Our PR24 Business Plan
For the period 2025-2030

A thriving Yorkshire.
Right for customers.
Right for the environment.

YorkshireWater

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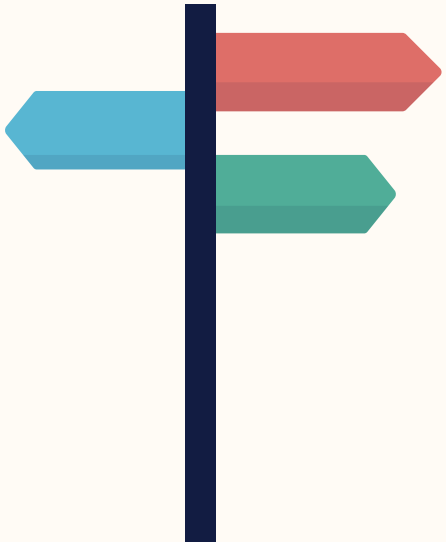
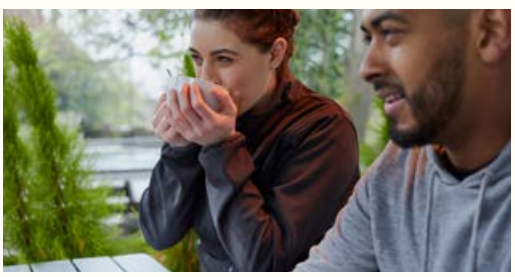


How we plan to meet our strategic ambitions

You will see the chapter numbers running along the top header of each page. This is to help you navigate through the document.



Our region, our customers

5.5m customers

2.2m households

1m customers living with illness or disability

188,000 customers living in water poverty

140,000 business and non-household customers

1.3bn litres collected, treated and returned every day

53,000km sewers

32,000km waterpipes

50 water treatment works

605 waste water treatment works

Key:

- Operational boundary water service
- Operational boundary sewerage service
- National Parks

10,000 + jobs supported

65 hospitals that we supply essential services to

28, 000 hectares of land managed

2,500 schools and colleges that we supply essential services to

£4.3m to be invested every day, between 2025-2030

12 universities that we supply

£1bn of water bills managed through water meters

2,000 fleet vehicles

Our business plan for 2025–2030 will help deliver our vision for 'A thriving Yorkshire: Right for customers. Right for the environment.'

At its core, the plan must deliver what a water company should. We must get the basics right, delivering resilient water and wastewater services that the public expects. While this plan will continue to deliver these core services in the short term, we recognise that we need to do more.

We need to consider what else is important to Yorkshire. Our customers, community groups and regional stakeholders want us to focus on activities that enhance the region. Therefore the plan, developed in line with Ofwat guidance, prioritises additional investment in activities that reflect those priorities, reduces our impact on the environment and future-proofs the business in the longer term.

Anchored in Yorkshire

Anchored in the heart of Yorkshire, employing 4,000 people directly and supporting a further 6,000 jobs across our suppliers. We play a vital role in enabling the social and economic development of the region.

Every day we work with local councils, the Environment Agency and a wide range of environmental interest groups and stakeholders to ensure that our activities are aligned to the needs of the region. This has helped us develop a plan that's right for customers and right for the environment. For example, this plan sees investment of £26 million into flood resilience, £580 million in improving coastal and inland bathing waters, and £95 million to continue to improve drinking water quality.

Accelerating our performance improvements

We need to continue with and accelerate improvements to many aspects of our performance. We have performed well on the things customers have told us they care about most, such as reducing leakage and sewer flooding, but we know we haven't always delivered improvements in other areas at the rate expected, such as river pollution.

The extremely tough external environment, including the pandemic, cost pressures on energy and chemicals, as well as unprecedented dry weather in 2022 followed by a freeze-thaw event later the same year, means that we have faced a challenge in improving our performance. We need to continue to improve performance in a sustainable and efficient way in the current 2020-2025 period while attempting to remain in line with cost allowances.

Our customers have also told us we need to get better at the things that impact their experience of our services. We have invested heavily in modernising the business – for example, replacing outdated systems including our 20 year-old work scheduling systems, thereby improving our maintenance schedules, productivity and asset health. We're reorganising our teams and streamlining processes so that customer issues are resolved more quickly and efficiently. But we need to do more. That's why we are proposing a £7.8 billion investment programme between 2025 to 2030. This includes investing £1.4 billion on storm overflows, £134 million for smart metering and £364 million on improving network asset health.

Nicola Shaw CBE
CEO, Yorkshire Water

> **"We have performed well on the things customers have told us they care about most."**

10,000+

Jobs supported

£7.8bn
Investment programme.

The plan will help future-proof our activities

While we need to improve our performance now, we also need to think longer term — in particular anticipating the impacts of population growth and climate change on our business.

This plan therefore includes future-proofing our activities. These include: investing in new sources of water such as boreholes — something that we've not done since the 1970s but will help build resilience of water supplies; and using digital technology to help us manage the network efficiently and effectively. This will include more sensors being used to monitor water levels, quality and usage in real-time, while using artificial intelligence and machine learning to analyse large amounts of data to identify patterns and predict future water supply, demand and customer behaviours and sentiments.

Importantly, we are investing almost a billion pounds, £959 million, to reduce our impact on the environment and to meet new environmental obligations. This includes our commitment to reduce carbon emissions as we aim for a net zero future.

In this plan we will:

- ✓ Focus on getting the basics right
- ✓ Accelerate our performance improvements
- ✓ Future-proof our activities

This will help deliver our vision for the region: **'A thriving Yorkshire. Right for customers. Right for the environment.'**

We recognise that we face scrutiny on our company financial performance, resilience and our ability to invest for the future. Our Board is fully committed to this plan delivering our vision for Yorkshire. This is evidenced by our shareholders making £400 million of capital repayments this year and deciding to reinvest in the company over and above initial plans over the last ten years. The shareholders will also make capital repayments of another £540 million by March 2027. This investment enables us to continue to support customers in challenging financial circumstances and deliver even more for customers and the environment in 2025-2030.

Nicola Shaw
CEO, Yorkshire Water

> **"Our customers have also told us we need to get better at the things that impact their experience of our services."**

£959m
On the environment.

A summary of our plan

Our plan will help deliver our vision for Yorkshire

- All water companies must produce business plans every five years. The business plans set out what water companies intend to deliver for customers and the environment. These plans must follow a specific process and then be submitted to Ofwat – the water industry's economic regulator. Ofwat will assess the plans and make decisions about the amount of revenue we can recover from customers through their bills that can be spent to deliver the plans.
- We look beyond five years to ensure that we're making good decisions for our customers and the environment – now and in the future.
- This is our business plan for the period 2025 to 2030 which forms the first five years of our 25-year Long-Term Delivery Strategy.
- Our vision is to create a thriving Yorkshire, right for customers and right for the environment. This means achieving the following outcomes:

Secure, safe, clean water supplies

Deliver safe, clean, great tasting water and ensure we can continue to meet water demand in future.

First-class customer service

Provide a tailored, reliable service and make sure that we are easy to interact with, in whatever way our customers choose to get in touch.

Bills everyone can afford

Deliver value for money to our customers, keep bills as low as possible, and offer the right support to customers who struggle to pay.

Modern and resilient infrastructure

Build and operate efficient, climate-resilient infrastructure to provide reliable services for our customers.

Net zero carbon emissions

Reduce carbon emissions towards net zero across our business and supply chain.

A healthy, natural environment

Reduce pollution and sewer flooding, improve river quality, and enhance biodiversity across the region.

There is a range of things we must consider when putting a plan together. This includes government targets, new legislation, changes from our regulators and what our customers and communities say is priority to them. Our plan seeks to strike the right balance of these things, over time.

The plan balances what's needed now with what may be needed in the future

- We need to think not only about what needs doing now but also what may happen in the future. That's why we also have longer-term strategies that look beyond 2025-2030. One of these strategies is our Long-Term Delivery Strategy.
- The purpose of our Long-Term Delivery Strategy is to ensure that we can continue to deliver our essential water and wastewater services, including meeting our obligations, statutory requirements and achieving our target outcomes for customers and the environment for the long-term.
- We know there are lots of uncertainties in the future including climate change, changes in technology, how much water our customers use, how much water we can take from the environment, and regulatory changes.
- Therefore, we have taken an 'adaptive planning approach' which means that we've identified what investments are needed now and identified what may be needed in the future.
- This approach accounts for future uncertainties, helps us to make good timely investment decisions to deliver our strategy efficiently, and balances affordability and fairness between current and future customers.

54,000

Number of customers and stakeholders that have contributed to our plan.

The plan reflects our customer, community and stakeholder priorities

- As part of the process of putting a plan together we must also make sure that we reflect the needs of the region and the customers and communities that we serve.
- Since 2020, 54,000 customers and stakeholders have contributed to our plan, through engagement activities, on a range of matters including ways to access our services, customer trust levels, the use of storm overflows, and our draft plan.
- We have incorporated industry-wide research as undertaken by Ofwat and the Consumer Council for Water (the independent voice of water consumers) and carried out high-quality engagement activities as set out by Ofwat.
- We know from listening to our customers that their priorities are for us to manage the health of our network as efficiently and effectively as possible to conserve our precious water resources. This is key to continue to provide customers with: a supply of safe, clean, drinking water; keeping sewage in pipes; and keeping bills affordable.
- We tested our final plan with customers recently and 78% of them found our plan acceptable - meaning our plan will deliver what the majority of customers want and need.

The plan will deliver wider environmental and social benefits

- In developing our plan we first ensure we can deliver our statutory obligations. We then consider the other things that our customers and stakeholders have told us they want and seek to get the right balance between the next five years and the longer term to arrive at an affordable plan overall.
- So an efficient, best value plan is not necessarily about delivering our activities at the lowest cost possible but instead is one that considers the whole-life cost of any activities, as well as any broader benefits they may provide to society and the environment.
- We have taken a 'six capitals' approach to inform the development and optimisation of our plan. This means we look at these six capitals (or categories) – financial, manufactured, natural, social, human and intellectual – and use these as lenses to look at the plan.
- These capitals are critical to the long-term success of our organisation and provide a robust and consistent approach to assess value and ensure we are making the best overall decisions for our customers and the environment.
- Our plan will create substantial positive value for Yorkshire across the six capitals. Overall, every pound invested generates £8 of wider benefit for our region.

£8

Our plan will deliver £8 of wider benefit for every £1 invested.

The six capitals

Financial capital
Our financial health and efficiency.

Manufactured capital
Our pipes, treatment works, offices, and IT.

Natural capital
The materials and services we rely on from the environment.

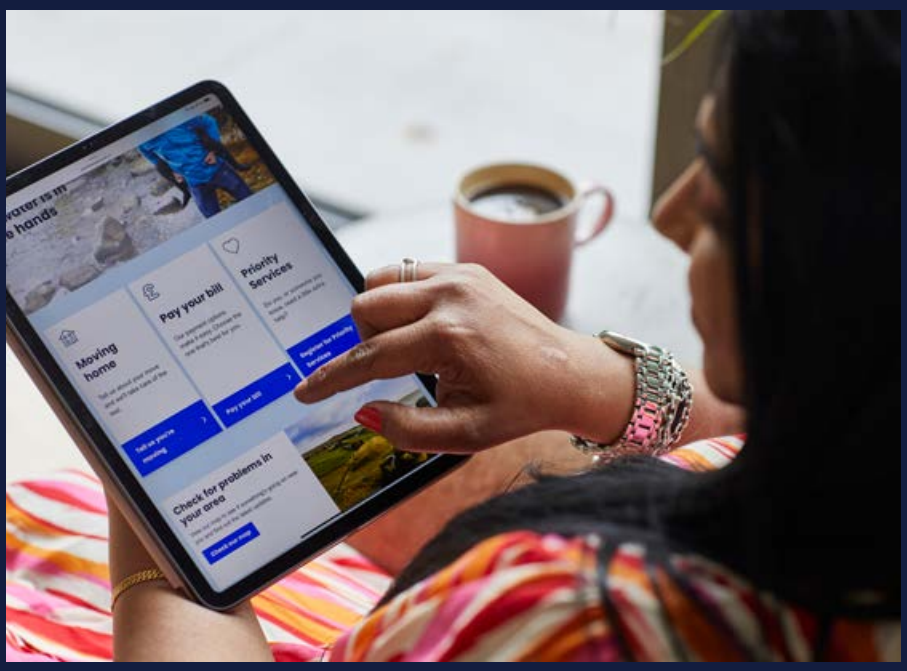
Human capital
Our colleagues' capabilities and wellbeing.

Intellectual capital
Our knowledge, processes, innovations, and strategic partnerships.

Social capital
Our relationships, trust, and contribution to wider society.

The plan ensures that bills are affordable and financial assistance is accessible to all those who need it

- We know that affordability is a key concern for Yorkshire Water customers. Household customers cannot choose their water company, so it is vital that we provide our services to customers efficiently, in order that they receive value for money and that our bills are affordable.
- So when we are developing our plan, we run the forecast costs through financial models to see what it might cost our customers over the five-year period.
- Water poverty modelling shows that more than 85% of our customers can afford water bills throughout this plan period.
- We estimate that the delivery of this plan will mean the average customer bill is £553 per year, in 2022/23 prices, that's an extra £111 on the average, compared to the average bill in 2020-2025. That's approximately £1.51 per day.
- We have adopted a natural bill profile in this plan, the preference of our customers. This means that the bill profile will reflect the investment that Yorkshire Water is making across the five years, and will lessen the bill increases to customers in the early years of the 2025 to 2030 period.
- Yorkshire Water is one of only three water and sewerage companies in England and Wales in the current 2020-2025 period to provide a voluntary financial contribution to support customers. In the 2025-2030 period, we will go further by increasing this voluntary contribution to £2.5 million per year, contributing to the increased support to customers via our social tariff 'WaterSupport'.



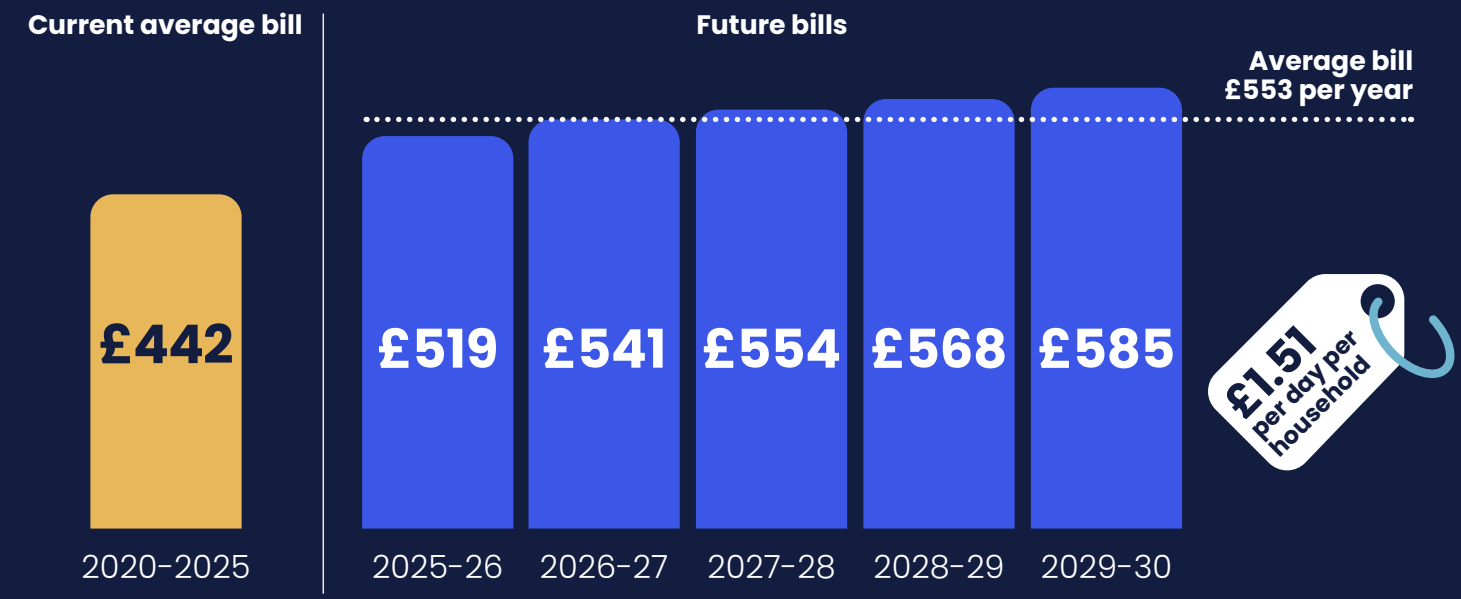
£2.5m

Increased support to customers via our social tariff 'WaterSupport' per year.

- We know that about 15% of customers in our region are economically deprived and therefore may struggle with their water bill. To address this, we are putting in place our largest ever package of financial support for customers who will struggle to afford their bill. We will provide financial support via a suite of measures to over 180,000 customers every year who are in financially vulnerable circumstances.
- These measures include: the national tariff 'WaterSure'; our social tariff called 'WaterSupport'; our two payment matching schemes; our hardship fund; and encouraging the take up of water meters where data suggests customers could save money. By 2030, we will provide £52 million of bill reductions to our customers each year - £30 million of which is through WaterSupport alone.

How our plan will impact future annual householder customer bills between 2025–2030

Average household bill, £/property in 2022/23 prices



Efficiency and innovation will help deliver the plan

- We know that our customers expect great service. To meet these expectations, we must think about delivering our services in new and different ways and be as efficient as possible with our time and resources. This is what we refer to as innovation and efficiency.
- By considering innovation and efficiency, we will be able to deliver the outcomes our customers have asked for and accelerate our performance improvements.
- We have already invested heavily into modernising our business through the current 2020-2025 period to ensure we are fit for the future and prepared to deliver a larger business plan for 2025-2030.
- In putting together our plan we have challenged ourselves to ensure our costs are efficient, and that we are spending customers' money wisely. We have worked with our partners, supply chain and market information to inform and reflect the costs put forward in our plan.
- In the plan for 2025-2030 we will deliver the outcomes our customers have asked through innovation and efficiency to accelerate our performance improvements.
- We are investing £38 million into our innovation programme, with over 50% of this to be delivered by external funding mechanisms. The innovation programme includes proposals for autonomous assets, connected infrastructure and nature-based solutions to improve water quality.
- We are fully supportive of market-based approaches, including direct procurement for customers (DPC) to deliver large programmes of work. We are proposing three DPC schemes as part of our plan for 2025 to 2030 to deliver best value for money.

£38m

Investment into innovation.

The plan for 2025-2030

- Our plan is summarised on the following pages showing how the investments that we plan to make will not only improve service and help us get the basics right, improve our core water services and future-proof our activities, but also reduce our impact on the environment.
- In our plan for 2025-2030, we are proposing an investment of £7.8 billion to accelerate performance improvements in almost all areas of our service and build future resilience.
- Our plan includes a base expenditure and maintenance programme (these are routine year-on-year costs for the normal running of the business) and an enhancement programme (enhancements are improvements to service and may be required to meet new statutory requirements).
- The tables on the following pages set out the total water and wastewater costs of delivering this plan (in 2022/23 prices), before any ongoing efficiencies.

Secure, safe, clean water supplies

	What's in the plan?	
Service improvements		
Water resource management and smart metering	Ensuring we have enough water to meet our customers' needs, both now and in the future. We will ensure we have enough raw water to treat, and water is used efficiently both by ourselves and our customers. Activities include measures to increase water supply for example, new boreholes, raw water transfer and activities to reduce demand for example, reducing our leakage rate and encouraging water efficiency via smart metering.	**£461m**
Drinking water quality	Additional treatment to ensure a safe and clean supply of drinking water to our customers. Activities include improving water treatment facilities and cleaning our treated water mains to reduce contacts from customers about discolouration.	**£95m**
Environmental protection and improvements	Ensuring we meet all environmental requirements in the way we undertake our activities. Activities include working with landowners and stakeholders to improve land management including sites of special scientific interest (SSSI) for the benefit of the environment and improve raw water quality.	**£83m**
Cyber & physical security	Protecting our assets and services from external threats. Activities include improving our IT infrastructure and improvements at our works.	**£59m**
Maintaining our assets		
Water resources (totex) Totex is the total operating and capital expenditure over the plan period	Ensuring all our raw water assets are available, capable of providing the water we need and ensuring our land is managed sustainably. These are the costs for maintaining our water business such as the maintenance and running of our assets including energy costs, people and other day-to-day operational activities.	**£245m**
Water networks (totex) Totex is the total operating and capital expenditure over the plan period	Ensuring we have enough available treated water and we can provide this at our customers taps with little wastage. Activities include day-to-day operations involved in treating the water, storing the water and mains maintenance and replacement.	**£2.2bn**

A healthy, natural environment

	What's in the plan?	
Service improvements		
Environmental programme and storm overflows	Improving our treatment and monitoring systems to improve our impact on the natural environment and investigate where we might make environmental investments in the future. This includes activities to reduce unwanted products, such as phosphorus, microplastics and chemicals, from entering our river systems. Making sure the wastewater stays in our systems and we reduce spills to the environment. Our plan focuses on high priority storm overflows to reduce environmental impacts and improve river water quality.	**£2.0bn**
Net zero	Measures to reduce greenhouse gas emissions to target net zero by 2050. This includes preventing harmful operational aerosols entering the environment and investing in green energy such as photovoltaics on our land.	**£51m**
Living With Water – improvements in flood resilience	Continued development of strategic partnerships in the city of Hull to provide enhanced flood resilience and protect customer and business properties from flooding.	**£26m**
Appropriate measures	The standards we must comply with when dealing with waste products from our treatment processes. Activities include making sure we reduce emissions to air and contain any spills from entering the environment.	**£118m**
Growth - new housing	Making sure that our infrastructure meets the needs of the growing population and housing in our region.	**£38m**
Maintaining our assets		
Wastewater collection	Ensuring our wastewater network is capable of collecting wastewater from our customers, and delivering this to our treatment works. These are the costs for maintaining our wastewater business such as the maintenance and running of our sewerage assets including energy costs, people and other day-to-day operational activities.	**£1.8bn**
Wastewater treatment	Making sure our treatment works are available and capable of treating the volume of wastewater collected and received. Activities include day-to-day operations involved in all aspects of treating wastewater.	
Bioresources	Maintaining our assets that deal with the waste products removed from sewage when we treat it. Activities include day-to-day operations involved in all aspects of managing waste arising from treating wastewater, such as maintaining assets, ensuring we have sufficient capacity for the future and engaging with other operators to seek efficiencies in the way we operate.	**£347m**

First-class customer service

	What's in the plan?	
Retail residential	Customer and billing services to household customers	**£446m**

A detailed, efficient and stretching plan aligned with expected regulatory allowances

- We have developed a detailed investment plan at an asset level and challenged the efficiency of the plan based on Ofwat's early view of how it intends to assess efficient costs and set future service levels.
- As a result of past investment to protect river health, the historic industrial legacy of Yorkshire and the geography of the Pennines, we are seeking adjustments to how the level of future allowances are set.
- We have identified a limited number of areas where we are seeking additional expenditure for increased costs of phosphorus removal, the consequence of having a high number of combined sewers in our region compared to elsewhere in the country and an accelerated smart metering programme. We are also explicitly seeking targeted allowances to manage longer-term asset health.
- We also provide evidence where the external factors pertinent to the Yorkshire Water area mean that an adjustment is required to common performance levels to account for these differences. These are focused on internal and external sewer flooding.
- We have proposed that Ofwat introduces a way for us to reach agreement on potential additional costs that might arise between 2025-2030 but which are highly uncertain right now. We call these 'uncertainty mechanisms' and they help to protect our customers and ourselves from both future inflationary impacts and uncertainty in future environmental bioresources legislation. Rather than include the costs, which might not be needed, we propose that we have a way to agree that these costs are only included if it becomes clear that they are needed.
- We will continue to work with Ofwat and other water companies to ensure the approach to cost modelling sets an appropriate level of spend and takes account of future productivity levels across the industry.

Measuring performance and ensuring customers receive the service they pay for

- To ensure that customers receive the service that they pay for, we have followed Ofwat's methodology for proposed price control deliverables. Price control deliverables are essentially a commitment we are making that says we will spend allowances on the things we said we would. It means customers are protected from non-or late delivery of our enhancement programme as we will have to return allowances to customers if we don't have to deliver something we had planned to do or return money to customers in the form of penalties if we deliver things late.
- We have proposed an efficient plan that delivers a set of stretching performance commitment proposals and delivers our environmental and statutory obligations into the long-term. Ofwat will measure our performance through 23 performance commitments.
- Performance commitments are the metrics used to measure the service we provide. All water companies must measure delivery against a common set of performance commitments. In addition to these common performance commitments, water companies may propose additional bespoke performance commitments to target the needs of their customers.
- We are not proposing any bespoke performance commitments as customer and stakeholder priorities are addressed and the activities within the plan are appropriately covered by the common performance commitments.
- Our service improvements across the suite of performance commitments are driven by both our base expenditure and maintenance programme and enhancement programme.

£1.51 per day per household

Performance commitments by our strategic outcomes

Secure, safe, clean water supplies	First-class customer service	Modern and resilient infrastructure	Net zero carbon emissions	A healthy, natural environment	Bills everyone can afford
Deliver safe, clean, great tasting water and ensure we can continue to meet water demand in future.	Provide a tailored, reliable service and make sure that we are easy to interact with, in whatever way our customers choose to get in touch.	Build and operate efficient, climate-resilient infrastructure to provide reliable services for our customers.	Reduce carbon emissions towards net zero across our business and supply chain.	Reduce pollution and sewer flooding, improve river quality, and enhance biodiversity across the region.	By delivering our services and performance commitments efficiently and effectively, we can keep bills as affordable as possible.
Compliance Risk Index	C-MeX Customer Measure of Experience	Internal sewer flooding	Operational greenhouse gases - water	Serious pollution incidents	
Customer contacts about water quality	D-MeX Developer Services Measure of Experience	External sewer flooding	Operational greenhouse gases - wastewater	Total pollution incidents	
Water supply interruptions	BR-MeX Business Customer and Retailer Measure of Experience	Mains repairs		Storm overflows	
Per capita consumption		Sewer collapses		River water quality	
Business demand		Unplanned outage		Bathing water quality	
Leakage		Discharge permit compliance		Biodiversity	

Financing assumptions in the plan

- Investors can put their money into thousands of possible investments around the world and they will put their money into water companies if they receive a fair and reasonable rate of return. This level of return is determined by Ofwat (the allowed return).
- This is hugely important to ensure that the company remains financeable and can continue to operate and provide the essential services we do while being able to continue to raise funds needed to support ongoing investment into services on behalf of customers and the environment.
- If risk and returns are out of alignment, then it will become difficult and more expensive to borrow the funds needed to invest for the future and customers' bills will be higher than they need to be.
- For the company to remain financeable, and deliver our plan for 2025-2030, we have used a revised view of allowed returns using up to date information from financial markets (this includes the material increases in the cost of debt we have seen since Ofwat published its early views on allowed returns).
- We have also included the significant financial support of our shareholders who have injected funding into the company in June 2023, together with further planned injections of £100 million in March 2025 and £440 million by April 2027 to enhance financial resilience and help fund the planned costs of £7.8 billion.
- Our approach and policy on executive pay is consistent with Ofwat's final methodology and recent licence update, providing a specific link to delivery for customers. Other key financial assumptions have been set in line with Ofwat guidance.

£440m

Amount of financial support from shareholders planned by April 2027.

The board has provided the necessary challenge and assurance

- The Board of Yorkshire Water is accountable for the oversight of leadership and preparation of this plan. This includes setting the strategic direction for the business and the quality and transparency of information provided.
- The Board has satisfied itself that the systems, approach to risk management, and internal controls and processes that are in place to develop the information on which it has based its decisions was appropriate and effective.
- The Board has satisfied itself that the submission can be financed and will deliver operational, financial and corporate resilience over the next control period (2025-2030) and beyond.
- The Board is pleased at the level of engagement with customers and stakeholders and sees how important it is that the additional (above statutory) enhancements are included in the plan as they reflect the specific needs of Yorkshire.
- The Board is convinced that the additional investment in the underlying assets of the business will ensure that we can continue to play a vital role in the region – delivering what's right for our customers and what's right for the environment.

Next steps

The plan is now with Ofwat to review, check and challenge. Ofwat will respond with their draft determination (an early decision with any recommendations for change) in May/June 2024 before a final determination in December 2024. This means the plan won't be finalised until early 2025 before the plan period starts in April 2025. In the meantime, we will continue to deliver our activities as planned so that we can hit the ground running in April 2025 without any delay to delivery.

Customers and stakeholders can sign up to hear more about our plan at a second 'Your water, your say' event on 23 November 2023.

Details about the event and how to register will be available at yorkshirewater.com/about-us/your-water-your-say/

Timeline of business plan submission

Engagement with statutory bodies and the public on business plan development

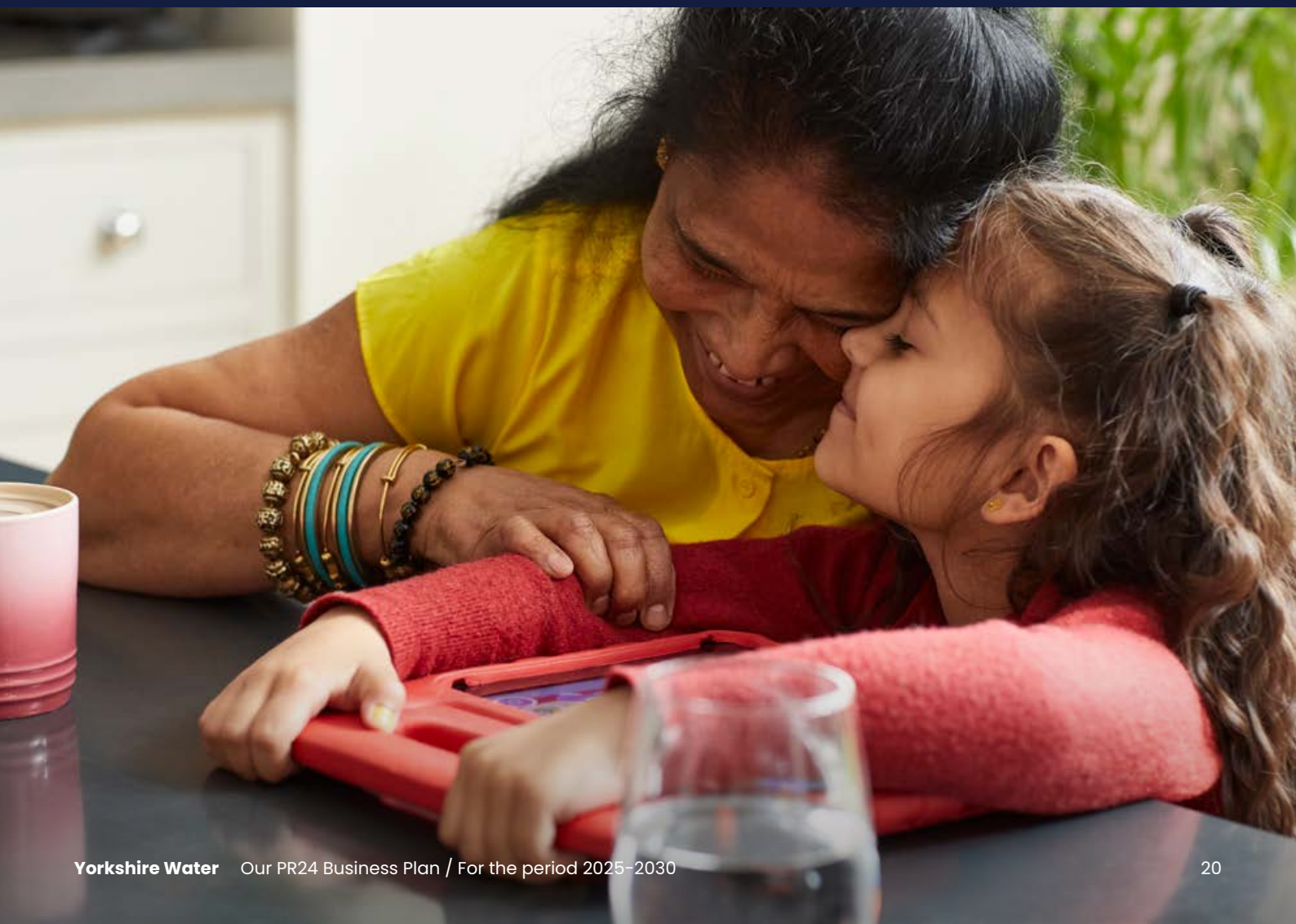
December 2022	June 2023	October 2023	November 2023	May/June 2024	December 2024
Ofwat PR24 methodology finalised and shared	**'Your water, your say' session 1** An opportunity for customers to share their views on the business plan	**2nd October Business plan submission to Ofwat**	**'Your water, your say' session 2** Update on incorporation of customer views into the business plan	**Draft determinations**	**Business plan assessment and final determination**

Chapter 1
Strategic context

This business plan sets out our activities, costs and proposed service levels for the period 2025-2030.

The plan addresses strategic priorities, balances demands of service improvement and affordable bills, and delivers long-term value for the environment and existing and future customers and communities.

Investment of £7.8 billion as set out in this plan will enable us to focus on getting the basics right, accelerate improvements to our services and future-proof our activities.



Chapter 1
Strategic context

1.1 Introduction

The purpose of this chapter is to set out what we need to do as a water company, our vision for the region, how the water industry operates in the price review process, and how we consider the competing requirements and priorities when putting together our business plan.

This plan sets us on a new course. It recognises the need to accelerate improvements to all aspects of our performance and remains steadfastly focused on everything we can do to achieve our strategy of "A thriving Yorkshire: Right for customers, right for the environment."

The water industry is under intense scrutiny, and we need to work hard to meet customers' rising expectations of what we need to deliver. At the highest level, we need to consider the bigger global picture and our government's commitments to adapt to climate change and meet net zero emissions. We also work to new legal requirements that include protecting and enhancing our environment, for example, operating in a more sustainable way, looking after our natural resources and making more rapid progress on the operation of storm overflows. All of this needs to be done in the context of the increasing cost of living challenges and making sure our customers' bills are affordable.

Figure 1: Our region in numbers

We exist to provide essential services to the people of Yorkshire

Yorkshire is the largest county in the United Kingdom, earning it the title 'County of Broad Acres'. The scale and diversity of our region is enormous, reflecting its history and cultural roots. The Peak District, North Yorkshire Moors and the Yorkshire Dales account for 20% of the entire region. We have two outstanding areas of natural beauty - Nidderdale and Howardian Hills and extensive rural areas including farming.

Our region is also famous for big urban centres with dense populations that are set to grow, business parks and major industries like financial services, manufacturing and a growing digital sector. We have a huge part to play in supporting a thriving Yorkshire.

We exist to serve our customers. We have statutory and regulatory duties to provide safe reliable drinking water and return wastewater safely back to the environment. We provide these essential services to over five million people and 140,000 businesses across Yorkshire every day, and we play a vital role in the region's health, wellbeing, and prosperity.

Many customers have particular challenges they face, more than one million are over the age of 65, average salaries in region are 13% lower than the national average, 188,000 live in water poverty, and we have customers for whom English is not their first language.

We employ 4,000 people and support a further 6,000 jobs across our suppliers. We supply essential services to 65 hospitals, 12 universities and approximatly 2,500 schools and colleges.

We are also the custodians of essential infrastructure (such as pipes, meters, treatment works) and our activities impact on many important environmental sites (including rivers, beaches and wetlands) and must comply with legislation and regulations. We manage 53,000km of sewers, 32,000km of water pipes and 655 water and wastewater treatment works and we collect, treat and return 1.3 billion litres of water every day.

We will invest more than we ever have before. Between 2025 and 2030 we plan to invest £7.8bn, so we can deliver Water Industry National Environment Programme priorities including reducing our reliance on combined sewer overflows as well as improving and protecting river water quality.

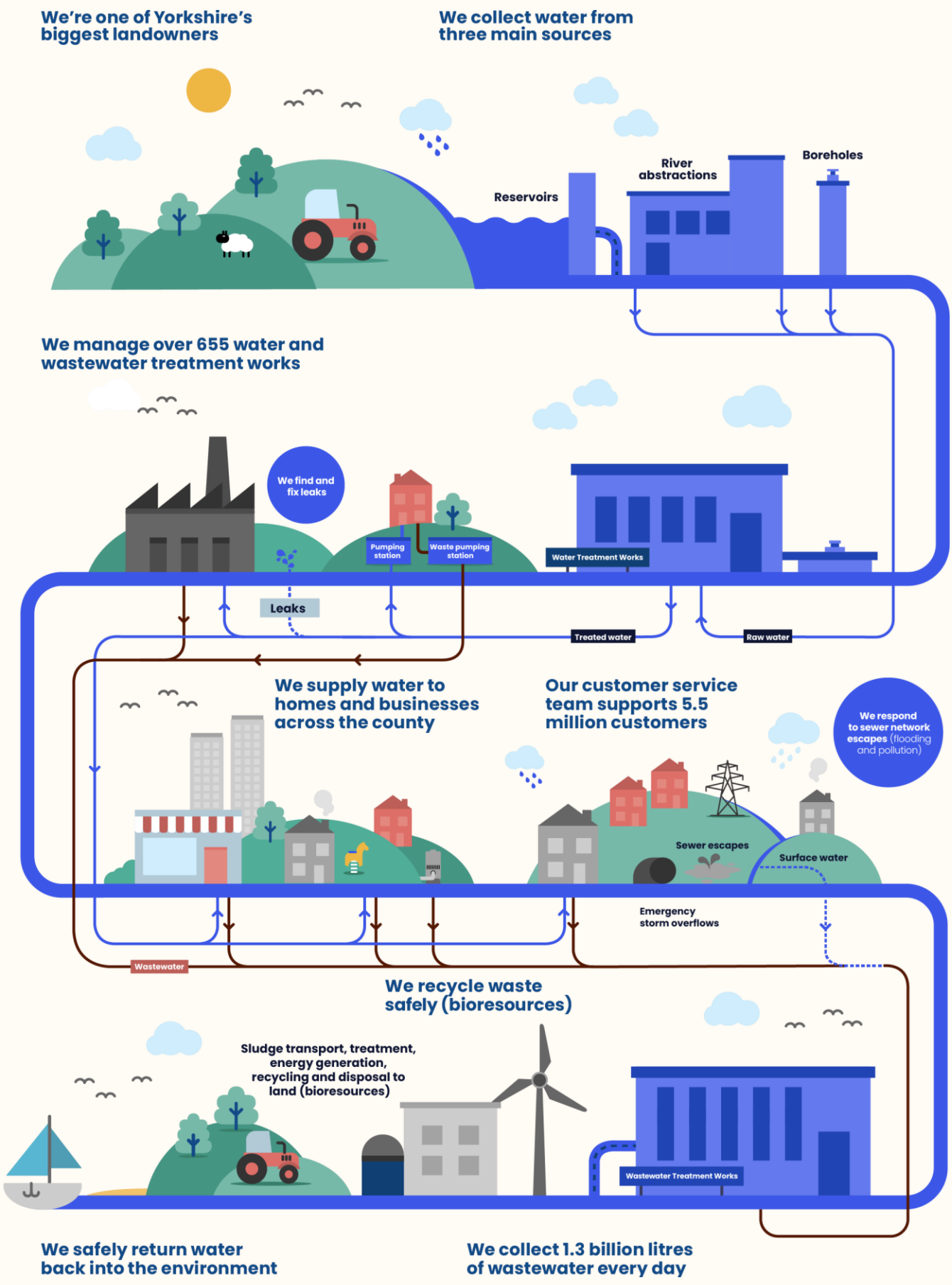


Figure 2: Yorkshire Water provides essential water and wastewater services

1.2 Our strategy and the key outcomes we want to deliver for Yorkshire

In order that our short and long-term plans address strategic service priorities, balance the demands of improvement and affordable bills, and deliver long-term value for the environment and existing and future customers and communities, we have developed a framework.

We have a clear vision for the region - **a thriving Yorkshire, right for our customers, right for the environment**. To achieve this we must manage our delivery, invest in our infrastructure, create jobs, and work in partnership with other organisations across the region.

We have six key outcomes

To achieve this vision, we will focus on achieving six key outcomes by 2050:

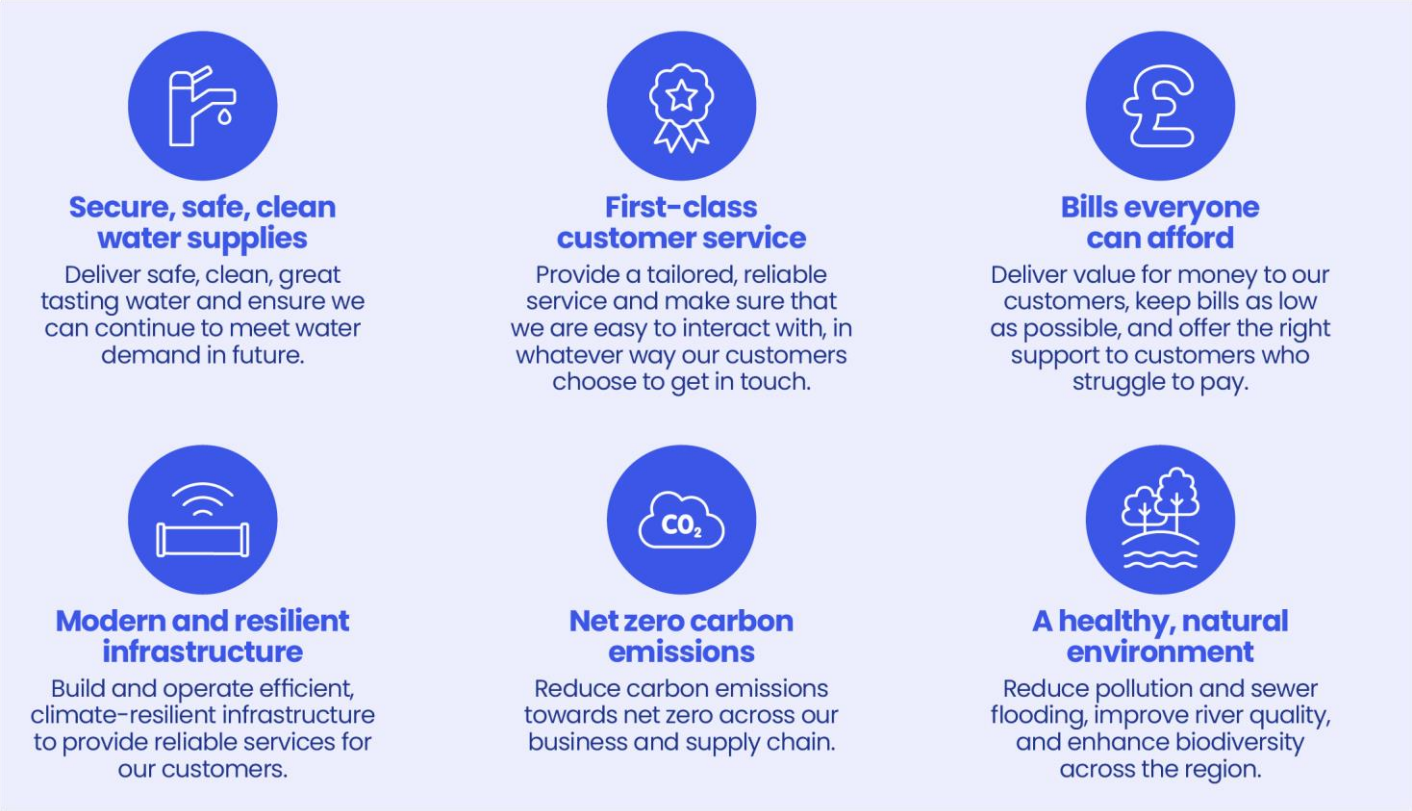


Figure 3: Our six key outcomes

To deliver these outcomes we take a long-term view

Our Long-Term Delivery Strategy aligns to Ofwat's Long-Term Delivery Strategy (LTDS) methodology and sets out our vision for the next 25 years, the outcomes we aim to achieve, and the actions and investments we intend to undertake to deliver them. It considers the priorities of our customers and how our plan may need to change under different future scenarios, setting out 'alternative pathways'.

In addition, we have recently launched a new customer and colleague supported 10-year corporate strategy. The strategy redefines how we deliver our priorities and provides a clear direction for our business.

To deliver the strategy, we have a five-year plan

Our business plan for the period 2025 to 2030 forms the first five years of our 25-year Long-Term Delivery Strategy.

Our business plan forms the first five years of our strategy and will ultimately help us deliver improved outcomes and our vision for Yorkshire

Figure 4: Our buisness plan and strategy

1.3 Our plan balances requirements and priorities

The water industry operates within a regulatory framework that consists of five-year asset management periods (AMPs). The five-yearly planning process is called the 'price review'.

The price review process determines the revenue we recover from customers, the investment we make, and services we provide to customers in each AMP. These are set in consultation with our customers and our regulators including Ofwat, the Environment Agency, and the Drinking Water Inspectorate. Ofwat provides the final sign-off for our plan. This document is our plan for this price review called PR24 and covers the period 2025 to 2030.

This five-year plan is built on meeting our customers' priorities and targets set out by the government. It is aligned to our Long-Term Delivery Strategy, setting us on the path towards 2050.

Balancing priorities

In putting the plan together, we must consider a wide range of priorities:

- **Statutory requirements** – as a water company with a statutory duty to supply water and sewerage services, we must comply with various legal requirements. These include standards for drinking water quality, environmental protection, water resource management planning, and security and emergencies.
- **Regulatory and government requirements** – we are a regulated business and the economic regulator, Ofwat, requires water companies to deliver UK government priorities for the English water sector as set out in their final methodology. The four strategic priorities that the government set for Ofwat in the Strategic Policy Statement are:
  - Protect and enhance the environment
  - Deliver a resilient water sector
  - Serve and protect customers
  - Use markets to deliver for customers.

We demonstrate the delivery of these priorities in our plan through:

- Setting stretching but deliverable performance commitments:
  - Reducing pollution
  - Reducing leakage

  - Reducing per capita consumption
  - Reducing internal sewer flooding
- Delivering the legal requirements of the Storm Overflow Discharge Reduction Plan and going beyond the requirements for bathing waters
- Exceeding the interim target for phosphorus reduction requirements set in the Environment Act
- Improving the health of our assets
- Supporting customers to pay their bill
- Continuing to modernise our business to provide a better service for our customers and to drive efficiency and increased productivity
- Proposing significant use of Direct Procurement for Customers as an efficient delivery route.

In addition, the UK government has set a legally binding target to deliver net zero carbon emissions by 2050. We are committed to play our part in the transition to net zero and our plan sets out how we will deliver carbon emissions reductions of 90% by 2050.

- **Customer and stakeholder priorities** – through our extensive ongoing engagement activity, bolstered by research undertaken externally by the Consumer Council for Water and Ofwat, we have a comprehensive understanding of our customers and stakeholders and their priorities for our service. We know our region's main priorities include:
  - Providing a continuous supply of water that is safe to drink
  - Keeping bills affordable for all
  - Preventing sewage from entering homes and businesses
  - Enhancing the quality of water within our natural environment.

Evidence of how we balance these priorities across our business plan, ensuring our investment decisions align with what is important to our customers, is weaved throughout our plan.

You can read about our customer engagement in detail in Chapter 6

Affordability – the current cost of living crisis means that affordability has never been so important and is a critical feature of our plans. Largely due to external pressures on customers during 2023, we have seen an impact on an increasing number of customers' ability to pay their water bill. At the same time, bills will rise to deliver our biggest environmental programme to date and, as a result, affordability issues will grow.

Most customers cannot choose their water company, so it is vital that we provide our services to customers efficiently, in order that they receive value for money and that our bills are affordable for current and future customers.

We have followed Ofwat's and the Consumer Council for Water's prescribed methodologies for testing affordability and acceptability of our business plan. Our customer research programme has been wide ranging, spanning several engagement methods and customer types to ensure we gain as much insight as possible to inform an effective business plan for 2025 to 2030. Our business plan is the culmination of our extensive engagement which is supported by the majority of customers.

Find out about customer insight and willingness to pay for the plan in Chapter 6 and how we are supporting customers in Chapter 2 on bills and affordability

Key point:

This PR24 business plan sets out our activities, costs and proposed service levels for the next five years to meet the long-term priorities of our customers, government targets, and regulatory requirements.

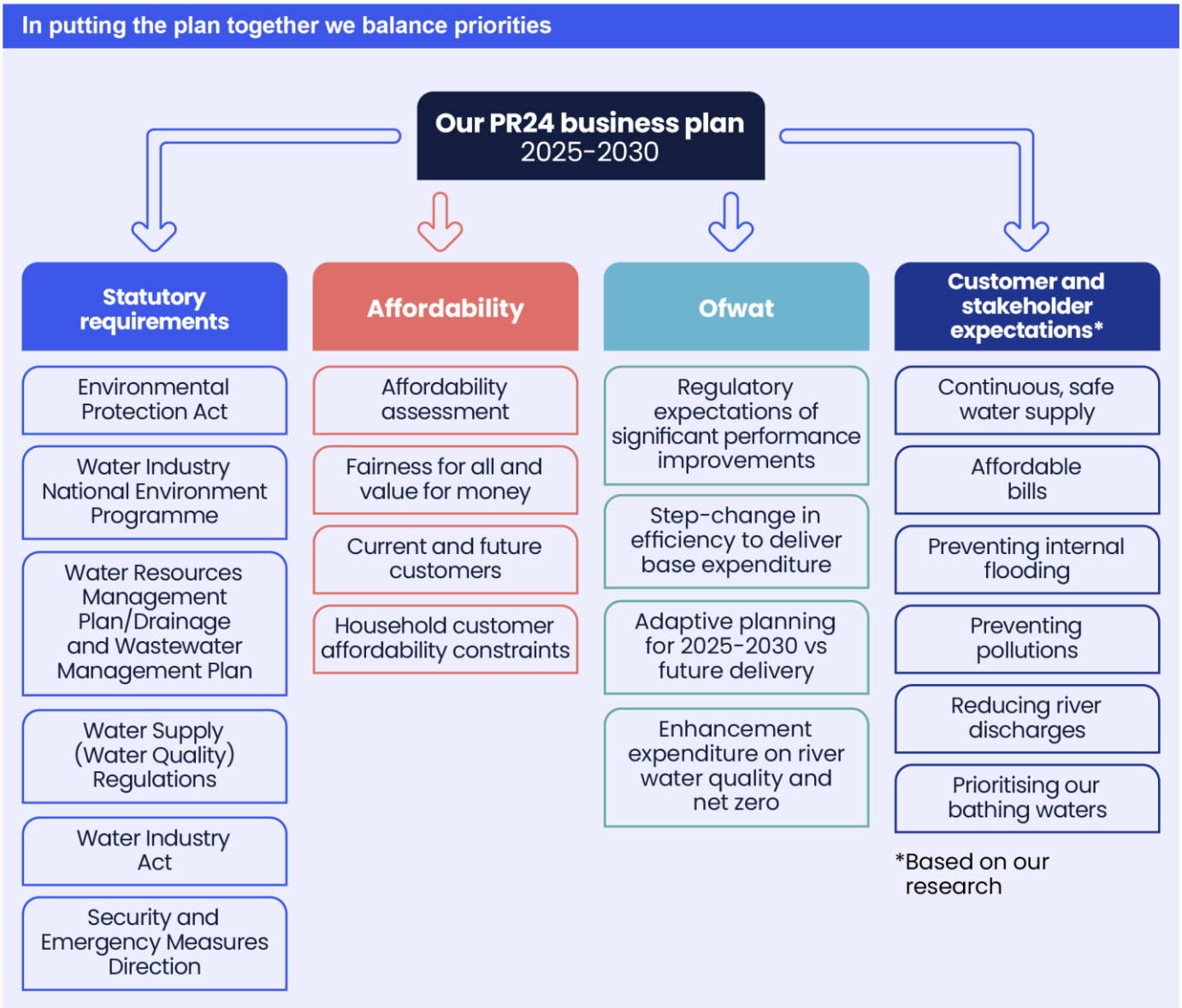


Figure 5: Balancing priorities

1.4 The plan considers a wide range of other factors

In addition to balancing the statutory, regulatory, government, stakeholder and customer priorities, we consider other factors including:

Other plans that feed into the process - these include our Water Resource Management Plan (how we plan to maintain a safe reliable water supply by balancing supply and demand) and our Drainage and Wastewater Management Plan (how we will manage the capacity and performance of our wastewater services, including reducing sewer flooding and protecting the environment from our wastewater operations).

Within these plans we take an adaptive planning approach and ensure that we take action in a timely way to protect against future risks while ensuring we do only what is required and do not complete activity today that may not be required in the future.

Find out more about how other plans impact our strategy and the development of this plan in Chapter 5

Past performance – Our plan seeks to build on our AMP7 performance. We have continued to see overall improvement for around 70% of our performance commitments, that will continue on into AMP8. We understand our recent performance has not been good enough in some areas as we have been challenged, as has the whole industry, in hitting the tough targets set at the last price review for all performance commitments.

Our AMP8 plan has proposals for notable improvements across almost all performance commitments, with only 2 out of the 23 measures expected to remain unchanged. We expect to move towards an overall median comparative position with some areas performing very well. We will continue to focus on reducing supply interruptions and leakage rather than reducing mains repairs. Our plan also delivers improved CRI and C-MeX performance which are both key customer priorities.

We have included a small number of proposed performance adjustments to recognise our operational circumstances and the historic industrial legacy of Yorkshire and the geography of the Pennines. This relates to performance commitment targets for internal and external sewer flooding and storm overflows.

To deliver our plan for 2025-2030 we will improve our performance and improve how we communicate with customers and all other stakeholders. We will focus on delivering what we have to in order to meet our regulatory obligations and what our customers have said that they are willing to pay for.

Find out more about the details of the plan in Chapter 8

We will operate as efficiently and effectively as possible – Our plan costs are efficient, evidenced and stretching. Wholesale base costs are constrained to align with what we expect Ofwat's econometric modelling will determine as an efficient allowance. We have made the case for three specific cost adjustment claims to base opex where they are clearly justified for phosphorous removal, metering and the high proportion of combined sewers in the Yorkshire region. We have also presented the need for two targeted allowance claims to support greater infrastructure mains renewals and non-infrastructure asset health in the water business.

Without a sustained increase in investment levels we will see more assets deteriorate and remain in service well beyond their expected lives with consequential risk to service, experiencing more frequent failures and driving up reactive and operating costs to unsustainable levels. Beginning the transition now to a more forward-looking approach, which will enable proactive long-term investment, will deliver a sustainable, healthy asset base and share the costs and benefits of achieving it equitably with current and future customers.

Our enhancement costs are detailed and evidenced. They are built up using cost models from our historical capital investment data supplemented with partner pricing of sample schemes, recent AMP7 tender results and tender prices for ongoing schemes as well as consideration of experienced inflation and AMP8 sample schemes. Our commitment to deliver a £180m programme of storm overflow schemes by 2025 has also given us real insight and direct scheme costs from the market to underpin the single largest component of our AMP8 enhancement investment.

Our plan will drive design and productivity improvements through modernisation and innovation to achieve at least £400m of efficiency that is needed to pay for reinvestment that has been committed to in addition to a further £160m on frontier shift efficiency.

This plan embraces market opportunities with Direct Procurement for Customers (DPC) accounting for more than £500 million of investment delivery plus we will expand our renewable generation capacity to support delivery of regulated services while making progress on our long term ambition of net zero.

Find out more about innovation and efficiency in Chapter 4

We will work with others to deliver our plan – we will continue to work in partnership with other agencies and organisations to deliver and accelerate our performance. We play a key role in creating local jobs and supporting Yorkshire's economy and through collaboration we can maximise our impact and contribute to the inclusive growth of the region

Our plan will ensure a fast start on delivery building off our significant run rate at the end of AMP7. We will have developed plans and a full project pipeline to manage potential delivery challenges around capacity, capability, external dependencies and delivery profile.

Find out more about partnerships in Chapter 8

We will invest in the plan – this plan includes investment of £7.8 billion to deliver resilient water services, accelerating improvements to many aspects of our performance to serve and protect our customers and the environment. In producing our plan, we have identified all investment needs, then identified a broad range of options for meeting those needs. The options have been assessed and optimised, recognising the significant new statutory obligations and including the use of the six capitals analysis. Solutions have then been selected based on the whole life cost and the overall benefits that they deliver.

Find out more about the levels of investment and the process for determining this in Chapter 8

Find out more about six capitals and how the plan delivers environmental and social value in Chapter 3

We balance decisions over time – we balance decisions over time to ensure that we are not just pushing investment costs onto the next generation, while recognising the challenges of the current economic climate.

We make difficult decisions to strike the right balance and carefully consider all decisions in relation to this plan so that we are confident our plan addresses all interests, issues and risks appropriately.

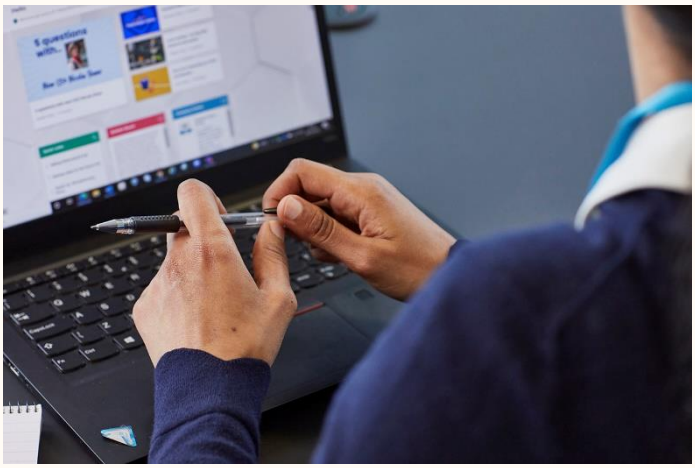
Find out more about how the final plan decisions are balanced between competing demands over time and how the Board has provided assurance of this in Chapter 10

We will finance the plan – to deliver the plan, we consider how we finance it and what's affordable for customers against what is fair for the company and investors. Our Board has satisfied itself that the plan is financeable and has confidence in the plan.

Our plan includes a substantial increase in the level of support for customers potentially experiencing affordability constraints. In our plan for the 2020-2025 period, we included a voluntary contribution to customers to support bill affordability as a voluntary sharing mechanism. We have retained this in our AMP8 plan and have increased the amount of voluntary contribution to customer bills in line with the increase in average bill. This will see us contribute £2.5 million per year. In addition, we propose a further voluntary sharing mechanism such that if the business performs well, then we will increase the level of voluntary contribution we make to support customers.

We are also seeing an expansion of customer cross-subsidy levels as the people of Yorkshire want to be generous to those less well-off especially in the current economic climate. In combination with the ongoing company support, we are able to fund more than £52m per year into supporting 180,000 customers. This is big increase in support reaching more customers than ever at a really important time. This will help to shield a large proportion of customers from the impacts of the proposed bill increases which, for the majority of our customers, remains affordable and excellent value for money at around £1.51 per day.

Find out more on risk and return in Chapter 9



Performance commitments deliver outcomes

A thriving Yorkshire. Right for customers. Right for the environment.

Secure, safe, clean water supplies	First-class customer service	Modern and resilient infrastructure	Net zero carbon emissions	A healthy, natural environment	Bills everyone can afford
Deliver safe, clean, great tasting water and ensure we can continue to meet water demand in future.	Provide a tailored, reliable service and make sure that we are easy to interact with, in whatever way our customers choose to get in touch.	Build and operate efficient, climate-resilient infrastructure to provide reliable services for our customers.	Reduce carbon emissions towards net zero across our business and supply chain.	Reduce pollution and sewer flooding, improve river quality, and enhance biodiversity across the region.	By delivering our services and performance commitments efficiently and effectively, we can keep bills as affordable as possible.
Compliance Risk Index	C-MeX Customer Measure of Experience	Internal sewer flooding	Operational greenhouse gases - water	Serious pollution incidents	✓
Customer contacts about water quality	D-MeX Developer Services Measure of Experience	External sewer flooding	Operational greenhouse gases - wastewater	Total pollution incidents	✓
Water supply interruptions	BR-MeX Business Customer and Retailer Measure of Experience	Mains repairs		Storm overflows	✓
Per capita consumption		Sewer collapses		River water quality	✓
Business demand		Unplanned outage		Bathing water quality	✓
Leakage		Discharge permit compliance		Biodiversity	✓

Figure 6: Performance commitments by outcomes

We are assessed on our performance – the company's performance will be assessed across a set of 23 common performance metrics - these are called performance commitments (PCs). These PCs reflect areas of performance that are of particular importance to customers, stakeholders and the environment.

These PCs align with the outcomes set out to deliver our vision for the region: **a thriving Yorkshire, right for customers, right for the environment.**

In our plan we propose stretching and customer acceptable service levels for each of these PCs and in our Long-Term Delivery Strategy we show our long-term proposals for each of these areas of performance.

Find out about our stretching service levels in Chapter 7

1.5 Board assurance of the plan

The Board of Yorkshire Water is accountable for the oversight of leadership and preparation of this plan. This includes setting the strategic direction for the business and the quality and transparency of information provided.

The Board has satisfied itself that the systems, approach to risk management, and internal controls and processes that are in place to develop the information on which it has based its decisions were appropriate and effective. This specifically recognises the scale and scope of the work, including more than 10,000 lines of data tables, table commentaries, business plan narrative and supporting appendices and Long Term Delivery Strategy submissions.

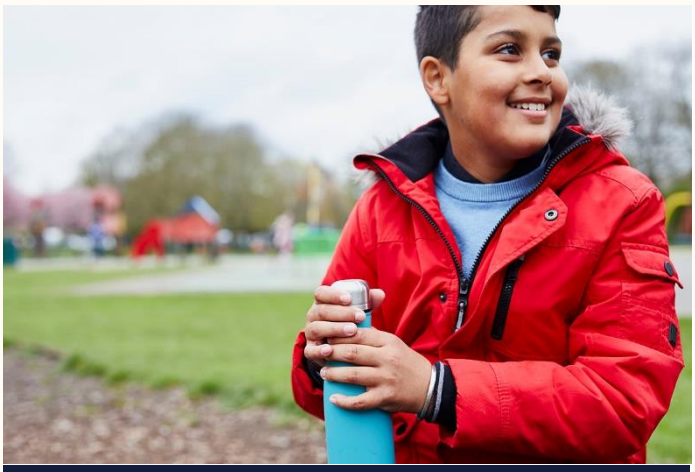
The Board has satisfied itself that the submission can be financed and will deliver operational, financial and corporate resilience over the next control period (2025-2030).

This plan has been produced during a period of immense challenge for the business and economy. The Board has reflected on the experience and challenge of delivery during AMP7 as well as its learning from the periodic review process of 2019. The Board understands Ofwat's need for plans based on asset health and service delivery and the need to achieve a step change for customers during AMP8 whilst protecting the environment for us all for the long term.

The Board intends the plan to be stretching and ambitious, yet also achievable and realistic given lessons learned, the ongoing economic uncertainty (including inflation), and increasing societal expectations. The Board is committed to its ongoing role of providing oversight and challenge to delivery in AMP8.

The Board is satisfied with the final plan and content that it meets Ofwat's expectations and requirements. The submitted plan is intrinsically linked with all components working together to create an overall plan that is financeable, deliverable, in the interest of current and future customers and the environment, and which provides resilience in the long-term.

Find out about Board assurance of the plan in Chapter 10



Key point:

In summary, we believe that an investment of £7.8 bn, as set out in this plan, will enable us to focus on getting the basics right, accelerate improvements to our services and future-proof our activities.

The plan seeks to address strategic priorities, balancing competing demands of service improvement and affordable bills, and delivers long-term value for the environment and existing and future customers and communities.

Figure 7: This plan will deliver our vision for 'A thriving Yorkshire: Right for customers, right for the environment' through acheiving six key outcomes

Chapter 2
Bills and affordability

Affordability is a significant concern for our customers particularly in the current economic climate.

Yorkshire Water is one of only three water and sewerage companies in England and Wales (in the current 2020-2025 period) to build into our plan a voluntary financial contribution to support customers.

For the 2025-2030 period, we have increased this voluntary contribution, and we commit to increasing this further, should performance improve, to reduce bills for those most in need.

We go further than ever before with a suite of measures to support customers including: the national tariff 'WaterSure'; our social tariff 'WaterSupport'; our hardship fund; our debt schemes; and our drive to encourage the take-up of water meters.

In this plan average customer bills will increase to £553 per year. That's an extra £111 on the average bill each year across the five-year period, amounting to a total bill of around £1.51 per day. We are proposing a natural bill profile in this plan which customers generally prefer.

Chapter 2
Bills and affordability

Supporting appendices:

Frontier economics affordability report
TransUnion credit reference report
Supporting customers in vulnerable circumstances

2.1 Introduction

The purpose of this chapter is to show how we will ensure bills are affordable, balancing good value for our customers with external upward pressures on price; for example, from the largest ever environmental programme (WINEP) to storm overflow spill reduction plans. It also aims to demonstrate that financial assistance is accessible to those who need it most.

A key outcome in our Long-Term Delivery Strategy (LTDS) to 2050 is to offer '**Bills that everyone can afford'.** We have pledged to deliver value for money to our customers, keep bills as low as possible and offer the right support to customers who struggle to pay.

Long-Term Delivery Strategy (LTDS)

We know from our research (Valuing Water Customer Priorities Research Final Report) that affordability is a key concern for Yorkshire Water customers, with around half of customers across our region just about managing financially.

Valuing Water Customer Priorities Research Final Report in **Customer research appendix**

Customers cannot choose their water company, so it is vital that we provide our services efficiently, in order that they receive value for money and that our bills are within reach. In this chapter, we set out how we will ensure that bills remain fair and reasonable for all customers, including those who, for a variety of reasons, may struggle to pay their water bill.

The cost to deliver our services has always been important, but we have heard from our customers that it is of much greater importance than ever before given the cost of living crisis. It's our responsibility to ensure that bills remain affordable, now and in the future. At the same time, we must invest to continue to improve our service and our resilience.

We have a statutory duty to comply with legal requirements such as environmental protection and water resource management planning and respond to external considerations including the Water Industry National Environment Programme (WINEP) and storm overflow reduction plan through to climate change and government net zero targets. We know our customers care about these things too. The investment required to meet these requirements is a significant driver for bill increases in the 2025-2030 period.

In the 2025-2030 period and beyond (as detailed in our Long-Term Delivery Strategy), we need to accelerate our performance improvements through investment to enable us to replace ageing infrastructure, future-proof our activities and reduce our impact on the environment.

For more information on Long Term Delivery Strategy see Chapter 5

2.2 We understand our customers and their needs

2.2.1 Understanding our region

In this section we use the evidence from our customer research and wider sources to demonstrate that we know our customers and the affordability challenges they face.

Yorkshire overall, when compared to the rest of the UK, is a fairly deprived area and this is something we must be mindful of when delivering and charging for our service. In Yorkshire we have a series of indicators alluding to a significant proportion of our region who are struggling financially:

- 14.4% of our customers are in economic deprivation – this equates to approximately 320,000 – Index of Multiple Deprivation.
- 31% of children across the region are living in poverty – Child poverty coalition.
- Yorkshire people earned roughly 13% less than the UK average weekly wage – ONS.
- 1 million people in Yorkshire are living with an illness or disability – ONS.
- 8% of households in the region have a bill greater than the water affordability threshold (bill greater than 5% of disposable income after housing costs) – our own research.

Whilst understanding the economic conditions on a macro level provides a great deal of insight about our customer base, carrying out our own customer engagement on affordability is critical, especially in the current economic climate. We have undertaken an extensive programme of customer research, specifically on understanding affordability. Our research findings support these national and regional statistics, revealing that customers are suffering from financial stress and that affordability remains a key concern.

Using our own June 2022 Valuing Water Customer Priorities Research Final Report, the customer preferences research carried out by Ofwat and CCWater, a significant study on Affordability and Vulnerability in our region, the Ofwat standardised Affordability and Acceptability testing, and our own Yorkshire Water Affordability and Acceptability Testing, we have a comprehensive understanding of our customers' affordability needs (see Customer research appendix for details of the all the research carried out).

A summary of each of these customer studies in relation to affordability is provided below.

2.2.2 Understanding affordability – our research

It's clear from our customer research that affordability is a growing concern for many. In fact, around half of customers across our region are just about getting by financially, with those in receipt of financial support feeling the strain more than others (see the Affordability and Vulnerability Research in the Customer research appendix). We are committed to doing more to support our customers financially – in Section 2.3 we provide further information on our package of support to help meet our customers' affordability needs.

For more details see Section 2.3

In this section, we summarise our research undertaken to help understand affordability challenges and help us identify how and where we can better target our support services.

Customer preferences research studies

- Our own valuing water priorities research (see the Valuing Water Customer Priorities Research Final Report in the Customer research appendix) found that keeping bills affordable was the second highest priority after a continuous supply of safe clean drinking water. When testing this in PR19, affordability of bills was not considered a priority to evaluate in further research. In fact, 'helping other customers to pay their bill' was ranked in 12th place versus other measures – a stark contrast to what we've seen this time around and a reminder that affordability is as important as some of the other services our customers consider "essential". Our affordability and vulnerability research found that there is customer support to enhance our offering for financial support schemes, such as WaterSupport, and provide a more holistic approach to debt management (see the Affordability and Vulnerability Research in the Customer research appendix).

Valuing Water Customer Priorities Research Final Report and Affordability and Vulnerability Research in **Customer research appendix**

- In early 2022, the Ofwat and CCWater Customer Preferences Research found affordability to be of medium importance when considered across the full suite of performance areas, though customers with

families tended to rank affordability higher. The unanimous view from customers was that everyone has a fundamental right to water regardless of their ability to pay.

Ofwat and CCWater Customer Preferences Research

Affordability and vulnerability research

- Affordability is a growing concern for many, with around half of our customers struggling financially and those in receipt of financial support feeling the strain, in particular.
- 84% of people in our region felt that their ability to pay their water bill has remained the same despite of the cost of living crisis but around a third were concerned about their ability to keep up with payments in the future.

See the Affordability and Vulnerability Research in the **Customer research appendix**

- While most customers surveyed reported that their main concerns were with housing, energy and grocery bills (see the Affordability and Vulnerability Research in the Customer research appendix), the study identified that there is more we can do to support financially vulnerable customers. Below we have outlined a few of these customer recommendations and how we've addressed these:
  - **Banded tariffs:** Customers identified that in some cases they would fall between the cracks of some of our financial support tariffs despite being in desperate need of support. For example, if a customer has a lower-than-average bill, they will not qualify for 'WaterSupport' as the cap on this tariff is higher than their bill, but they are still struggling to pay it. Banded tariffs were recommended in this instance and would help our most financially vulnerable with the support they need. We have updated our tariff structure to include banded tariffs, this will meet the needs of these lower income and low bill households.

More information about our move from one static WaterSupport tariff to a branded tariff is provided in Section 2.3

  - **Collections letters to customers:** The research suggested that letters sent in 'red' can be disengaging, especially for customers who are struggling with debt. Customers told us these letters can cause them to view Yorkshire Water as aggressive and unsupportive, further causing these customers to bury their heads in the sand regarding addressing their debt. More worryingly, our customers told us that 'red' letters impact their mental health – inducing further anxiety and distress. Listening to our struggling customers through this feedback, we have made the decision to completely remove 'red' letters from our debt recovery processes. Instead, our customers will continue to receive letters which include more supportive language and signposting to help, encouraging customers to engage with their debt and come to Yorkshire Water to discuss support.
  - **Work with others to improve awareness and engagement of support:** The research also showed that working collaboratively with external partners could help raise awareness of all the support available to customers in our communities. Trusted organisations such as Citizens Advice and StepChange are well placed to provide customers with debt advice and income maximisation beyond just the water bill. We have made our signposting processes more robust and are trialling new activity with digital platforms to try and reach more customers through this process.

For more information on the customer research carried out in this space see Chapter 6

Bill profile research

- All of our previous research has told us that customers would prefer a flat bill profile within an AMP. However, given the accelerated programme of work we must deliver, bills will increase to a much greater extent than ever before, at a time when the economic climate is particularly challenging for our customers. Our Board were concerned about this and wanted to investigate if a flat bill would still be desirable in this economic climate. We decided to ask our customers which bill profile they would prefer.

Overall, customers were supportive of either:

- spreading the cost to reflect the money that Yorkshire Water will spend on improvements across the next five years, representing a slightly smaller step-up in bills in 2025 and a further annual increase across the 5-year period up to 2030 – a natural bill profile.

or

- spreading the cost evenly over the five-year period. This represents a step-up in bills in 2025 but the bill remains the same beyond this to 2030 – a flat bill profile.

See the Yorkshire Water Bill Profile Research in our **Customer research appendix**

- There was, however, a slight preference from our customers for a natural bill profile, lessening the initial impact of bill increases in the early years of the 2025-2030 period. For customers in financially vulnerable circumstances, we are offering more support than ever before.

For more details see Section 2.3

The views of our customers have informed our decision to adopt a natural bill profile in AMP8 (2025-2030).

Water affordability data analysis

We commissioned water affordability data analysis research in 2023 to replicate the industry research earlier in the 2020-2025 period. This analysis suggests that 8% of households in the region currently have a bill greater than the water affordability threshold (bill greater than 5% of disposable income after housing costs). This is a reduction of approximately 1%, compared to the expected levels in 2023-24; a difference which can be attributed to the additional support we have provided to low-income households via the social tariff and WaterSure bill reduction since 2022, and the additional company voluntary contribution of £15 million which our we pledged in June 2022 for the period from then to March 2025

Analysis of water affordability data shows that approximately 28% of customers with a bill greater than the water affordability threshold currently have a higher than median household income. This customer segment is most likely to benefit from metered charges, water efficiency and/or signposting to external support. Equally, there are approximately 3% of customers with a bill greater than the water affordability threshold who have negative disposable income, meaning they will remain under the water affordability threshold with a water bill of any value.

Frontier economics affordability report appendix

In addition, our debt modelling analysis suggests that those customers who struggled before the cost of living crisis are now struggling further.

Cost of living report, Ofwat

For more details see Chapter 8 section 9

This is particularly difficult for customers who are already in debt.

Through this analysis we have learnt that the three customer segments which are most likely to require help are:

1) Customers in economic deprivation
2) Customers below the water affordability threshold
3) Customers falling into debt.

Later in the chapter, we will outline how we will support these customers, who are struggling most, through targeted schemes.

For more details on this see Section 2.3

Affordability and acceptability testing – Ofwat

In line with the industry-wide standardised approach, we have carried out extensive testing on the affordability and acceptability of our business plan with our customers. 2,175 household customers and 203 non-household customers took part in this study. Whilst

78% of customers surveyed found our plan acceptable, only 22% found our plan affordable.

Affordability and acceptability testing – Yorkshire Water

Having undertaken the qualitative phase of research prescribed by Ofwat and CCWater, customers highlighted a number of issues with the materials/plan presented – namely that it was not comprehensive (a partial plan was presented) and that a lot of it was focusing on immaterial content (a lot of time was spent explaining/understanding regulation and comparative information which was deemed unimportant as customers can't choose suppliers). Given this feedback, we wanted to understand the impact of showing a wider view of the plan – presenting all of our performance commitments and their respective targets up to 2030 alongside the improvements customers can expect to see across the board.

Our acceptability scores likened to the Ofwat study with 79% of household customers finding our plan acceptable, this was similar for non-household customers (79%), and higher for future customers (84%).

Affordability scores showed a significant difference to the Ofwat study. In our study, 60% of household customers found the bill easy to pay and 56% of non-household customers found the bill easy to pay. This result was obtained following CCWater guidelines.

Further details are provided in Chapter 6

We conclude that when shown the extent of services and improvements being made across the 2025-2030 period, our customers find our plan both affordable and acceptable. However, regardless of our study findings, given the cost of living challenges facing our customers, we do know, for many of our customers, affordability remains a concern. That is why we are putting in place our largest ever package of financial support for customers who will struggle to afford their bill.

Further information about this support is provided in Section 2.4

2.2.3 Considering fairness in paying across generations

We have engaged with current and future bill payers to understand the priorities of the customers we serve now, and in the future, across a range of our studies.

As expected, part of our affordability and acceptability testing (Yorkshire Water Affordability and Acceptability Testing in the Customer research appendix) involved engaging with customers on the topic of phasing necessary bill increases.

Yorkshire Water Affordability and Acceptability Testing in the **Customer research appendix**

From this, we know that all customers, across current household bill payers, non-household customers and future bill payers, would prefer to see increases in bills starting sooner, spreading increases across different generations of bill payers. We can triangulate this view using our Valuing Water Customer Priorities research, which also tested customer views on bill profiling (Valuing Water Customer Priorities Research Final Report in the Customer research appendix). 52% of household customers showed a preference to start paying for investment needs now, and that payments should be spread across different generations of bill payers. This was consistent with non-household customers' views, with 57% also stating a preference for this option. In addition, the engagement we carried out to support the development of our LTDS also supported this view (Yorkshire Water – Long-Term Delivery Strategy Research in our Customer research appendix).While 44% of customers, when asked about intergenerational fairness, felt they were unable to provide a view, more customers than not (37%) preferred the option for an increase in bills starting sooner, spreading increases across different generations of bill payers and were less likely to opt to place more of the burden on future bill payers.

For more information on our customer research in this area see Chapter 6

2.3 Addressing investment needs while maintaining affordable bills

Our business plan for 2025-2030 represents an acceleration in our level of investment to improve our services. It is the first part of the delivery of our LTDS, which lays out critical paths to 2050. The plan has been prepared in line with regulatory requirements, as well as customer and stakeholder priorities. In confirming the scale and scope, a key consideration has notably been affordability and value for money, both in the 2025-2030 period and in future planning periods to 2050.

Our business plan sets out how we are pushing the boundaries of service improvement and efficiency for our customers, making sure we spend customers' money wisely. **Chapter 4** of this business plan summarises our commitment to innovation and efficiency.

For more details see Chapter 4

The average Yorkshire Water customer bill for the 2020-2025 period is £442 (in 2022/23 prices). Our average bill will reach a total of £553 per year in the 2025-30 period, which is an additional £111 compared to today's average bill, a significant increase. This equates to a bill of around £1.51 per day, an increase of 30 pence per day.[1] We have considered how we can better support our customers in the most vulnerable circumstances and, for all our customers, how to implement increases to bills fairly.

To balance bill increases, this plan contains our biggest ever package of support for customers in vulnerable circumstances and given the cost of living crisis, we haven't waited until 2025 to increase our support. Details of this additional support are provided below.

By 2030, we will provide £30 million worth of bill reduction to our customers through our social tariff, WaterSupport, each year. Further information on our entire offering, including WaterSupport, is set out in **Section 2.3.**

For more details see Section 2.3

As mentioned above, we have adopted a natural bill profile for the 2025-2030 period, informed by the customer research.

Further details on the outputs of the bill profile research are provided in Section 2.2

Figure 1 below shows a breakdown of the elements that underpin the average bill for the 2025-2030 period, together with a comparison to the current 2020-2025 period.

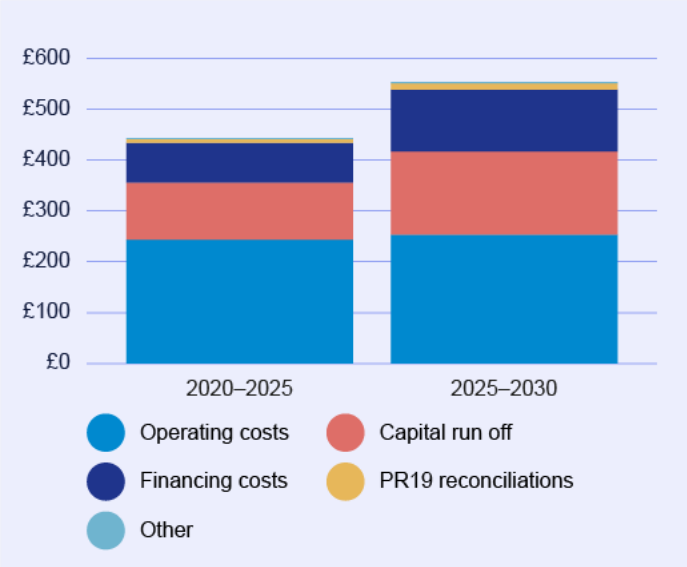


Figure 1: Breakdown of customer bill

[1] Customer Bills shown in a comparable 22/23 price base

Our financial support offered in 2020-2025

- We understand the cost of living crisis is having a significant impact on our customers, we see it every day in our contact centre with queries about financial help and uptake of bill support – there is no doubt that the situation is urgent. We have not waited for the start of AMP8 in 2025 to increase essential support to customers.

In response to the current challenging economic climate, we have already enhanced the financial support we provide.

- In 2022-23 we provided over 40,000 cost of living payments to low-income households on our social tariff. This has been funded through additional company contributions to the social tariff, on top of the £2 million per year already committed throughout the 2020-2025 period.
- Since 2023-24, the additional company contribution has allowed us to reduce the annual charge for WaterSupport customers from the current average bill value for all customers of £426 to a lower amount of £350. This means that those on social tariffs have had their bills reduced. Therefore, we have protected low-income customers from both inflation and annual bill increases.
- In addition to the support for social tariff customers, we have implemented new initiatives for customers in debt.
- All of this has been funded through an additional £15 million company voluntary contribution committed between 2022-2025, to support customers needing more affordable bills in response to the cost of living crisis. This was over and above the £10 million voluntary contribution included in our PR19 business plan. The financial support provided to Yorkshire Water customers has grown significantly in the 2020-2025 period. Figure 2 illustrates the substantial increase in the number of customers receiving financial support.

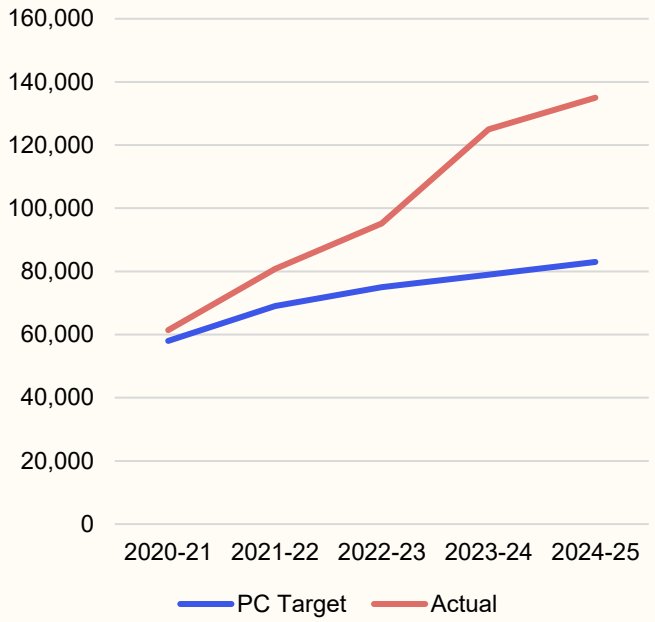


Figure 2: Customers receiving financial support compared to Performance Commitment target 2020-2025

We achieved this uptake through building awareness and engagement throughout the 2020-2025 period. We targeted our efforts towards those customers where data analysis (including, but not limited to, credit reference data, Office for National Statistics data, customer segmentation data) identifies the greatest need. Our process involved:

- Greater targeted promotion
- Proactive engagement with customers via our Community Engagement team
- Embedding customer insight into our billing systems. This enables tailored conversations with customers about how to reduce their bills as part of our response to customer enquiries.

This customer-centric approach resulted in us winning the Utilities & Telecoms award for Best Culture and Conduct in 2020.

For further information see the **Supporting customers in vulnerable circumstances appendix**

For more details see Chapter 8.9

2.3.1 Surpassing expectations

Figure 2 also illustrates that the uptake in financial support achieved since 2020 consistently exceeds performance commitment targets. There has been out-performance in every year of the 2020-2025 period so far, reflecting Yorkshire Water's commitment to helping customers who need support paying their bill.

Our performance commitment data doesn't tell the whole story, however. We also offer:

- Support with water charges for those customers in debt who have been referred to us through the government Breathing Space legislation[2], giving customers the time to engage with debt support.
- Signposting to debt advice and income maximisation support.
- Water efficiency advice.
- Leakage support.
- Targeted promotion of water meters to support bill affordability.

Table 1 below summarises the number of customers that we have supported with their bills overall, beyond our performance commitment measures, and how we have provided that support throughout the 2020-2025 period.

Type of support	Customers helped 2020-21	Customers helped 2021-22	Customers helped 2022-23	Customers helped 2023-24	Customers helped 2024-25
WaterSupport (social tariff)	27,140	34,467	45,019	66,000	66,000
WaterSure (national tariff)	9,726	10,465	12,680	15,000	16,000
Debt schemes (write offs)	36,866	44,932	57,699	14,000	14,000
Water meters (for affordability)	6,328	8,120	8,377	17,000	10,000
Targeted demand reduction, e.g. meters/water efficiency (for affordability)				4,250	3,750
Community Trust (write off)	1,909	1,862	2,431	2,500	2,500
Other bill reduction initiatives	3,030	3,021	5,407	5,350	5,350
Income maximisation/debt advice	865	755	481	3,300	3,300
Non-direct support, e.g. payment breaks, special payment arrangements, external signposting for support	49,193	40,288	33,054	33,400	33,400
Total	**135,057**	**143,910**	**165,148**	**160,800**	**154,300**

Table 1: Financial support for customers 2020-2025

[2] https://www.gov.uk/government/publications/debt-respite-scheme-breathing-space-guidance/debt-respite-scheme-breathing-space-guidance-for-creditors#:~:text=Standard%20breathing%20space,-A%20standard%20breathing&text=It%20gives%20them%20legal%20protections,and%20charges%20on%20their%20debts.

2.4 Our plan for financial support for customers for 2025-2030

In this section we explain how we propose to support customers with a variety of options to make their water bill affordable in the 2025-2030 period, according to individual customer's circumstances and needs. In line with our research, the plan prioritises financial support for:

- Income-deprived households
- Customers in debt
- Customers with bills below the water affordability threshold (bill greater than 5% of disposable income after housing costs).

This section also outlines the development of Yorkshire Water's social tariff, WaterSupport.[3]

2.4.1 Our PR24 Plan (2025-2030) builds on existing financial support schemes

This plan builds on our performance to date. By 2030, we will provide financial support to over 180,000 customers every year who are in financially vulnerable circumstances with bill reductions reaching £52 million per year. We will deliver this through an effective suite of support which helps to make water bills more affordable for those key customer segments who are most likely to struggle with their water bills.

Table 2 below summarises the number of customers that we will support and how we will provide that support throughout the 2025-2030 period.

Type of support	Customers helped 2025-26	Customers helped 2026-27	Customers helped 2027-28	Customers helped 2028-29	Customers helped 2029-30
WaterSupport (social tariff)	76,000	80,000	83,000	86,000	90,000
WaterSure (national tariff)	17,000	18,000	19,000	20,000	20,000
Debt schemes (write-offs)	14,000	14,000	14,000	14,000	14,000
Water meters (for affordability)	10,000	10,000	10,000	10,000	10,000
Targeted demand reduction for example, meters/water efficiency (for affordability)	4,000	3,500	3,000	2,500	2,500
Community Trust (write-off)	2,500	2,500	2,500	2,500	2,500
Other bill reduction initiatives	5,000	5,000	5,000	5,000	5,000
Income maximisation/debt advice	3,500	3,500	3,500	3,500	3,500
Non-direct support (for example, payment breaks, special payment arrangements, external signposting for support)	33,500	33,500	33,500	33,500	33,500
Total	**165,500**	**170,000**	**173,500**	**177,000**	**181,000**

Table 2: Financial support for customers 2025-2030

[3] We do not cover any national social tariff proposal, as we understand from Ofwat's 'Supplementary 15' guidance that this tariff not progressing. However, we continue to work across the industry and support the development of this opportunity as things change.

2.4.2 Customers in economic deprivation

As set out in Section 2.1, more than half of customers in economic deprivation already have a bill lower than the water affordability threshold. This business plan ensures we have financial support available to the remaining customers in this segment. The suite of support includes:

- Reducing customer bills through our social tariff, WaterSupport, and national tariff, WaterSure.
- Private water leak allowances and repairs.
- Signposting for benefits and income maximisation opportunities.
- Promotion of water meters and water efficiency for lower annual charges.
- Tailored payment arrangements to provide manageable budget planning.

For more details see Section 2.1

2.4.3 Customers below the water affordability threshold

We will assist this customer segment primarily through our social tariff and targeted water meters which will reduce bills to below the water affordability threshold. Our embedded operational signposting processes enable customers to easily access debt and income maximisation support via external expert organisations.

Despite the economic climate, which is likely to mean that customers have less disposable income, this business plan aims to reduce the number of customers below the water poverty threshold by more than 50% by 2030.

2.4.4 Customers in debt/falling into debt

This business plan prioritises customers struggling with their charges and aims to provide over £7 million of financial help through payment matching schemes and debt write-offs every year. This includes support via the Yorkshire Water Community Trust which is funded through an annual donation from Yorkshire Water of £1.2 million for the 2025-30 period – this donation is over and above Yorkshire Water's annual £2.5 million contribution to the social tariff. Debt support is an effective way to get customers back on track, with over 80% of customers who get out of debt through Resolve, our payment matching scheme, maintaining their ongoing water charges.

In addition to the financial support provided directly by Yorkshire Water, we will also:

- Ensure that customers are signposted to external debt advice services should they need it.
- Use data effectively to ensure we support customers as part of our payment collection strategies.
- Provide face-to-face visits where there are potential signs of financial vulnerabilities.
- Provide payment breaks or special payment arrangements as core services within our collections activity.

2.4.5 Social tariff: supporting low-income households

Of all the financial support provided, our social tariff WaterSupport provides help to the most customers each year. We expect to support 65,000 customers in 2023-24. It is available to all low-income households across the region and is expected to increase its reach in line with the cost of living and economic deprivation forecast for the region (see graph 2). By 2030, we aim to be supporting 90,000 customers with our social tariff each year. Reaching customers with the lowest household income is central to our plan.

Customers tell us they find the scheme simple to engage with, and that it provides them with the financial support they need (see the Affordability and Vulnerability research in the Customer research appendix for details of the research carried out). The tariff is structured with clear eligibility criteria, based on equivalised household income, and is set at a fixed annual charge. This provides transparency to customers on application about what they will be paying and keeps the scheme and process as simple as possible. This tariff design provides clarity, fairness, and reassurance throughout the process.

However, while a single annual charge means WaterSupport is simple in design, our research shows that it does not provide some customers with enough bill reduction to remove them from below the water affordability threshold.

Frontier Economics affordability report appendix

Similarly, for some customers, it may provide more discount than is actually needed. We have learned from this, and in this plan we are evolving WaterSupport for the 2025-2030 period into a three banded tariff which will be means-tested, based on customer household income as per customer recommendation (Affordability and Vulnerability Research in the Customer research appendix).

Bill values will be set through modelling disposable household income to provide optimum customer benefit for each tariff band. To do this we have used actual credit reference data modelling, in collaboration with one of our data bureaux, to design bill values that support the largest possible number of customers.

This is presented in the **TransUnion credit reference report appendix**

This is a more impactful method of helping customers obtain more affordable bills than a model which provides percentage discounts or a single tariff value.

We plan to protect WaterSupport tariff charges throughout the 2025-30 period from the effects of the step up in investment within this plan. This should shield customers from increases if they are struggling financially.

To meet the increasing customer need for the social tariff, we will provide £30 million worth of bill reduction through WaterSupport to our customers each year, by 2030. This will be funded via our annual company contribution and customer supported cross-subsidy. We carried out our 'Willingness to Pay/Contribute' research with customers in 2023, and from this research we know our customers support an increase in cross-subsidy support. This will increase for the 2025-30 period from approximately £4 each year at the start of the 2020-25 period to £14 each year for the 2025-30 period.

As best practice in the industry, Yorkshire Water continues to commit funding to the social tariff each year and is increasing the annual company contribution from £2 million to £2.5 million[4]. Furthermore, we commit to increasing this amount should performance improve. Our aim is to ensure we maximise the funding available for customers by distributing it in a more tailored way, through a banded tariff approach, helping more customers obtain an affordable bill.

40% of customers benefiting from WaterSupport in the 2025-2030 period are expected to be on the lowest banding with a bill of £270 (2022/23 prices). This is significantly less than they currently pay. Therefore, our most vulnerable customers will pay less in the 2025-2030 period than they do today.

In addition, we are committed to delivering a charging trial in the 2025-30 regulatory period, to further support affordability – the rollout of our smart meter programme will in the longer term create the opportunity for more innovative tariff structures, aiding affordability. Such varied help for customers also underpins our long-term strategic outcome: 'bills everyone can afford'.

We have provided further details of how we reach customers in need of financial support, and the service provided, in the **Supporting customers in vulnerable circumstances appendix.**

2.5 Protecting customers - recovery of costs

When recovering costs, we consider that the natural rate, the proportion of totex that is opex, is the most appropriate starting point. This ensures that operating costs are recovered as they are expensed, and capital costs are recovered in line with the economic use of those assets that we invest in.

- For PAYG rates we have recovered operating costs as fast money, in line with Ofwat's PR24 methodology.
- For RCV run-off rates we have considered analysis of current depreciation rates, together with prior run-off rates, which is consistent with Ofwat's PR24 methodology.

We believe that these approaches provide a fair starting point for customers from an intergenerational point of view. We consider that deviation from these rates should only be done where there is a compelling reason to do so that is in the interest of customers. At all points in the decision making process, we have considered the impact on customer bills.

We discuss our decisions around cost recovery in more detail in Chapter 9

[4] The decision by Board of Yorkshire Water to increase the company contribution was made late in the business planning process so is not captured in the data tables

Chapter 3
Environmental and social value

Creating social and environmental value sits at the heart of our business plan.

Our six capitals framework helps ensure we make the right investment decisions that deliver long-term value.

Our plan creates £8 of value for every £1 invested, which is demonstrably good for customers.

Chapter 3
Environmental and social value

Supporting appendices:

Nature First commitment

3.1 Introduction

In this chapter, we provide an overview of how we ensure environmental and social value sits at the core of our plan for our customers and the Yorkshire region. We outline the processes and tools we used to develop the plan, followed by information on the environmental and social value that our plan will generate through both its design and delivery. Finally, we describe how we will measure and report on the impacts that our plan will create for Yorkshire.

3.2 Creating value from our plan

Our business is tied closely to the environment in which we operate, and the support and wellbeing of the customers we serve. We recognise that it is our responsibility to get things right and help create a thriving Yorkshire by delivering environmental and social value over the long term.

Developing a plan that creates value for our customers, communities and the environment is a priority for us. This means finding a balance between many different factors, including delivering a high-quality service, complying with all our legal and regulatory requirements, mitigating risks, building long-term resilience, ensuring affordability of customers' bills, and delivering environmental and social value through our work.

Through conversations, engagement and research with our customers and stakeholders, we have developed a deep understanding of their needs and preferences. Expectations on the water industry have shifted dramatically over the past five years. Customers now expect us to do more, and it is our job to meet these expectations by developing an efficient plan that demonstrates we are making the right decisions about where and how we spend customers' money.

Our plan for the period 2025-2030 reflects customers' priorities to ensure it delivers the right outcomes for Yorkshire. However, it has also been developed with the long-term in mind, so that decisions taken to improve the efficiency of our services are not made at the expense of our long-term resilience or affordability for future generations. Our research shows customers are supportive of us going over and above a 'least cost' plan to produce a plan that delivers more than our minimum statutory requirements, addresses customers' priorities –such as tackling leakage, reducing flooding risk in Hull, and reducing the use of storm overflows – and creates real value.

3.3 Environmental and social value are central to our plan

At the heart of our plan sits a robust and consistent approach to assessing value, ensuring we are making the best overall decisions for our customers and the environment. We recognise creating value from our plan is not about delivering our activities at the lowest cost possible, but instead considers the whole life costs and benefits of any activities, including the value they provide to society or the environment.

To understand the wider costs and benefits of our investment decisions beyond traditional financial considerations, we have used a six capitals approach to support the development of our plan. The six capitals represent the resources and assets that we depend on to sustain our business, and which we impact through our activities. This approach is designed to protect and grow the environmental and social value we create by better understanding – and therefore better managing – the impacts of our activities across the capitals. The six capitals are integrated into our Decision Making Framework (DMF), which is the system we used to develop and optimise significant elements of our plan. We introduced this approach in the last price review period for 2020-2025 (PR19) and continue to refine and mature our methodology over time. The DMF

allows us to attribute monetary values to non-financial costs and benefits and ensure that they are considered explicitly in our decision making, which means we can choose between potentially very different solutions using a common unit of measurement.

Importantly, the values used by the DMF to assess investment options are informed by customer engagement research, and therefore reflect the priorities and preferences of our customers across the region. This provides us with deep and meaningful insights into the environmental and social value our investment options will bring to Yorkshire, and makes sure our plan will deliver the outcomes that our customers want and expect, while ensuring bills remain affordable, both now and in the future.

For more information on the methodology that underpins our Decision Making Framework see Chapter 8.2

Figure 1: Six capitals

3.4 Our plan will create £8 value for every pound invested

Our plan will create substantial positive value for Yorkshire across the six capitals. Here, we provide a summary of the benefits provided by our plan, including the wider environmental (natural capital) and social (social capital) value we will deliver for the region (Table 1). Overall, every pound invested generates £8 of benefit for our region[1], which is demonstrably good for customers.

Totex investment	£7,375m*	
Benefits realisation (total over five years)		Key value creation activities
Financial	£62,076m	• Investing in our clean and wastewater assets • Lowering direct costs of service failures
Manufactured		
Natural	£3,388m	• Reducing greenhouse gas emissions • Enhancing protection from natural hazards (e.g., floods) • Supporting environmental processes that improve water quality
Social	£1,728m	• Increasing household customer welfare through enhanced service quality • Building trust with customers • Contributing to the regional economy
Human	£776m	• Safeguarding public health and safety through our work
Intellectual	Reflected under human and social capitals	

*excluding Developer Services & Retail

Table 1: Summary of the benefits provided by our plan

Our customer supported plan incorporates more non-traditional solutions than ever before, including nature-based solutions, and is guided by our Nature First commitment appendix. This is our intention to use nature-based solutions as our preferred option for new schemes wherever practicable, to help reduce carbon emissions, enhance regional biodiversity, and improve the climate resilience of our assets.

Nature First commitment appendix

For example, we are planning to deliver 18 low-carbon wastewater treatment wetlands across the region, building on our experience of designing and operating these wetlands that we developed through the regulatory period from 2020-2025 (**see Case study 1**).

We are also actively working towards achieving net zero by reducing carbon emissions across our business and wider supply chain.

For more details see Section 3.7

[1] Return on investment calculated as (Benefits - Investment) / Investment. Note this is a conservative estimate as some benefits will continue to be realised beyond AMP8.

Other highlights from our plan include:

- Enhancing our support for vulnerable customers by developing our social tariff, WaterSupport, to provide varying levels of support based on customer household income and reduce water poverty across the region. We are planning to provide support to over 180,000 customers by the end of the 2025-2030 period, which will deliver annual benefits of £9 million in social value through improvements to mental health associated with reduced debt.

For more details see Chapter 2

- Our ambition to deliver at least 20% of our storm overflow programme interventions with components of blue-green infrastructure, such as detention basins and swales, to retain or attenuate surface water runoff upstream of storm overflows.
- Investing in chemical and biological phosphorous removal at our wastewater treatment works to protect biodiversity and improve the health of Yorkshire's rivers and coasts by reducing the risk of eutrophication. By 2030, this will reduce the amount of phosphorus we release to the environment by 634kg per day, or 30%, compared to 2025, with an expected natural capital benefit of £16 million per year.
- Playing our part in protecting public health and working towards meeting customer expectations for improved water quality standards by installing additional disinfection equipment at our wastewater treatment works, with a focus on works that impact current and potential future designated bathing waters in our region.
- Increasing storage capacity in our wastewater network, investing in sustainable drainage solutions, and rolling out smart monitoring technologies to reduce pollution incidents and move us towards upper quartile performance in this area.
- Reconnecting 500km of rivers through our Great Yorkshire Rivers partnership with The Rivers Trust and Environment Agency to protect ecologically important and endangered fish species across the region.
- Supporting an estimated 6,000 jobs through our supply chain.

6,000

estimated number of jobs we support through our supply chain

Case study 1 – Nature-based treatment wetlands

Yorkshire Water's wastewater treatment works at Clifton, near Doncaster in South Yorkshire, required upgrading in the 2020-2025 regulatory period to meet new phosphorous water quality standards. Instead of a traditional chemical treatment facility, we trialled one of the first integrated constructed wetlands in England for municipal wastewater treatment. This nature-based solution provides a natural, sustainable, and low-carbon way to treat water to a high standard before returning it to the environment.

The wetland features three interconnected pools containing over 20,000 wetland plants, which deliver a suite of benefits including minimal operating costs, extremely low operational carbon emissions, a net gain in biodiversity and less dependency on supply chains for chemicals. Overall, we calculate that the wetland's whole-life carbon footprint is 55% lower, and the biodiversity benefits are 240% higher, than those of a traditional treatment solution.

Commissioned in 2021, the wetland has performed well to date, meeting the water quality consent limits set within the site's permit. We are also currently delivering similar treatment wetlands at other sites across Yorkshire. Although we did not include these wetlands in our PR19 Business Plan, we have since worked collaboratively with the Environment Agency to incorporate these into our delivery programme in the 2020-2025 period.

The knowledge and experience gained through delivering these schemes and working with the Environment Agency provides us with confidence that these wetlands can act as templates to inform similar nature-based treatment solutions in the 2025-30 period, particularly at our smaller rural sites, and support our journey towards achieving net zero.

We will share our learning with other interested stakeholders to promote innovation and encourage collaboration around nature-based solutions across the water sector.

3.5 Delivering environmental and social value through our plan

We know we cannot deliver our plan by ourselves. We will need to work with others to ensure we achieve our ambitions and deliver our plan in a way that creates value for customers, the environment and wider society over the long term.

We have identified three key areas that we believe represent opportunities for leveraging further value as we deliver our plan: our business, our supply chain, and our external partnerships. We discuss each of these below in further detail.

3.5.1 Our business

Our colleagues work hard to deliver the right outcomes for Yorkshire, not just for Yorkshire Water. As individuals, and collectively as a water company, we have a huge impact on the communities we serve and the environment in which we operate. But we recognise the need to challenge ourselves to accelerate our performance improvements. We must recognise our responsibilities to customers while also tackling the expectations and challenges that face our industry, now and in the future, particularly in relation to environmental and social value.

We have recently launched a new 10-year strategy that sets out our vision for Yorkshire Water over the next decade. A key element of this strategy is focused on the need to create engaged, high-performing teams that work collaboratively to get things right for customers and right for the environment.

As we transform our business to improve efficiencies, becoming easier to interact with and more reliable, our processes are delivering indirect environmental and social value benefits. For example, through the provision of training and development opportunities, such as apprenticeships, we ensure that our colleagues have the skills they need to achieve their career ambitions.

In addition, we are raising colleagues' knowledge and awareness of wider environmental and social issues. We have rolled out carbon literacy training to promote low carbon thinking in all the decisions we make across the business. Through our continued focus on low-carbon solutions, we have reduced embedded carbon in our capital delivery programme by 48% compared to our PR19 Business Plan.

Furthermore, in line with data protection legislation, we are sharing details of vulnerable customers from our Priority Services Register with other utilities, such as energy providers, to ensure our customers are supported by other organisations in times of need.

3.5.2 Our supply chain

We spend hundreds of millions of pounds each year on goods and services and in doing so play a key role in creating local jobs and supporting Yorkshire's economy. We believe conducting our procurement activities in a sustainable and ethical manner can help to reduce risks to our business, as well as create wider social and environmental value throughout our supply chain. We estimate that our business plan for the 2025-2030 regulatory period will create 6,000 jobs with our suppliers.

We want to work and collaborate with suppliers that share our aspirations to create further environmental and social value for our region. That is why we recently launched our Sustainable Procurement Code, which details the expectations and requirements on our suppliers and contractors, when undertaking work on our behalf.

Sustainability considerations now form an increasingly important part of our procurement decision making. For example, we expect all our suppliers to measure and reduce carbon emissions in their operations and their own supply chains. We require our capital delivery partners to prioritise the use of low-carbon designs, materials, and construction methods in their work. We are also exploring how to enhance the diversity of our supplier base further by providing additional support, such as immediate payment terms, to small- and medium-sized enterprises and community organisations, making it easier for them to engage with us commercially.

We challenge our suppliers, and particularly our capital delivery partners, to consider how they can deliver solutions that drive better social, environmental, and economic outcomes in the long term. For example, our supplier pre-qualification process for the 2025-2030 regulatory period includes scored questions on environmental sustainability and social value to allow bidders the opportunity to demonstrate the added value they will bring to contracts with Yorkshire Water.

We also work in collaboration with our suppliers to tackle shared social and environmental challenges that we recognise as risks to our business. For example, we are proud to be a member of the Utilities Against Slavery forum, which seeks to identify, prevent, and mitigate the risk of modern slavery within utility supply chains. Our work with the Supply Chain Sustainability School provides freely avaialble support and resources for our suppliers to build skills and knowledge in our supply chain.

We acknowledge the risk posed by the scale of our PR24 plan (for the period 2025-2030) in relation to the capacity of our supply chain to deliver our ambitions. We are actively working to mitigate this risk through early engagement with our supply chain partners and establishing long-term contracts to secure resources. We are also supporting the delivery of further social value through wider training and development opportunities across our supply chain to establish a long-term talent pipeline and make the water sector an attractive career proposition.

3.5.3 Collaboration and partnerships

We see collaboration with other stakeholders – including local authorities, farmers, landowners and community and environmental groups – as an important part of how we optimise the value we create for the environment and society as we deliver our services. As a large and permanent presence across Yorkshire, we recognise the role we can play in convening partnerships with pooled planning, and resources to tackle environmental issues we have in common such as flooding, resilience, and climate change. Responsibilities for, and interest in, managing water and the water environment spans numerous authorities and non-governmental organisations, meaning that collaboration and partnership working are essential in the delivery of holistic solutions.

In the 2020-2025 regulatory period, we co-funded our largest partnership programme to date. This included the industry-leading Living With Water partnership to build flood resilience and develop innovative water management systems for communities in Hull and the East Riding, which demonstrates our leadership and commitment to maximising the environmental and social value benefits of collaboration. Over the course of this five-year period, we have engaged over 6,000 members of the public about Living With Water and provided over 4,000 quality educational hours in schools or through outreach events.

Further information on our plans for partnership working in AMP8 is provided in Chapter 8

Examples of other partnerships we have delivered to date include:

1) Working together with the Yorkshire Dales Millennium Trust to boost pollinator biodiversity across the region through the creation of wildflower patches, community meadows and bee nesting sites.

2) Collaborating with Leeds City Council and Defra to remove a culverted watercourse from our sewer network. This provided benefits to our customers by reducing network flood risk and further benefits to the local environment through tree planting and wildflower meadow creation.

3) Joining forces with a local nature reserve sited on one of our former wastewater treatment works to deliver effective conservation management by bringing together our capital project delivery expertise with the knowledge of the reserve staff and volunteers.

We are passionate about the benefits of partnership working and intend to use this approach to deliver greater environmental and social value across the Yorkshire region in future. Our experience to date has provided important learning opportunities that have shaped our approach to collaborative working in the 2020-25 period and beyond, and will ensure we continue to be recognised as a leader in the partnerships arena in future.

3.6 Our approach to achieving net zero

At the heart of our plans to create greater environmental and social value is our approach to achieving net zero. Our customers tell us that net zero is still really important to them, and while the cost of living crisis and concerns of future affordability impact customers' views of net zero, it is clear that they do not want us to push this aside.

See the Valuing Water Customer Priorities Research final report in the **Customer research appendix**

We are committed to reducing our emissions across all scopes, by 90% by 2050. This is in line with the government's net zero glide path and the baseline set out in the UK's sixth carbon budget.

Our progress in reducing our carbon emissions to date includes:

- Purchasing 100% of our electricity from renewable sources.
- Transitioning approximately 18% of our commercial fleet to electric vehicles, with plans to achieve 100% by 2030 (see below).
- Reducing our on-site use of fossil fuels and switching to lower carbon alternatives.
- Use of nature-based solutions for wastewater treatment to reduce process emissions.
- Peatland restoration and tree planting across our upland estate to store and sequester carbon.

Installing renewable energy generation technologies, such as solar arrays, on our water and wastewater treatment sites.

In the 2025-2030 period, we propose to invest £51 million specifically to reduce carbon emissions across our business. Our intention is to focus on the following key emission reduction activities, which have been selected on the basis of their materiality and efficient marginal abatement costs.

- **Process emissions reduction for wastewater.** We will invest to reduce nitrous oxide and methane emissions at our larger wastewater treatment works and energy and recycling centres. Notwithstanding this plan, our wastewater emissions look set to increase in absolute terms because of upwards pressure on chemical and energy use required to deliver our wider environmental quality programme as set out in the Water Industry National Environmental Programme (WINEP).
- **Deployment of renewable energy generation equipment.** We will invest in solar renewables split 50:50 across our water and wastewater estate. This will reduce our reliance on energy purchased from the grid and reduce our associated scope 2 emissions.
- **Fleet transition to electric vehicles.** Our target is to make our light commercial vehicle fleet fully electric by 2030. A key part of the fleet emissions reduction will be optimisation of the fleet, to reduce the number of vehicles, while ensuring we have vehicles fit to meet business needs and securing a high-quality service for our customers.

Understanding scopes 1, 2 and 3

Scope 1: greenhouse gas emissions from sources that we own or control directly, such as burning fossil fuels on our sites or emissions released during treatment processes.

Scope 2: greenhouse gas emissions indirectly released to the atmosphere through our purchase of electricity.

Scope 3: other indirect greenhouse gas emissions associated with our activities in our value chain, such as emissions associated with purchased goods and services.

- **Energy and chemical optimisation.** This ongoing work ensures we operate as efficiently as possible by providing new data-led insights to target sites with high chemical and energy use to develop appropriate solutions. We will deliver this in part through tighter operational control, utilising our Performance Excellence approach and leveraging the modernisation investments made in the 2020-2025 regulatory period, but also through planned and reactive maintenance and upgrade of assets such as pumps or motors.
- **Driving whole-life carbon reduction.** By including the cost of carbon (both embedded and operational) in optioneering processes for new and upgraded assets as part of our asset management process.

For more details see
Chapter 8

In the longer term, we intend to focus on further reductions in process emissions and investments in nature-based solutions to continue to drive down our carbon emissions. As we move beyond 2030, we will place greater emphasis on reduction of scope 3 emissions, including those arising from the embedded carbon in purchased goods and services (including chemicals) and capital goods.

This longer-term approach is explained in our **Long-Term Delivery Strategy (LTDS)**

For more details see
Chapter 5

Reducing the carbon impact that results from our growing capital programme that is required to meet environmental, resilience and service improvements will be a key challenge. There are activities beyond the water industry that will deliver benefits to our overall carbon balance. For example, scope 2 purchased electricity reductions arising from grid decarbonisation will lead to reductions in the carbon intensity of goods and services we buy, and our suppliers' own efforts to reduce their scope 1 emissions will lead to a reduction in our scope 3 emissions.

In summary, our approach is to build on the carbon reduction measures we have made in previous regulatory periods, with a continued focus on targeting emissions reductions from scope 1 and scope 2 emissions in the 2025-2030 period, aligning with both science-based targets and glide paths out to 2030.

3.7 Measuring and reporting our impact

We want our customers to understand our operational performance and the impacts we create through our work. To complement the information in our Annual Performance Report, we also publish an impact report each year called Our Contribution to Yorkshire, which assesses the impacts of our business activities and investments. As this uses our six capitals approach, it covers measurement and reporting of our environmental and social impacts.

The Our Contribution to Yorkshire report looks beyond the financial balance sheet to assess the value we provide to Yorkshire across six capitals. For each capital, we present annual accounts that include a range of indicators showing the extent and condition of our assets, as well as the positive and negative impacts created by our activities. Through this report, we demonstrate the social and environmental value we create through the provision of our core water and wastewater services and other operational activities. This allows us to explain our impacts to customers in an accessible way and helps them to understand trends in our performance over time.

Publication of the Our Contribution to Yorkshire report is overseen by our Board, and assessment findings are used to inform our strategic direction and priorities. For example, in Table 2 we highlight areas from our assessment with our largest negative six capitals impacts and how we are seeking to mitigate these in the 2025-2030 regulatory period.

During the 2025-2030 period, we will continue to report on our performance in future Our Contribution to Yorkshire reports. To enable scrutiny and build trust, we will also continue to provide the underlying data and methodology that supports our reporting. Finally, we will continue to evolve our assessment process to respond to business priorities and latest best practice guidance, working in collaboration with the reporting community across the water sector and beyond to share our knowledge and understanding of this subject.

Area	Annual environmental / social value to society (FY23)	Mitigation plans for 2025-30
Water leakage	-£62m	Increasing our leakage response capability, investing in smart networks for leakage detection and prevention, and adopting new technologies to extend the life of our clean water network assets.
Pollution incidents	-£21m	Increasing storage capacity in our wastewater network, investing in sustainable drainage solutions, and rolling out smart monitoring technologies to reduce pollution incidents and improve river health.
Phosphorus released to the environment	-£121m	Investing in biological, chemical and nature-based wastewater treatment solutions to reduce phosphorus loading from our works by 634kg/day from 2025-2030, with further reductions planned for future years.
Carbon emissions	-£29m	Driving down carbon emissions by reducing process emissions, electrifying our fleet, optimising energy and chemical usage, and deploying renewable technologies as part of our drive to achieve net zero by 2050.

Table 2: Current areas of negative impact and associated mitigation plans

Chapter 4
Innovation and efficiency

Innovation and efficiency will deliver the outcomes our customers have asked for and accelerate our performance improvements.

This plan for 2025-2030 includes investment of £38 million into our innovation programme, with over 50% of this to be delivered by external funding mechanisms.

We are aligned with Ofwat's view of costs and have set stretching service targets which will require us to be more productive and efficient in the delivery of our plan.

Chapter 4
Innovation and efficiency

Appendix:

Research & Development Innovation Strategy Process and Objectives for PR24

4.1 Overview

The purpose of this chapter is to set out how we have developed our plan for 2025-2030, through placing extra emphasis on the need for innovative and efficient thinking. The breadth of this thinking spans our entire business plan, including our ambitious modernisation programme, use of alternative funding routes, and robust cost estimating methodologies. We remain committed to doing all we can to improve our cost efficiency. Implementing new ways of working, upgrading enterprise systems and a continuing programme of award-winning innovation will help us do this. The remainder of this chapter will provide an overview of:

Innovation – covers all positive business change, whether these are improvements in the day-to-day business processes, changes that come from external partners and supply chain, or investment in early-stage technological innovation. As well as scanning the market for new technologies, and working with our partners, our team also develops technologies to fill identified gaps in knowledge, services and products related to improving our service that cannot be provided through the supply chain.

Efficiency – comes from our ability to continually review and improve the way we deliver our service to customers, so that we ensure the best value from the money we invest. Making sure that our business plan costs are best value is a key part of our overall efficiency strategy. However, efficiency also means delivering the investment on time and on cost, as well as delivering the outcomes for customers.

This chapter signposts where we have applied innovation and efficiency in our plan. References to other chapters, appendices and supporting documents will be made throughout, where you can find more information on specific activities and initiatives. Both innovation and efficiency has been carefully considered in our Long-Term Delivery Strategy (LTDS) as well as our business plan.

Read more about this here: **Long-Term Delivery Strategy (LTDS)**

Building strong foundations in the 2020-2025 regulatory price control period

What we have done in the 2020-2025 period to be innovative and efficient.

The current planning period has seen significant challenges for us, including the pandemic, a rapidly changing environment, and a renewed focus on our wastewater operations. We are undertaking a substantial modernisation programme to deliver our current investment plan as efficiently as possible. This programme also lays the foundations for efficiency in the 2025-2030 price period. We have also delivered a successful programme of innovation that has already delivered productivity improvements.

Establishing an innovative and efficient business plan for 2025-2030

How we have ensured our PR24 Business Plan is innovative and efficient.

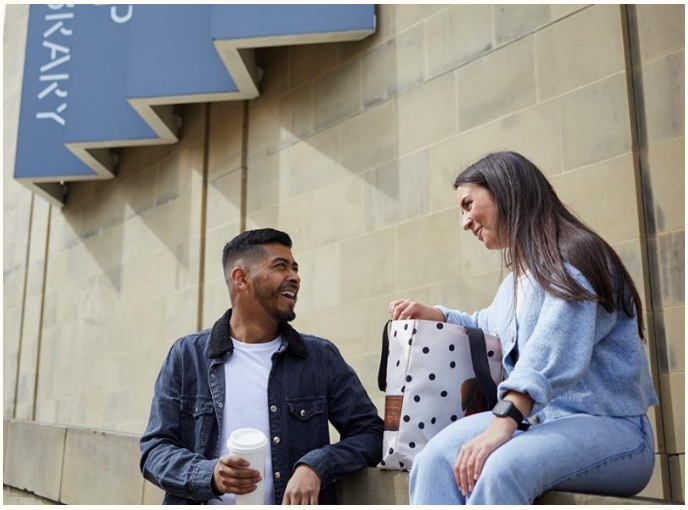
Innovation identifies efficiencies in the way we can achieve our vision. Being efficient allows us to innovate more and achieve outcomes with less. Both are about making us fit for the future to serve our customers. We have an innovation programme to deliver improvements that help us provide a sustainable, resilient service provision to customers.

Innovation covers all positive business change – whether improvements to the day-to-day business processes, opportunities from external partners and the supply chain, or investment in research and development. We are also challenging ourselves to be more efficient in the way we identify, develop, and implement innovation into our business processes. We are aiming to be efficient in our costs, options, and operations during the 2025-2030 period.

Setting ourselves up for efficient delivery in the 2025-2030 period

How we are going to deliver the new plan innovatively and efficiently.

Building an innovative and efficient business plan is an important first step. However, we recognise that we need to have confidence in delivering the plan. We have gone further than ever to ensure we have a complementary delivery plan in development. For the coming planning period, we are making extensive use of alternative funding and delivery mechanisms and will use the Direct Procurement for Customers (DPC) pathway for three schemes in our AMP8 programme. Our innovation and efficiency agenda contributes to our overall aim of having a plan that ensures best value for customers, constant innovation, and realisation of efficiencies.



4.2 Building strong foundations

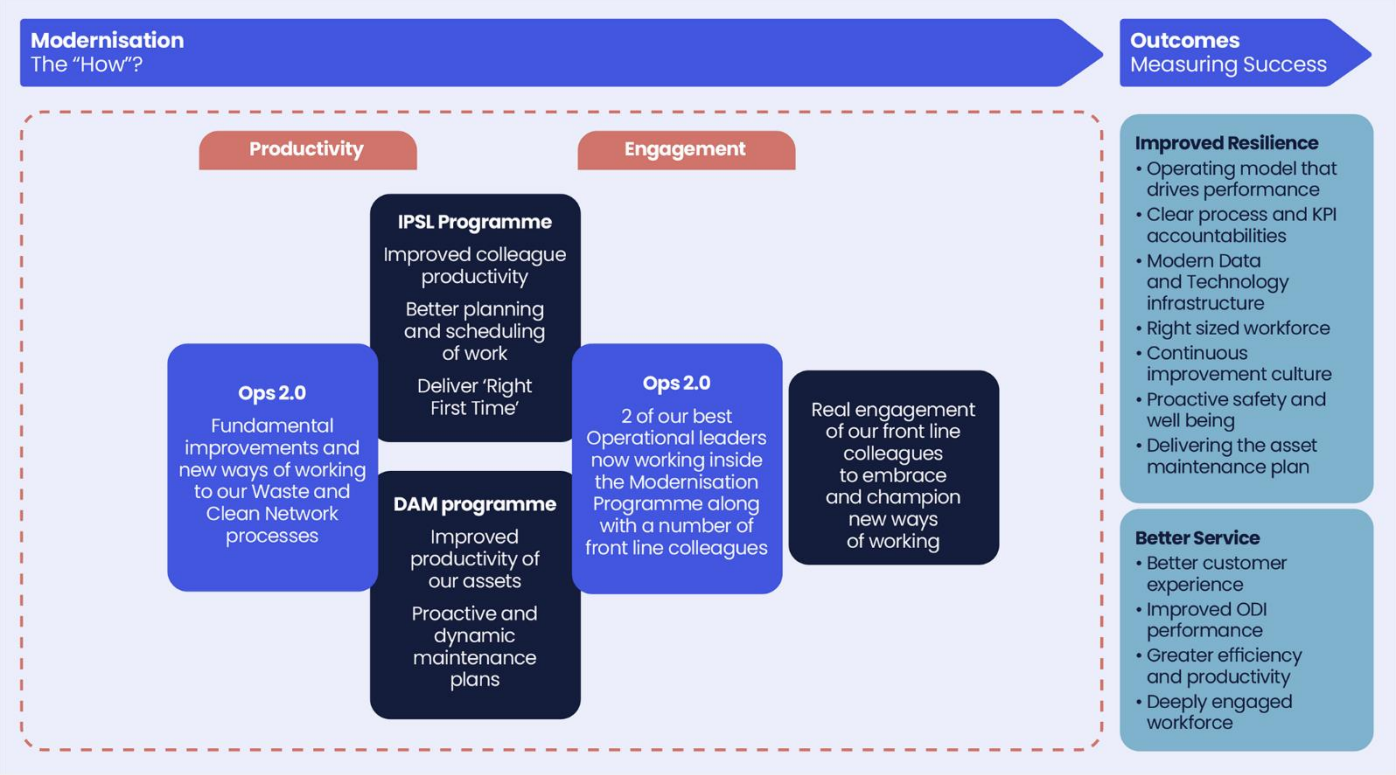


Figure 1: the building blocks of our modernisation programme

4.2.1 Fit-for-purpose organisation

We have well-established processes for reporting and assessing performance across all areas of our business. This ensures we are compliant with our statutory obligations and are always aware of what we are doing well, and where we need to take action to improve a level of service to our customers.

Modernisation programme – our modernisation programme is one example of the action we have taken to improve performance in the 2020-2025 regulatory period. The programme delivers business capabilities that we need to deliver our business plan efficiently in the next regulatory period. We are currently observing a fundamental shift in the role technology is playing in providing additional and increasing value to us and our customers. Our Technology Strategy lays out how technology can successfully support our vision of 'A thriving Yorkshire: right for customers, right for the environment'. The strategy has moved us from unconnected systems and processes into a series of joined-up processes and data, underpinned by leading technologies which offer scalability, adaptability, and efficiency. It is this newly created technology foundation that will enable us to drive additional activities, such as automation and the further introduction of Artificial Intelligence (AI), which will be at the core of our efficiency activities.

The activities in the current regulatory period have focused on our modernisation agenda, delivering new processes and capabilities within our asset maintenance functions, enhancing our processes and systems for reactive work, and introducing additional technology into our networks to provide proactive insights into potential asset failures to mitigate service impacts and reduce costs of interventions.

All of this is supported by the creation of our new data reservoir which brings together disparate data sets to provide actionable insights. This has allowed us to share data quicker both internally and externally. The modernisation programme is made up of four components, shown in Figure 1. These form the building blocks, and the starting point for developing a digital twin of our asset portfolio. They are key enablers to many of our AMP8 programmes of investment including smart metering, smart wastewater networks, and our base capital maintenance programme (by moving towards real-time decision making).

- **Data & system architecture** – we have an ambitious and comprehensive programme to roll out new network sensors, meters, and monitors as part of our next investment plan. Our strategic data platform is being developed to capture data from all these sources in a central location so we can develop greater insights into the performance of our assets.
- **Below-ground maintenance (including Integrated Planning, Scheduling & Logistics – IPSL)** – we are upgrading core systems that allow our Technical Services, Engineering and Operations teams to maintain our network of pipes.
- **Above-ground maintenance (including Dynamic Asset Maintenance – DAM)** – we are also upgrading core systems that manage the lifecycle of our water treatment works, booster stations and reservoirs. This will reduce our response time and improve resolution time to failures.
- **Business processes** – installing new monitoring equipment and upgrading systems is essential to achieving our performance commitments and future-proofing our business. However, this cannot be achieved without modernising our processes and the way we work.

We are currently part of the Stream programme which will design and deliver the 'network of data pipes' needed to share useful industry datasets in a secure, standardised and easy to access way. This will allow our data to flow into larger datasets, enabling us to collaboratively solve tough sector challenges. We are also building a significant data infrastructure to support the opening of datasets and their consumption by the public (Event Duration Monitoring is a technical example of this currently live in the sector).

We are working with the Stream programme to maintain a joined-up industry approach to make the release of open data by the water industry consistent, sustainable and beneficial to all stakeholders. We maintain a relationship with Leeds Data Mill North (an open data leader) and we publish various datasets via them.

Operations 2.0 is a change function which brings operational teams, technologies and the company strategy together to develop innovative ways of working, and new operating models that create exceptional business performance. Its aim is to develop and deliver new ways of working now, ready for the next regulatory period. The Operations 2.0 Model Office approach draws together people, processes and technology in one collaborative space, focusing all modernisation activity into one isolated part of each operational area. It develops a scalable model that redefines and improves operating processes, roles, technology and ways of working. This scalable model will be designed to deliver a step change in operational performance at a reduced cost to serve.

Our launch area for Operations 2.0, created within the wastewater networks team, has been identified as a key focus. It has potential to deliver significant improvements across several key performance commitment measures: Internal Sewer Flooding, External Sewer Flooding, Pollution and C-MeX. A 'One Team' approach has been developed, pulling together all activities across the end-to-end customer journey. Launched in March 2023, the initiative created a fast-paced change programme building our model office capability. Further rollout to two additional teams and associated support roles has now created the optimal model office size to develop and test future ways of working and performance improvement initiatives, ready for full scale deployment throughout 2024.

After an initial six-week period of Operations 2.0 in our wastewater model office, we have already seen improvement across several key performance measures. Within the model office we:

- Instated a new technical office, bringing together field and office people to delivery better solutions in a fraction of the time it would normally take.
- Improved the triage process at the beginning of a new work order to ensure the right solution is delivered to address the root cause.
- Ensured we were promoting work orders that had all the necessary data and information for our dedicated teams to deliver the solution successfully.
- Increased fleet availability by installing two-way messaging to make better use of our digital capabilities, and moving to having dedicated teams that focus on a particular problem (for example, pollutions).

We are already observing and measuring a substantial improvement in productivity and efficiency of our operations. Both response time and resolution time for Internal and External Sewer Flooding events has reduced between 45 and 60% from our baseline performance at the start of AMP7. It is these types of improvement that will enable us to deliver our plan efficiently, and successfully.

Operations 2.0 is now developing a further model office area within water networks. Development work throughout the summer of 2023 is preparing for a wave one 'go live' in the autumn of 2023, with a full-scale model office for water networks in early 2024. Building on the learning of our Wastewater Networks 2.0, Water Networks 2.0 aims to deliver significant performance improvements across the water networks, at a lower cost to serve. This second operating area also ensures that our approach will commence the 2025 to 2030 period, with a model office established to deliver continuous improvement and business change for our operational customer facing teams.

4.2.2 Innovation culture

Innovation programme – our innovation programme runs in parallel with our modernisation programme. It introduces innovative technologies to address business needs that cannot be solved with existing solutions. We have developed and maintained a strong innovation roadmap for over a decade. This roadmap has delivered an extensive list of award-winning improvements to provide a sustainable and operationally resilient service provision to customers. Each innovation project has a business sponsor, who ensures the business need is met and the innovation adopted and embedded. Our projects can cover any of the following:

- **Cultural innovation** – this is the day-to-day process of continuous improvement. It concerns how our people and our existing framework partners can make positive changes to how the Company operates and delivers its services.
- **Supply chain innovation** – if a risk or opportunity cannot be mitigated or realised through cultural change, we may look to engage our suppliers through the procurement process. This allows innovative solutions and thinking to be sought, over traditional solutions.
- **Research and Development (R&D) innovation** – this aims to fill gaps in knowledge, services and products which cannot be provided by process improvements from within the business or supply chain. We are regularly prepared to develop technology from an early stage to a commercially ready product.

More detail can be found in our **Research and Development Innovation Strategy Process and Objectives for PR24 appendix**

We have a long history of collaboration with other water companies to share learning and deliver innovation projects for the benefit of the participating companies and industry. The R&D Innovation Team works with the wider industry, other water companies, and the supply chain to identify and prioritise project opportunities.

Our Innovation Board provides the governance and assurance for our approach to funding innovation opportunities, such as the successful £3.25 million Department for Digital, Culture, Media and Sport 'Fibre in Water' bid. Individual innovation projects must have a benefits case and be progressed through our well-established, project approval processes. Three of our current projects are outlined in Table 1, with further example case studies below.

Project	Outcome
Designer liner – Phase 1 & 2 (Ofwat Innovation Fund)	Designing and trialling a new method for lining water mains in a cost effective, sustainable way. The anticipated benefits from this innovation will be to reduce leakage and improve the health of our distribution mains. Phase 1 complete, Phase 2 ongoing.
Lateral sewer CCTV (Business need)	We have 262,000 cellared properties and around 1,200 of these properties suffer from internal sewer flooding (ISF) each year. Most incidents are caused by blockages in the first length of the small diameter sewer which serves the property. We have trialled the technological capability (CCTV that can access the lateral sewer) that allows us to work from the main sewer and go back upstream, to survey every pipe connected to the main. When the project completes, we will have confirmation of the measurable improvements this technology can deliver for productivity and customer satisfaction.
Fibre optics in water mains (Government funded partnership)	Technology to insert permanent fibre optic cables into water pipes and use them to accurately detect leakage in real-time has been developed. Initial cost benefit analysis showed that additional benefit, in the form of gigabit (broadband) connectivity, is required to make the investment case stack up. Many of the 'hard to reach' rural areas that the government aims to connect with gigabit broadband are served by water pipes, and so Fibre in Water could provide a unique opportunity to improve connectivity and leak detection. The first phase of this project aimed to investigate and resolve the commercial, legal, technical, operational and other issues to allow this cross-industry solution to be viable and mutually beneficial. Further work is required to gain full approval for use in drinking water mains, carry out a trial installation and validate the economic business case.

Table 1: Current innovation projects

In **Section 4.3.5,** we will discuss in more detail the additional innovations we are planning to deliver in the 2025 -2030 period and how they will support us deliver our ambitious business plan. Several of our innovation projects are now driving performance across a range of areas, including the case studies shown here.

More details are presented in Section 4.3.5

Case study: Leakage analytics

We commissioned Xylem and Stantec to help us design a smart water network in 2019. This project deployed enhanced levels of monitoring to ingest data in near real time, and analysed that information to support improved awareness, optimisation and efficiency in leakage management. The pilot was run by us in collaboration with Stantec and 17 other partners, including Itron, Sensus, Arqiva, HWM, ATi, Inflowmatix, Syrinix, Invenio, Ovarro, Temetra, Technolog, Gutermann, Elster (Honeywell), BT, MUS, Connexin and Xylem3. The pilot covered a 36km area of Sheffield that supplies water to around 3,500 properties. It used a combination of sensors, meters, analytics, and communication systems to monitor and control the water network in real time. Some of the key features of the pilot were:

- Over 650 acoustic loggers that listen for leaks and send alerts.
- Over 35 pressure sensors that measure the pressure in the pipes.
- Over 20 flow meters that measure the volume and direction of water flow.
- Over 2,000 smart meters that measure the water consumption.
- A cloud-based platform that collects, stores, and analyses data from all the devices and provides dashboards and reports for decision making.
- A machine learning algorithm that identifies patterns and trends in the data and predicts future events and risks.

The project has matured and grown in capability over the last three years and has been awarded three prominent industry awards.

- Utility Week Awards 2020 (Innovation Award)
- Utility Week Awards 2021 (Innovation Award)
- Water Industry Awards 2023

This project has derived several service-level improvements and cost efficiencies. We are currently analysing the business case to understand the role this solution (and the additional associated hardware) must play in our 2025-2030 plan.

Case study: Smart metering

We started pilot trials of smart meters in 2020, aiming to better understand the challenges faced and capabilities required during a smart meter rollout. We also wanted to establish an understanding of future service levels required to achieve the step change in performance which smart meters would enable.

We worked extensively with Connexion to comprehend the data requirements and how the data would be used, and this intelligence was mapped to a water industry-specific data regime. By collecting only the data we needed, we were able to extend the asset life of the meter as far as possible. This will ensure best value for customers when we come to a wider rollout of smart meters in the 2025-2030 period.

The project was the first successful trial of the communications network, LORAWAN. It has enabled subsequent access to this technology with confidence to the wider market, with Severn Trent, South West Water and Yorkshire Water awarding long-term smart metering contracts to LORAWAN providers. This has increased competition in the sector and efficiency for Water customers. The project won the Water Industry Award 2021 for the most innovative use of an existing technology.

Case study: Customer sewer alarm

At an innovation event in 2018 looking at reducing sewer flooding at properties, a challenge was set to the room for a company to produce a sensor to alert us to flooding at properties that do not have utility holes. This is a particular challenge in our region where we have over 250,000 cellared properties, the majority of which connect directly from the property to the main sewer.

Technology stepped up to this challenge and developed a prototype unit that could be installed in a property gully. The first two prototypes were deployed in late 2018 to prove the concept and these were successful; a period of cost engineering followed to enable the device to be produce at scale. This led to a deployment of 500 devices in early 2020 followed by 5,000 more in late 2021 and a further 35,000 that began installation in mid 2022 and will be fully installed by the end of 2023.

The installation of these devices has resulted in the proactive removal of over 700 (as of May 2023) blockages which could have led to internal or external flooding for our customers. This project was the first of its kind to monitor sewers so close to customers' properties and other companies are now starting to adopt this technology to improve their performance.

4.3 Establishing an innovative efficient business plan

In this section, we provide an overview of how we have developed our business plan to be innovative and efficient for the next regulatory period (2025-2030, known as AMP8). We have been innovative both in the way we have identified investment and in how we have developed options. We have also ensured that those costs are robust, well-evidenced, and deliverable so that our solutions are best value for our customers. A more detailed breakdown of our totex plan can be found in **Chapter 8**, which was produced using the approaches described in this section.

For more details see Chapter 8

4.3.1 Identifying innovative ways to deliver outcomes

Our optioneering process ensures that a wide range of solutions are considered to address each risk, including conventional and non-conventional innovative solutions. Our Decision Making Framework (DMF) ensures that all solutions are assessed on a consistent basis and wider benefits are captured, particularly where non-conventional solutions have been identified.

Our LTDS and business plan for AMP8 emerge from this process, ensuring that innovative solutions have been compared with more traditional and certain solutions on a consistent basis, offering innovative ways to achieve our vision. Some of the exciting new solutions we tested included: attenuated surface water, water recycling, non-potable supplies, and ultrafiltration for seawater treatment. We have had to deploy new thinking, and careful consideration of the best time to invest in these innovative technologies. Our DMF aided us in this decision making process ensuring the full range of benefits were considered, as well as the costs and associated uncertainties with some of these more innovative solutions. More information can be found within **Chapter 8** and our enhancement cases.

For more details see Chapter 8

4.3.2 Determining efficient unit costs

We predict and forecast the capital expenditure cost of our proposed solutions 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. Inflated to the current price base, they give a unit cost for several types of physical assets across our portfolio. 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-based expenditure solutions, and 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.

This thorough approach to cost modelling ensures we have considered the full range of costs over the entire asset lifecycle. Applying this across the portfolio gives us confidence that no major component of cost has been missed, and the costs that are captured are accurate. This results in a balanced portfolio of cost for the solution options that we are proposing within our totex plan. **Chapter 8** provides more detail on the costing process and components of cost assessment that we consider. The major components that have been considered in every aspect of our totex plan are:

- Direct costs
- Indirect costs
- Catch-up and frontier shift efficiency
- Real-price effects

For more details see Chapter 8

4.3.3 Efficient allowances

A considerable proportion of our costs will be determined by Ofwat's econometric models, which calculate an efficient base cost allowance for each company based on the industry's historic expenditure and all the business plan submissions. We have taken a view of what this allowance may be when setting targets to ensure they are achievable whilst delivering outcomes our customers support. Ofwat consulted on its approach to econometric base cost modelling in April 2023 and we provided detailed responses to the questions posed, supporting some elements and challenging others. We are confident that we have developed a plan that achieves stretching levels of

performance when compared to our current baseline. However, for long-term sustainable allowances to be set for the industry, we urge Ofwat to further consider:

- The incorporation of service and maintenance drivers into these econometric models to reflect differing circumstances.
- Developing a combined model for sewage treatment and bioresources, given the level of interconnectivity and dependency.
- Inclusion of a % combined sewers parameter to take account of the relative proportion within each company's asset portfolio.
- How the benchmark is set for the sector and the stringency applied to companies.
- How the models address the significant inflationary pressures seen in AMP7, not faced before in the sector.

Throughout development of the business plan costs, we have maintained line of sight to our expected modelled allowances and ensured we challenge ourselves to be as efficient as possible. We also commissioned an independent review of how our efficient costs should be assessed.

This review is available in **Oxera cost modelling appendix**

For more details see Chapter 8 section 3

4.3.4 Other business plan costs

A portion of our costs cannot be modelled and therefore required detailed cost estimation to take place based on the specific scheme and the preferred solution. This is most often the case in our enhancement programme where we propose one-off, large expenditure items to deliver a step change in performance for customers. It is also found in elements of our base programme where large expenditure is required (including our cost adjustment claims). These costs have been developed following a detailed options development and design process with our supply chain and industry partners.

For more details see Chapter 8 section 3

Our plan encompasses a range of business cases and our approach to cost efficiency reflects this diversity of needs. We use data gathered over the last 20 years to inform our Unit Cost Databases (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. We do not build in any overestimates by assessing scheme risk separately. By doing this, we are modelling the efficient and effective delivery processes and materials used. Our UCDs are used subsequently during a technical identification and optioneering process to give a notional view of project and unit costs. The outputs of our UCD are then subject to internal quality assurance and portfolio optimisation. Our operating cost models and carbon cost models are generated in an equivalent way to our UCDs, utilising real observed costs to estimate future costs.

There are some projects where this modelling approach isn't appropriate, and their use varies across some business cases. For business cases which have not been priced with our UCDs, 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.

4.3.5 Proposed innovation programme

The proposed 2025-2030 innovation programme totals £18.25 million. This will be enhanced by an additional £18.25 million external leveraged funding, delivering an overall Innovation programme of £36.5 million. This recognises the economic pressures facing customers and a need to keep bills low. The directly funded programme is an increase of £6 million on the £12 million we forecast to invest in innovation during the 2020-2025 period. The programme has been developed by our R&D Innovation team with intelligence gathered during engagement at all levels across our business, along with the external environment and wider water industry. The proposed programme represents a balanced approach considering near, medium, and long-term risks and opportunities that will deliver multiple benefits, and directly aligns to Ofwat's key aspirations of long-term, customer-focused, social, and environmental value, and performance improvement.

The innovation programme will deliver projects across five key themes (Table 2 below). An indicative programme of projects addressing known and emerging business risks and innovation opportunities is included in the Research & Development Innovation Strategy Process and Objectives for PR24 appendix. These projects will be amended, prioritised and developed throughout AMP8 as appropriate at the time.

More detail can be found in our **Research and Development Innovation Strategy Process and Objectives for PR24 appendix**

R&D Innovation in AMP8		
Themes	**Description**	**Example projects**
Processes and infrastructure resilience	Exploration, evaluation, development and demonstration of emerging innovative technology, systems, processes and engineering solutions delivering asset resilience to address current and emerging risks and realise opportunities.	Enhanced pipe lining solutions, enhanced repair techniques, nanotechnology and membrane development, enhanced nitrogen and phosphorus removal, treatment of emerging 'substances of concern' including microplastics and PFAS, sludge transformation and productisation, greenhouse emissions recover and reuse, centralised and decentralised wastewater treatment.
Smart assets	Exploring, evaluating and demonstrating the opportunity to exploit existing, new and emerging technologies across Yorkshire Water's asset base, the wider environment and related infrastructure to provide real-time intelligence and automated asset control.	Reservoir monitoring/modelling, development of enhanced sensing capabilities, AI optimisation, increased remote and auto control equipment, control and process optimisation of small, medium and large works and energy and recycling centres.
Circular economy (resource recovery and reuse)	Building on the Integrated Water, Waste and Resource Systems work and further exploration, development, evaluation and demonstration of the technology that will enable new sources to be exploited.	Water recycling, wastewater reuse, repurposed sludge lagoons, recovery and reuse of resources such as heat, power, water, phosphorus, ammonia, cellulose, urine, and chemicals.
Efficiency and value	Exploration, evaluation and demonstration of the technology, data, systems and process which will facilitate the deployment of high-speed wireless communication technologies across Yorkshire, enabling true remote working, asset monitoring and intervention within Yorkshire Water and enabling wider social and economic development.	Further exploration of emerging IoT networks (LoraWan, SigFox, NB-IoT etc.), Cross-Industry Telecoms Industry Partnerships, Fibre in Water/Sewer, 5G, development of virtual technician, remote visibility concept, improved field decision support tools (for example, live valving feedback).
Fundamental research	Fundamental research projects supporting the generation of intellectual capital and informing the future direction of water industry operational activity and investment plans.	Academic research for example PhDs, Industry collaborations that do not deliver a tangible or intangible capital asset for Yorkshire Water.

Table 2: R&D innovation in AMP8

4.4 Setting ourselves up for efficient delivery for 2025-2030

The size of our investment plan needs to increase if we are to achieve the outcomes we have promised our customers. We recognise that this places extra focus on our own capability to deliver a larger business plan innovatively and efficiently. In Section 4.2, we introduced our modernisation and innovation programmes. Both are critical to improving our business capabilities and will support delivery of this larger plan. We have invested significantly in these programmes and will continue realising the benefits in delivery of the proposed plan.

For more details see Section 4.2

We have reflected on our performance in the 2020-2025 period, setting the groundwork for successful delivery in the next. We considered our performance in the current planning period carefully, identifying root causes of inefficiencies and opportunities to innovate. Next, we developed a business plan that our customers have told us is ambitious, but that we know is also deliverable at an efficient cost. We are now preparing our people and business for delivery of the plan, the highlights of which are presented in the remainder of this section.

4.4.1 Our supply chain and delivery partners

We have challenged ourselves to commit to efficient costs and stretching levels of performance, ensuring that we are spending customers' money wisely. We have worked with our partners and supply chain, as well as gathered market information to develop the costs put forward in our plan. We see the potential for efficiency and innovation through our supply chain. We have transformed our commercial function over the last five years through a fundamental change to our operating model, process overhaul and introduction of new systems.

Recognising the value which procurement adds, we took the decision to outsource our highest value and most complex procurements to an expert partner. This gives us access to widespread market intelligence, cost benchmarks and innovative commercial models. Beyond driving a programme of cost savings, there has been an increased focus on sustainable and ethical procurement. We actively track our level of local and small and medium-sized enterprise spend, and we understand not only the cost savings delivered, but the impact on our scope 3 (supply chain) carbon emissions. This helps ensure that we are selecting solutions and partners with an innovative approach, in line with our targets.

All commercial activities are delivered through a single function, supporting effective management of the full commercial lifecycle. This means that the efficiencies created in procurement are maintained through targeted contract management. We will continue to work with our key suppliers to enable them to deliver the performance we require to achieve our performance commitments.

Example of exploring efficiency in supply chain procurement: storm overflow alliance

To deliver the £1.4billion[1] storm overflow programme, we are establishing an alliance to increase deliverability, confidence and efficiency. The alliance approach will build on best practice identified by the Infrastructure Client Group. It will create an enterprise model, with aligned budgets and incentives to deliver the programme successfully through a programmatic approach. This approach to delivery will mitigate risks associated with scarce skill sets, enabling an increased focus on the development of separation and blue green infrastructure solutions.

For more details see Chapter 8 section 16

The storm overflow alliance programme is now being procured, with the intention to have an award scenario around the start of 2024 with go-live following board approval In September 2024.This early engagement with our supply chain will enable us to hit the ground running in AMP8 and deliver benefits on time, and on cost to our customers as they expect.

4.4.2 Operational delivery

The current planning period has seen significant operational challenges, including the pandemic, high rates of fuel/energy/chemical inflation, a rapidly changing environment, and a renewed focus on wastewater operations. Despite these pressures, we have continued to deliver sustained improvement across most performance areas, but we are determined to go even further to meet the expectations of our customers.

[1] This includes Inland Overflows, WINEP Overflows, Coastal Overflows, Accelerated Investment and DPC

For more details on how we've delivered sustained improvement across most performance areas see Chapter 7

We are undertaking a substantial modernisation programme to deliver our current investment plan as efficiently as possible. This programme also lays the foundations for further efficiency in the 2025-2030 price period. We have also delivered a successful programme of innovation which has helped to shape our plans.

For more details see Chapter 8 section 16

Our operational approach falls into four principal areas, which will work in combination to ensure we deliver the right outcome for customers, the environment, and colleagues:

1. Enhanced maintenance plans that improve asset health – through our Dynamic Asset Maintenance (DAM) programme and new above-ground maintenance (AGM) system, we have created new asset maintenance plans and enhanced our asset data gathering capabilities.
2. Increased visibility to enable centralised intelligence – we have increased the visibility of our network assets, enabling us to better predict failure and respond proactively before there is an impact on customers. We intend to make another significant step change in asset visibility and analytical capability to drive further improvements in networks performance and operational efficiency.
3. Effective operational response and data capture – through our Integrated Planning Scheduling & Logistics (IPSL) programme, we are set up to deliver improved colleague productivity and reduced incident response times. We will continue to invest in the training and capabilities of our operational teams to deliver an efficient and effective, 'right first time' response to customers and our assets.
4. Targeted totex investment to improve resilience at best whole life cost – we will continue to use our totex hierarchy to make the best whole life cost decisions and interventions for our customers and the environment.

4.4.3 Capital delivery

Our proposed approach to delivery of capital expenditure in AMP8 will address the main risks associated with the deliverability of the 2025-2030 programme, namely:

- Insufficient time and cost allowances to deliver requirements.
- Insufficient capacity/capability within our delivery team.
- Insufficient capacity/capability within the supply chain.
- Failure to optimise the delivery profile across the pricing period.
- Failure to secure external dependencies on time.

To address these risks and deliver the plan successfully, we have identified five critical success factors. Through these, we can make sure the plan represents good value for our customers and address the issues which resulted in our 2020-2025 wastewater enhancement programme being delivered later than the original proposed spend profile. The critical success factors are:

- Accurate pricing of our business plan.
- Effective sourcing of the materials, equipment and delivery partners required to secure value for money in the delivery of our programme.
- Developing asset solutions and ways of working that are efficient.
- Deploying a mature and continuously improving programme management capability.
- Successfully managing critical external dependencies.

For more details see Chapter 8 section 16

For the 2025-2030 period, we have developed a capital delivery workforce plan to maintain the correct levels of internal resource so we can delivery on-time and on-cost. Two key elements of our programme management capability are our Programme Management Office (PMO) and our commercial function:

- Our PMO provides the governance oversight, systems and processes and programme and project controls for effective monitoring and reporting. We also monitor expenditure and efficiency performance, reporting on variances monthly.

Delivery of the programme of asset investment within the funding available requires effective commercial management. To ensure that partner prices represent market rates, a combination of bottom-up cost estimation, direct negotiation and competitions are deployed.

Chapter 5
Our Long-Term Delivery Strategy

Our Long-Term Delivery Strategy looks 25 years ahead to future-proof our activities and meet our future legal requirements and customer priorities.

Based on adaptive planning principles it accounts for future uncertainties and ensures we deliver efficiently for customers and the environment.

The first five years of our Long-Term Delivery Strategy represent our business plan for 2025-2030.

Chapter 5
Our Long-Term Delivery Strategy

Supporting appendices

Long-Term Delivery Strategy

5.1 Introduction

Our business plan for the period 2025-2030 represents the first five years of our 25-year Long-Term Delivery Strategy (LTDS). This chapter gives an overview of our LTDS, including how we plan for 25 years ahead, our adaptive planning approaches based on future scenarios, and how we have engaged with stakeholders and customers.

- Our LTDS underpins and informs the business plan as a whole, situating the plan in the context of a 25-year forecast.
- It combines strategic planning requirements with statutory obligations and input from customers and stakeholders.
- It accounts for a range of possible futures, building in uncertainty posed by the challenges of climate change, demographic shifts, and new legislation.
- It represents a step change in how we will deliver for customers. An unprecedented level of investment will deliver significant increases in performance and long-term resilience.

We have created our PR24 Business Plan submission for the period 2025-2030 in the context of our LTDS. This chapter sets out the strategic environment for the LTDS. It includes how we plan for the long-term (25 years ahead), how we consider existing and future regulations and commitments, adaptive planning approaches based on a range of future scenarios, and how we have taken on board stakeholder and customer views.

For full details see our **Long-Term Delivery Strategy appendix**

5.2 Long-Term Delivery Strategy looks 25 years ahead

Our LTDS sets out our vision and ambition for the next 25 years, the outcomes we aim to achieve, and the actions and investments we intend to undertake to deliver them.

We face a series of long-term challenges including climate change, affordability pressures, and rising customer expectations around service delivery and environmental protection. A long-term view is essential to ensure that we make decisions that maximise the value we create for customers, society, and the wider environment, and consider intergenerational fairness.

Our LTDS brings together strategic planning framework requirements, statutory obligations, existing commitments, and feedback from customers and stakeholders to outline the investment activities that are required over the next 25 years to meet our ambitions.

The first five years of our LTDS form the basis for our business plan for the 2025-2030 regulatory period. The text below provides a summary of our LTDS, and further details are available in the Long-Term Delivery Strategy appendix.

5.3 We have a clear vision and ambition

Our vision is to create a thriving Yorkshire: right for customers and right for the environment.

To achieve this vision, we will focus on achieving six key outcomes by 2050 or earlier, which have been developed in response to our current and future customers' needs and expectations:

Secure, safe, clean water supplies
Deliver safe, clean, great tasting water and ensure we can continue to meet water demand in future.

First-class customer service
Provide a tailored, reliable service and make sure that we are easy to interact with, in whatever way our customers choose to get in touch.

Bills everyone can afford
Deliver value for money to our customers, keep bills as low as possible, and offer the right support to customers who struggle to pay.

Modern and resilient infrastructure
Build and operate efficient, climate-resilient infrastructure to provide reliable services for our customers.

Net zero carbon emissions
Reduce carbon emissions towards net zero across our business and supply chain.

A healthy, natural environment
Reduce pollution and sewer flooding, improve river quality, and enhance biodiversity across the region.

Figure 1: Our six outcomes

Our ambition for 2050 defines what we will deliver in terms of long-term performance outcomes for customers and the environment. In developing our ambition, we considered areas where we already have statutory or legal requirements, existing commitments that we have made in the past, and the long-term priorities, needs and expectations of our customers.

Our ambition is aligned with our corporate strategy and outputs of strategic planning frameworks (for example, our Water Resources Management Plan), which received scrutiny and challenge from our Board during their development.

We set out our ambition in Table 1 below and consider these outcomes to be stretching but achievable in the long term. While these outcomes are defined for 2050, in many cases we will deliver performance improvements within much shorter timescales.

Outcome	Goal	Performance metric	Unit	2050 target	Statutory and other requirements
Secure, safe clean water supplies	Consistently deliver high quality water	Compliance Risk Index	score	1	
		Customer contacts about water quality	no./10,000 population	0.4	
		Water supply interruptions	Average time for interruptions >3hrs	00:01:20	
		Drought resilience	Return period (years)	1 in 500 year event	
	Reduce household and non-household water consumption	Household per capita consumption	l/p/d	18.5%	
		Business demand	Ml/day	11.9%	
	Reduce leakage across our network	Leakage	Ml/day	48.8%	
First-class customer service	Deliver leading levels of customer service	CMeX	ranking	Upper quartile	
		DMeX	ranking	Upper quartile	
		BR-Mex	ranking	Upper quartile	
Bills everyone can afford	Reduce water poverty for economically deprived customers	Customers in water poverty	%	AMP-on-AMP reduction	
Modern & sustainable infrastructure	Reduce the occurrence of sewer flooding	Internal sewer flooding	No.	0	
		External sewer flooding	No.	8.61	
		Modelled hydraulic sewer flooding risk	Return period (years)	1 in 30 year event	
	Maintain reliable clean water and wastewater networks	Mains repairs	No/1,000km clean network	149.9	
		Sewer collapses	No/1,000km waste network	5.73	
	Maintain reliable clean water and wastewater treatment works	Unplanned outage	%	1.0	
		Discharge permit compliance	%	100	
Net zero carbon emissions	Reduce greenhouse gas emissions	Operational GHG - water (location based)	tCO_2e	66,264	
		Operational GHG - wastewater (location based)	tCO_2e	243,402	
A healthy natural environment	Eliminate pollution incidents (Category 1-3)	Serious pollution incidents	No.	0	
		Total pollution incidents	No.	0	
	Reduce discharges from storm overflows to rivers and coasts	Storm overflows	Avg no. spills / overflow	9.02	
	Reduce net phosphorous loading from treated wastewater	River water quality (phosphorus)	% reduction from 2020	85.8%	
	Achieve high quality bathing waters	Bathing water quality	%	69%	
	Enhance biodiversity across the region	Biodiversity	Units per 100km² operational area	8.35	
		Blue-green storm overflow solutions	% storm overflow solutions with blue-green component	50%	

Key for statutory and other requirements:

- Common PC
- DWMP
- 25 year environment plan
- WRMP
- Storm overflows discharge reduction plan
- Long-term obligations

Table 1: Table of targets for 2050

5.4 We have to deliver our statutory obligations

As a private business providing an essential public service, we are subject to stringent statutory requirements, and an important part of our strategy is to make sure we deliver everything that is required of us by law. Many of our legal obligations are associated with long-term targets, which we have used to form the basis of our LTDS. These include, for example, the government's 25 Year Environment Plan, Storm Overflow Discharge Reduction Plan, and duty to reach net zero by 2050. We have also considered how our other programmes affect our LTDS, including our Water Resources Management Plan, Drainage and Wastewater Management Plan, and our Drinking Water Quality Programme, along with our obligations under the Water Industry National Environment Programme.

5.5 We have used an adaptive planning approach for an uncertain future

Our LTDS is underpinned by an adaptive planning approach, meaning we have identified both the activities that are needed now and the investments that may be required in the future. This approach accounts for future uncertainties – such as climate change, regional population growth, and changes in legislation – and helps us to make the right investment decisions to deliver our strategy efficiently.

We recognise there are many potential developments that may occur in future. To make sure our LTDS is robust in the face of these uncertainties, we have used a series of plausible future scenarios to inform our planning, following guidance from Ofwat. This includes scenarios that are common to all water companies in England and Wales, as well as some scenarios that are specific to Yorkshire Water.

From this analysis, we have identified the investment activities that need to be undertaken to be ready for all plausible future scenarios. This is called our 'core pathway' and represents no- or low-regret investments that we are confident will be needed, coupled with further investment required to keep future options open or minimise the cost of those options in future. Our core pathway has helped shape our investment plan for 2025-2030 by allowing us to prioritise activities that need to be undertaken now, while identifying other less urgent activities that can be delayed until future asset management periods (AMPs) to ensure bills remain affordable for our customers.

We have also identified a series of 'alternative pathways' in our LTDS. These represent the potential future investments, focused on key areas of risk and uncertainty. Each pathway contains a decision point, which indicates when a choice must be made about the best option to efficiently deliver long-term outcomes, and a trigger point, which indicates the circumstances in which an alternative adaptive pathway would need to be followed, leading to a change in enhancement activities away from our core pathway.

One of these alternative pathways is termed the 'statutory pathway', it provides a view of only those activities that would be required to meet our statutory duties. This pathway shows that we can continue to meet these statutory duties into the future, but unlike the core pathway it would not deliver all of the priorities identified by customers and stakeholders. The statutory pathway could be triggered in the future by affordability or financeability constraints.

We will monitor progress against our LTDS and intend to publish an update each year and carry out a more substantial review at PR29.

5.6 Our stakeholders and customers agree with our plan

We have engaged with our stakeholders and customers to support the development of our LTDS. Our engagement work included multiple consultations associated with statutory planning frameworks (for example, Water Resources Management Plan) as well as a specific engagement exercise to understand customers' views on our LTDS.

See details of LTDS customer engagement in the **Customer research appendix**

In general, attitudes towards our LTDS are positive, with 72% of customers expressing their support overall. Four-fifths of our customers told us they like our vision and that it covers the main aspects they would expect from us. Similarly, our long-term outcomes are well-received overall and score highly on general appeal, as well as being seen as clear and beneficial to Yorkshire.

Customer opinions are divided when it comes to bill impacts. While the majority understand why our statutory obligations mean that the cost of bills will increase, only 38% agree that the forecasted bills are affordable for them over the longer term, with a similar proportion disagreeing. We know affordability is a significant concern for many of our customers and, going forwards, we will endeavour to deliver value for money to our customers, keep bills as low as possible and offer the right support to customers who struggle to pay. The 'statutory pathway' responds to customers concerns, setting out our plans for the future under a scenario where keeping customer bills as low as possible is the dominant and only consideration.

72%

In general, attitudes towards our LTDS are positive with 72% of customers expressing their support overall.

5.7 Overview of our Long-Term Delivery Strategy

Our LTDS shows how we will need to increase our investment activities in the future to enable us to deliver more for our customers and the environment in the face of future challenges and uncertainties. We know climate change and a growing population pose risks to future water availability, which is why our LTDS includes provision to secure new water supplies and roll out smart metering to meet the needs of our customers in years to come.

We are also embarking on our largest ever environmental improvement programme over the next 25 years, which will protect and improve the quality of water in our rivers and at our coasts, leading to cleaner, safer water environments that support recreation and biodiversity across the region. Furthermore, we are future-proofing our activities and transitioning towards an innovative and more sustainable business model by introducing new nature-based solutions and investing to drive down our carbon emissions to reach net zero.

By taking a long-term view and embracing new ways of working, we are confident that our strategy will deliver more value for our customers, society, and the environment than ever before. We believe our strategy ensures that risks are addressed when required, ensuring a fair balance of costs between existing and future customers.

Figure 2 below outlines the key outputs by investment area that will be achieved as part of our LTDS between 2025-2050.

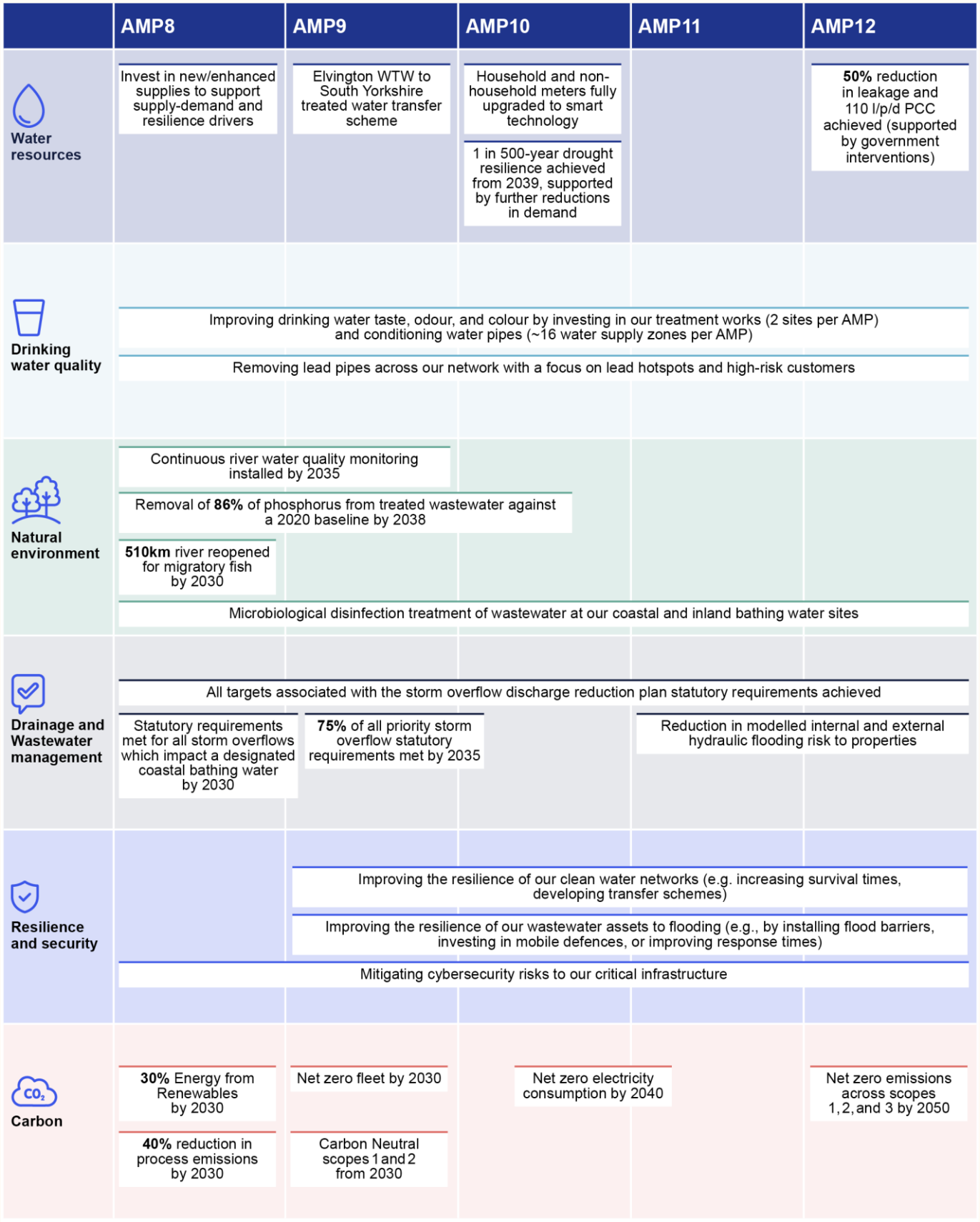


Figure 2: Key outputs that will be achieved as part of our LTDS between 2025-2050

5.8 Summary of our alternative pathways

Through our adaptive planning work, we have identified several alternative pathways that we may take between 2025-2050 in response to plausible changes in future circumstances. These alternative pathways represent additional or alternative activities that would be undertaken under certain circumstances and would be likely to have a material impact on customers' bills. Our alternative pathways are summarised in Table 2 and Figure 3: Core and alternative pathway expenditure 2025-2050.

Alternative pathway 1: Statutory investment programme

Our core pathway is based on best-value planning principles that we are confident will deliver long-term benefits for our customers and the environment. However, we recognise that high energy bills, food costs, and other inflationary pressures faced by customers at present represent significant pressures on their household budgets. If the current cost of living crisis continues in future, there is a risk that our customers will prioritise lower cost bills over investment activities that would deliver better value in the long term. This would require us to reduce the scope of our future investment programmes to minimise future costs to customers.

Under this alternative pathway, we would deliver our minimum statutory requirements but remove most non-statutory activities from our investment plans. We would also seek to reduce the cost of delivery by, for example, investing in grey solutions over blue-green solutions. These changes would produce an investment plan that would minimise customer bills in the shorter term. At present, we estimate the likelihood of triggering this alternative pathway at the start of AMP9 to be 60%. However, ahead of PR29, we will seek to review our investment activities with a view to delivering the benefits of our core pathway at a cost closer to that of our statutory investment programme alternative pathway.

Alternative pathway 2: Our most likely WRMP pathway

Our 'most likely' pathway within our draft WRMP contains provision for improving the environment as part of the government's 25-year Environment Plan, achieved through specific reductions in abstraction. This would require the introduction of the Tees to York transfer – a transfer from Northumbrian Water to Yorkshire Water – coupled with a reduction in abstraction on the River Derwent to reduce abstraction and comply with Common Standards Monitoring Guidance (CSMG), which sets long-term flow targets for protected areas. Such a reduction in abstraction aligns with abstraction reductions under the BAU+ environmental destination scenario in the WRMP guidance, although we note that under a high Ofwat common reference scenario (Abstraction reductions) further investment may also potentially be required in the very long term, outside the 25-year planning horizon.

Under this alternative pathway, we would require additional WRMP enhancement expenditure to deliver supply-side improvements in AMP12. Given the uncertainty associated with the abstraction reductions and solutions that will be required, we have presented these costs as an alternative pathway rather than as part of our core pathway as, at this point, we do not consider it to represent no- or low-regret expenditure.

Our decision to move to this alternative pathway would be made following completion of environmental investigation work on the River Derwent in collaboration with all relevant stakeholders and regulators to define the solution in more detail. These investigations would feed into a decision point in 2032 as part of the draft water resource management plan for that planning cycle. This will also allow Yorkshire Water further time to expand the feasible option portfolio to affirm the best-value solution to meet these longer-term drivers. The pathway would subsequently be triggered in 2049/50, which is the date at which we assume our abstraction licence will be reduced and the CSMG target will be applied. At present, we estimate the likelihood of triggering this alternative pathway at this date to be 50%. Note, however, that our trigger point may be amended following publication of our revised draft WRMP.

Alternative pathway 3: Removal of all lead pipework across Yorkshire

Replacing lead pipework across Yorkshire is important for the long-term health of our customers. While our core pathway includes investment to renew lead communication pipes and external supply pipes, there is potential for future changes in legislation or regulation that would require us to accelerate our lead removal programme and achieve full removal of lead pipework across our clean water network within 25 years. Such changes would necessitate further Drinking Water Quality investment to replace communication pipes, full-service pipes and internal plumbing to ensure compliance with relevant changes in legislation. At present, we estimate a 20% likelihood of triggering this alternative pathway at the start of AMP9.

Alternative pathway 4: Alternative disposal of sewage sludge to mitigate loss of landbank

We currently recycle the majority of our digested wastewater sludge to farmland where it can supply a large part of the nitrogen or phosphorus that most crops need and can also be a good source of organic

matter that improves soils. However, there is uncertainty whether interpretation by the Environment Agency of Rule 1 of the Farming Rules for Water (Regulations 4 and 5 of the Reduction and Prevention of Agricultural Diffuse Pollution (England) Regulations 2018), which aims to tackle diffuse water pollution, may prevent us from recycling all wastewater sludges to land.

Under these circumstances, we would require additional Resilience investment to create a different route for sludge disposal through the provision of new sludge destruction technology. These costs would be spread across three AMPs due to the time required for planning and delivery. At present, we estimate a 30% likelihood of triggering this alternative pathway at the start of AMP9 but consider the likelihood of transitioning to this alternative pathway will increase over time.

Given that this is an area of significant regulatory uncertainty, we believe that there is lower but not insignificant chance (10% probability) that this landbank loss could occur within AMP8. As such, we have proposed an uncertainty mechanism to protect the Company in the event that investment is required to address this risk ahead of AMP9.

This is set out in Chapter 8

Alternative pathway 5: Alternative disposal of sewage sludge to remove forever chemicals

We treat all our digested sludge that we recycle to farmland to ensure it meets quality criteria, including limits on nutrients, chemicals, and micro-organism concentrations. However, there are no quality criteria at present for a group of chemicals known as poly- and per-fluoroalkyl substances (PFAS), which are widely used in consumer items from waterproof clothing to personal care products.

Although few PFAS have been studied in detail, they are extremely persistent in the environment, resulting in them being known as forever chemicals. At present, the recycling of sewage sludge to land as a route for PFAS into soil is poorly understood. Our core pathway for PFAS assumes that future action to reduce concentrations would occur in the form of legislative restrictions of certain chemicals as opposed to sludge treatment solutions. However, if societal intolerance was to significantly increase in the future, then new legislation could be introduced that would require us to remove PFAS from sewage sludge recycled to land. Under these circumstances, we would require additional Resilience investment to establish new sludge destruction technology to create a different route for sludge disposal. These costs would be spread across three AMPs due to the time required for planning and delivery. At present, we estimate a 10% likelihood of triggering this alternative pathway at the start of AMP9 but consider the likelihood of transitioning to this alternative pathway will increase over time.

Alternative pathway 6: Wastewater treatment to remove forever chemicals from final effluent

Treated effluent discharged to rivers from wastewater treatment works also represents a pathway for PFAS to enter the environment. As with the case for sewage sludge, PFAS in final effluent is not regulated currently (apart from the environmental quality standards in water bodies for perfluorooctane sulfonate) but we recognise that this may change and require us to remove PFAS from treated effluent in future. Under these circumstances, we would require additional WINEP (waste) investment to enhance chemical removal capacity at our wastewater treatment works using granular activated carbon treatment. At present, we estimate the likelihood of triggering this alternative pathway at the start of AMP9 to be 10%. Due to differences in decision timing, we have represented this as a separate alternative pathway to the one above.

Alternative pathway 7: Enhanced drainage and wastewater management capacity

Our modelling indicates that increased rainfall conditions under the high climate change (RCP8.5) common reference scenario would pose significant risks to the operation of storm overflows and hydraulic flood risk. Mitigating these risks would require us to create additional wastewater network storage capacity, separate a greater volume of surface water runoff at source, and attenuate surface water runoff to slow the speed at which stormwater enters our sewer network. This would require additional expenditure under our DWMP investment area. At present, we estimate a 30% likelihood of triggering this alternative pathway at the start of AMP9.

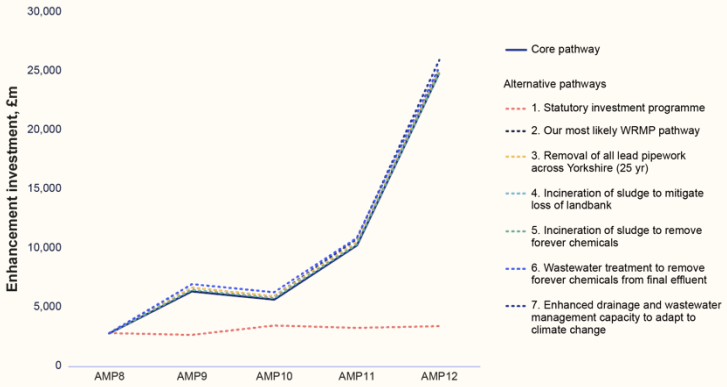


Figure 3: Core and alternative pathway expenditure 2025-2050

Alternative pathway	Description	Scenario type	Scenario	Investment area	Decision point	Trigger point
1	Statutory investment programme	Wider reference scenario	Customer affordability concerns – adverse	Resilience; DWMP; Living with Water	At PR29	Start of AMP9
2	Our most likely WRMP pathway	Common reference scenario	Abstraction reductions – high (adverse)	WRMP	2032 WRMP planning cycle	2049
3	Removal of all lead pipework across Yorkshire	Wider reference scenario	Lead-free Yorkshire – adverse	Drinking water quality	Price Review prior to change in legislation	Upon change in legislation
4	Incineration of sludge to mitigate loss of landbank	Wider reference scenario	Farming Rules for Water – adverse	Bioresources	Price Review prior to change in regulation	Upon change in regulation
5	Incineration of sludge to remove forever chemicals	Wider reference scenario	Society-driven substance intolerance – adverse	Bioresources	Price Review prior to change in legislation	Upon change in legislation
6	Wastewater treatment to remove forever chemicals from final effluent	Wider reference scenario	Society-driven substance intolerance – adverse	WINEP (waste)	WINEP planning round prior to change in legislation	Upon change in legislation
7	Enhanced drainage and wastewater management capacity to adapt to climate change	Common reference scenario	Climate change – high (adverse)	DWMP	Next DWMP planning round	Delivery of DWMP at start of AMP9

Table 2: Summary of our alternative pathways

5.9 Responding to Ofwat's feedback

Following a presentation to Ofwat in February 2023 on our proposed approach to developing our LTDS, Ofwat provided feedback that was generic to the industry and specific to Yorkshire Water. In this section, we summarise the key areas of feedback we received and outline how we have worked to address these in the development of our LTDS.

Ofwat feedback	Our response
The core pathway should consider all future scenarios. We must ensure that we do not consider only benign scenarios as this risks increasing the long-term costs of meeting outcomes for customers. Where activities depend on certain scenarios coming to pass, they should be described in alternative pathways with clear trigger and decision points.	We have developed our core pathway to ensure it contains solutions that are likely to be needed under a range of plausible scenarios to meet our long-term ambition. We have carried out impact assessments for each investment line against all common and wider reference scenarios. Our scenario testing approach, and the results of our assessment, are detailed in our LTDS.
How we have identified and prioritised low-regret investment should be clearly set out. We should show that the selected investment, and timing of the investment, is optimal given a wide range of benign and adverse plausible scenarios and their likely occurrence.	Our scenario testing approach ensures that our core pathway reflects no and/or low-regret investments that can respond to a range of plausible futures, with future investments that are subject to more uncertainty reflected in alternative pathways. We have also proposed enhancement funding in AMP8 to keep future options open, such as by carrying out investigations and trialling new technologies.
Testing the common reference scenario for technology. We should provide evidence of how we are testing the common reference scenario for technology and set out all assumptions we are making about the impact of the scenario.	We have tested all core pathway investment lines against the common reference scenario for technology and provide details of our testing approach and assessment findings in our LTDS.
Long-term performance improvements from base expenditure. We should develop forecasts of improvements expected from base expenditure and clearly set out the expected improvements towards each of the outcomes and metrics set out in your ambition.	We have developed long-term forecasts of improvements from base expenditure, set out in the LS2 data table.

Table 3: Our response to Ofwat feedback

5.10 Our PR24 Business Plan is the first five years of our Long-Term Delivery Strategy

Our PR24 Business Plan, covering the 2020-2025 regulatory period, forms the first five years of our LTDS. Taking a 25-year planning perspective helps us ensure we make effective decisions that provide long-term value for society and the environment.

However, we recognise that there is substantial uncertainty over such a long period and that statutory requirements, societal needs and customer expectations will likely change in future. As such, we have established a monitoring plan to review and refine our LTDS and ensure it remains fit for purpose over time.

Chapter 6
Customer and stakeholder engagement

We understand the diversity of our customers and stakeholders across our region.

Our customer engagement programme is vast, spanning business-as-usual research as well as business plan specific studies.

Our plan reflects what is most important to our customers:

- Providing a continuous supply of water that is safe to drink
- Preventing sewage from entering homes and businesses
- Enhancing the quality of water within our natural environment
- Keeping bills affordable for all

Chapter 6
Customer and stakeholder engagement

Supporting appendices:

Yorkshire Water customer research as specifically quoted in Chapter 6
Yorkshire Forum for Water Customer Engagement
Our research partners
Stakeholder responses to Ofwat's PR24 draft methodology
Letters of support for our PR24 Business Plan
Summary of 'Your water, your say' event
Summary of engagement with Yorkshire Leaders Board
Yorkshire Water response to the Wildlife and Countryside Link's Blueprint for Water
Alignment with Ofwat's customer engagement standards
Alignment with Ofwat's customer engagement principles

6.1 Introduction

This chapter sets out our approach to customer and stakeholder engagement and how the insights have fed into the creation of our PR24 plan.

After PR14, we made a commitment to get closer to our customers, to delve into who they are and what really matters to them. The scale of our engagement for PR19 was vast and wide-reaching. We talked to almost 30,000 customers, businesses and stakeholders while developing our plan, compared to 8,000 customers for PR14. Today our engagement is completely embedded in 'business-as-usual' activity and customers' views are central to our decision making process. Since 2019, we have had almost 55,000 quality conversations with our customers through surveys, focus groups, discussion forums and in-depth interviews, even sitting with our most vulnerable customers – people who may otherwise struggle with technology or getting to focus groups – in their own homes, to make sure their voices are heard. This chapter explores the extent of this activity, but the key role customers play in our business will also be apparent throughout the rest of the plan.

PR24 is the first price review to have an Ofwat-led element to customer engagement. It has introduced cross-company collaborative and prescribed research approaches to the most essential parts of the price review engagement programme. While we understand that Ofwat's direction ensures quality and comparability, it has not been without its challenges. This chapter will share how we have been compliant with Ofwat's prescribed research requirements for PR24. We also explain how our efforts have exceeded requirements, and where and why we have deviated from Ofwat's guidance with minor variations.

We have also been mindful to consider key documents as published by Ofwat and CCWater when planning, implementing, and analysing our customer research. We have carefully considered the conclusions of 'Engaging water customers for better consumer and business outcomes' and 'Showing comparable information', ensuring that our research meets the standards expected, not only by our regulators, but also our customers and stakeholders.

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.

Figure 1: Factors which determined the construct of our PR24 plan

We are delighted that acceptability of our plan is 78% from customers who took part in our study, which followed Ofwat/CCWater guidelines. Affordability was much lower, with 22% of customers stating that they found the plan affordable. We also undertook our own acceptability and affordability study – this addressed some of the issues highlighted by customers in the Ofwat study. Our study provided customers with a more extensive view of the service and performance levels they will expect to see following delivery of our business plan – affordability levels in this plan were 60% and acceptability 79%. We know affordability is both a priority and a challenge for our customers, we address this widely in **Chapter 2.**

For more details see Chapter 2

Our customer challenge group, the Yorkshire Forum for Water Customers ('The Forum'), has played a crucial role in ensuring that the insights programme is of the highest standard. They have provided direction and support in interpreting Ofwat's guidance and are always a welcoming sounding-board for the direction and scope of our customer engagement activity. We would like to thank The Forum for their valued challenge and contribution to our ongoing engagement activity and their independent assurance to our Board on our customer research programme and findings.

A summary of customer priorities and corresponding actions can be found in Table 1 below.

Customer priority	How our insights tell us this is a priority	Our response within our 2025-2030 business plan
Providing a continuous supply of water that is safe to drink	Multiple studies confirm this is our customers' number one priority when it comes to the services we offer. Our Valuing Water research (see our customer research appendix) as well as the Ofwat/CCWater customer preferences research indicate that customers consider fresh, clean, safe, and reliable supply as fundamental. Therefore, services which ensure this is achieved have been prioritised in our business plan.	To ensure we deliver on this priority, our plan will: • Reduce leakage by 16% • Improve water supply interruptions by 26% • Improve unplanned outage performance by 36% • Reduce the number of customer contacts about water quality by 34% For more information on our investment plans in this area, see **Chapter 8**.
Preventing sewage from entering homes or businesses	We know through customer preference research, triangulated through our own studies and complaints data, that this is a high priority area. Internal sewer flooding in particular sits at the top of the list of wastewater service failures to avoid. Even if our customers have never experienced sewer flooding, it is seen as the most shocking of failures to experience and one which could have huge personal, emotional, and financial repercussions.	We will work hard to avoid this failure and our proactive investment to tackle this problem will reduce the likelihood of this happening. Our plan aims to: • Continue our enhanced flood protection work in Hull through our 'Living with Water' programme • Install 165,000 customer sewer alarms. • Instigate c300,000 CCTV surveys and associated interventions • Install over 20,000 pollution focused network sensors • Install over 65,000 "main sewer" flooding monitors • Carry out extensive rising main and sewage pumping station surveys with associated remedial activity • Develop proactive campaigns on customer education to avoid blockages For more information on our investment plans in this area, see **Chapter 8**.
Enhancing the quality of water within our natural environment	Spurred on from the pandemic, much of our research highlights a growing customer interest in the natural environment, particularly the water environment. We can see this from our July 2022 report on the impact of the pandemic and other societal events – see The impact of Covid-19 and other events in our customer research appendix. Through our own customer priority research (see the Valuing Water study in our customer research appendix), our customers tell us that protecting water quality in our rivers, streams and sea is particularly important to them. Considering the coverage on pollution and the use of storm overflows, the priority of tackling issues relating to these areas has been frequently mentioned by customers - in our research - and our stakeholders. Our customers support us in going above and beyond our statutory requirement for designated bathing waters, as seen in specific research we carried out with our online community– see Exploring customer views on Designated Bathing Water sites in our customer research appendix.	Our investment in this area is vast, including our largest ever environmental improvement programme. We will: • Deliver our substantial National Environment Programme (WINEP) benefiting the water environment significantly • Reduce the amount of phosphorus we release to the environment ahead of target • Install over 1,800 river water quality monitors to better understand river heath and take proactive action • Invest in sustainable drainage solutions • Roll out smart monitoring technologies to reduce pollution incidents and move us towards upper quartile performance • Implement a storm overflow reduction plan to deliver 230 individual scheme improvements and a programme that ensures our coastal overflows have a maximum of two spills each per annum by 2030, five years ahead of target. For more information on our investment plans in this area, see **Chapter 8**.
Keeping bills affordable for all	Given Yorkshire is the third most income deprived region in England, out of the nine ONS regions in England, it is no surprise to learn that almost all our research undertaken in the last three years tells a story of customers who are struggling financially, or worrying they might struggle in future. This includes customers who have not had financial concerns in the past. In most cases the water bill is never a worry or cause of anxiety, but it is the escalation of what is happening in the wider economy that is driving additional apprehension and money-related stress. While our own research indicates 60% of customers believe our plan to be affordable, affordability poses a huge challenge to our business plan. Customers have struggled to balance the ambition and improvements needed and contained in the plan with simply being able to afford it.	We understand the plight of many of our customers, and our plan outlines the most ambitious support programme we have ever delivered. We will: • Provide financial support to over 180,000 customers (up from 95,000 in 2023 – 20,000 customers more than planned) by 2030, through several financial schemes – from debt write-off to reduced bills and payment breaks. For more information on how we are supporting bills and affordability in AMP8, see **Chapter 2**.

Table 1: Addressing customer expectations in our plan

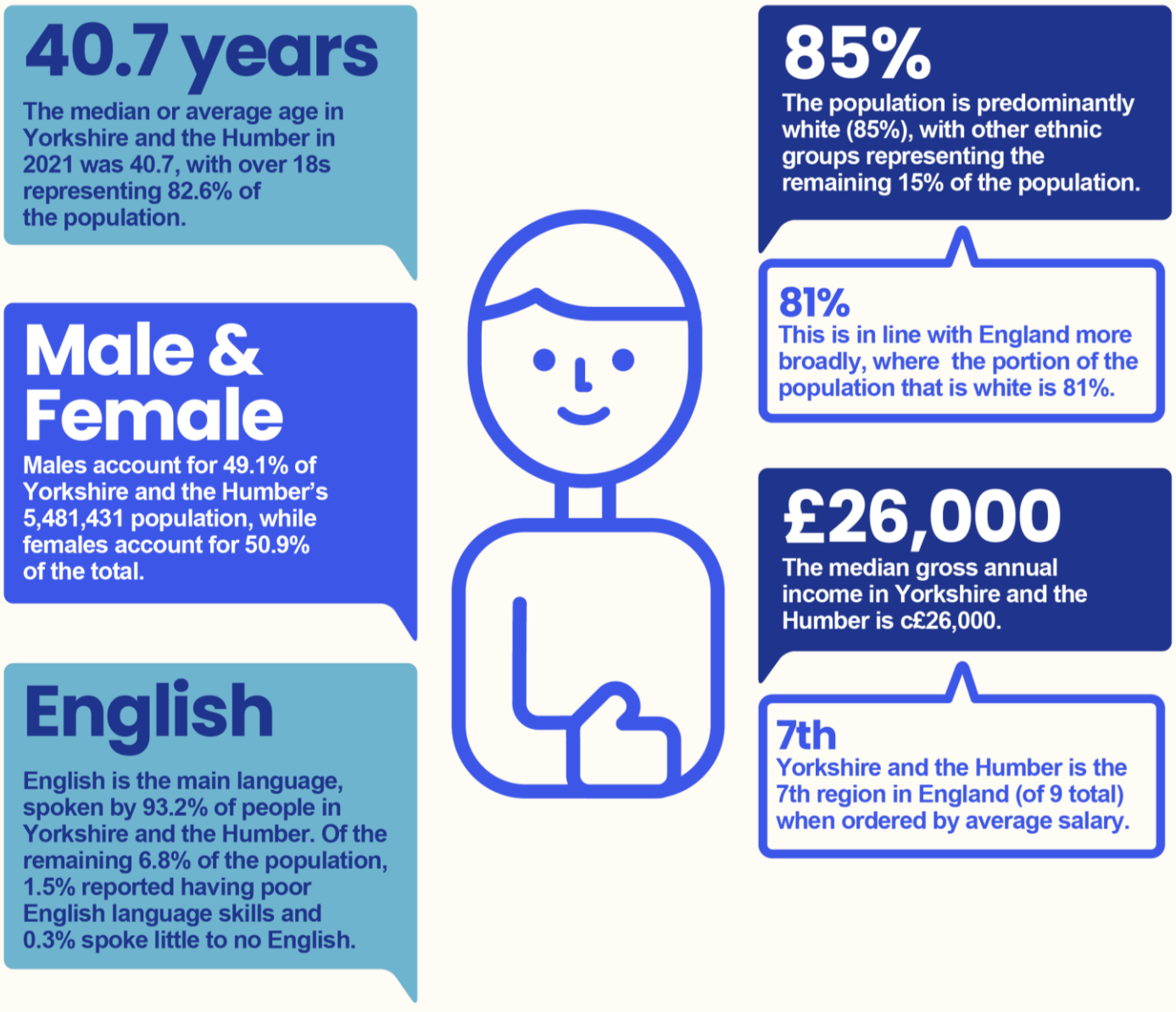
6.2 Who our customers are

We supply 1 billion litres of water every day to 5.5 million people and 140,000 businesses. We run over 670 water and wastewater treatment works, and our water and wastewater pipes combined could circle the earth twice. We are also responsible for 72,000 acres of Yorkshire countryside.

As the end users and beneficiaries of the services we provide, our customers are at the heart of everything we do. In addition to getting the basics right and improving our performance, it is essential that we engage with them regularly to build a solid understanding of their needs and expectations, and how these change over time.

Understanding Yorkshire's demographics allows us to provide a tailored service to all. We know our customer base is diverse and unique to our region – our customers on average are older than in other areas – and we are aware that pockets of our community suffer with higher-than-average levels of deprivation. Our service and engagement with our customers and stakeholders must take this into account.

We have built an in-depth view of our customers using the latest 2021 Census information as well as the Annual Survey of Hours and Earnings (ASHE). See our graphic below:



Our geographic area is vast, spanning West Yorkshire, South Yorkshire, the East Riding of Yorkshire, part of North Lincolnshire, the majority of North Yorkshire and parts of Derbyshire. The mix of rural and urban areas poses challenges for providing a continuous and reliable services to our customers and responding to vulnerabilities in both areas. We understand that, especially for those living in rural areas, interruptions to supply can be worrying. Our research highlights individuals' concerns about utility outages; a single supply makes these more likely and often more prolonged. It is also more difficult to receive support when interruptions occur (see 'ruralengland' vulnerabilities research). In addition, we know that our most vulnerable and economically-deprived customers generally live in urban areas (see Office for National Statistics research) .

According to the latest Office for National Statistics (ONS) data, there are approximately 320,000 customers across our region who are economically deprived and might require support (see English indices of deprivation). The latest research indicates that approximately 158,000 customers are below the water affordability threshold, in addition to those already facing debt challenges as a result of their water bill.

This can be found in our **Frontier Economics affordability report appendix**

Ofwat's cost of living research states "bill payers in some regions were more likely to report struggling 'sometimes or more often' to pay household bills, with almost two thirds (65%) of those in in Yorkshire and Humberside reporting this" (see page 4, Ofwat cost of living report).

Ofwat cost of living report

This is despite our financial support schemes, such as WaterSupport, WaterSure, Community Trust, and our debt-matching payment schemes. Hardship remains a serious challenge and one for us to focus on as we move into the 2025-2030 period.

5.5 million

customers who rely on our services each year

For more information on the customer engagement that we have carried out in this area and how we intend to help more customers with their bills, see Section 6.4 and Chapter 2

6.3 Our approach to engagement with customers and stakeholders

Our approach to customer engagement must accommodate more than simply household customers. We supply water and wastewater services to a wide range of people, from household customers, non-household customers, retailers, developers, Self-Lay Providers (SLPs) and New Appointments and Variations (NAVs).

We are proud to work with partners across our community, such as The Rivers Trust, whom we have formally engaged with on parts of our business plan. We have also engaged with The Yorkshire Leaders Board, a collective of councils and mayoral combined authorities across the Yorkshire and Humber area who have an interest in our future strategy.

For more information on our stakeholder engagement see section 6.3.1

While there has been industry-wide collaborative research as part of this price review process, we want to ensure that our business plan reflects our Yorkshire community. We have therefore made sure to validate our thinking with those who will be impacted. In addition to the collaborative research, we have also carried out several research studies across a wide range of customers, including future bill payers, informing this business plan and providing insight to shape day-to-day business decisions and activities. Our customers tell us that they do not think about their water service unless something goes wrong, which in most cases is rare. This can often make engaging on water and wastewater services challenging. However, we have worked hard to produce creative ways to capture the views of our customers and stakeholders.

The water sector can be complex and, through our customer research, we found that understanding of the water industry can be limited, particularly in those groups who are not yet responsible for their water bill, for example our future bill payers (FBPs) (see pages 16 and 20 of Ofwat/CCWater Customer Preference Research). Therefore, to gain meaningful insight, we use independent researchers to seek customer views on a range of water-specific topics to inform our plans and approaches. They carefully contextualise the topic of interest, provide an overview of the challenges the water sector faces and give a transparent view of the performance levels of Yorkshire Water. Further information on our research partners can be found here.

Beyond the business plan process, we are committed to ongoing and regular conversations with customers and stakeholders. Engagement is embedded in our business-as-usual activities – we constantly consult with relevant groups. Subsequently, extensive day-to-day discourse with our customers, as well as fresh research studies, has been used to inform our business plan. The variety and types of customer engagement activity we undertake are outlined below:

Engagement type	Engagement examples
Standardised research	Affordability & acceptability testing
Collaborative research	Ofwat/CCW customer preferences research
Bespoke research studies	Bespoke research to inform our business plan
Theme or plan specific	Long-Term Delivery Strategy, Drainage & Wastewater Management Plan, Water Resources Management Plan, Water Resources North regional water resources plan customer engagement
Online community studies	Weekly online studies on topics including the use of storm overflows and trust in water
Customer surveys	Customer measure of experience (C-MeX), Developer services measure of experience (D-MeX) & Retailer measure of experience (R-MeX) survey analysis, as well as long-term brand and satisfaction tracking through our own 'Customer Voice' surveys
Group engagement	Retailer forums, developer customer forums
Stakeholder engagement	Partnership forums (both formal and informal partnerships), Yorkshire Leaders Board, regional roundtables
Customer challenge sessions	Our 'Your water, your say' challenge sessions, and our Yorkshire Forum for Water Customers (The Forum) who independently challenge our research output and hold us to account. This ensures that our business plan reflects the needs of our customers and community

Figure 2: Examples of the wide-reaching engagement undertaken by Yorkshire Water

Further information on each of these engagement types are provided throughout this chapter.

6.3.1 Overview of our customer and stakeholder research

All our PR24 specific customer engagement research can be found on our website here but below we have outlined the types of engagement research we have undertaken.

Standardised & collaborative research

Ofwat supplied feedback on 2019 price review engagement (PR19), recognising the difficulty in carrying out cross-sector comparison effectively as part of the business plan process (see page 3 of Ofwat Collaborative Customer Research PR24). Subsequently, as part of PR24, Ofwat introduced collaborative research. This was carried out by a third party on behalf of the water sector, to provide an industry-wide view of customer preferences. In addition, to gain a comparative view across the sector, Ofwat has developed an approach to standardise some elements of customer research related to affordability and acceptability. (see Ofwat Collaborative Customer Research PR24).

- **Affordability & acceptability testing in our customer research appendix**: Based on the industry-wide standardised approach, we have carried out extensive testing on the affordability and acceptability of our business plan with our customers. Our study aimed to survey 1,500 household customers, well above the 500 expected sample size requested by Ofwat. We felt 500 would be too small a base size to be confident in our data, especially across customer types. We are really pleased to have achieved 2,175 responses from our household customers, and 203 from non-household customers, positively highlighting an engaged cohort of customers here in Yorkshire.

Customer research appendix

We have followed the guidelines provided by Ofwat, with minor variations following careful consideration of outputs seen post pilot and in early stages of testing. We consulted with The Forum on any variations and they were supportive of our approach. A summary of where we varied from the guidelines is provided below:

- The consensus from our customers was that there was too much information to digest and that some of the prescribed information was too wordy and not easily absorbable for all education levels or neurodiverse audiences. As such, we only briefly presented the Ofwat information slides during sessions, to allow more time to gather meaningful views on our business plan.
- The comparative performance information presented a lot of technical information and was especially difficult for customers to understand, particularly with regards to performance commitments such as interruptions to supply. As such, in the later focus groups we did not go through the comparative performance charts in as much detail.
- Some customers felt that, rather than seeing comparative data, they would have found it more useful to have seen how we had performed over time, including further information on our own targets. As such, we provided some further contextual information as to why some of our PR24 targets were lower than our current performance and why some targets were not currently being met.
- We felt that customers needed some company specific information to be able to accurately assess our proposed business plan. As such, we provided some specific asset information, such as how many water treatment works we look after, and how many combined storm overflows (CSOs) would be improved under our plans. This allowed more quality conversations about our investment plans, particularly when it came to our optional investment cases.
- We initially experienced a 100% dropout rate for future and vulnerable customers groups and in-depth interviews. The reason being that the extensive homework task was complicated and off-putting. It was decided that we would no longer share homework tasks with future customers, and vulnerable customers would only receive the least-cost plan. After this, recruitment improved.
- Given the volume of information to get through it was decided that we would only test our 'least-cost plan' which would outline the prescribed 6 PCs and 3 enhancement cases and bill impact. Instead of testing an entirely separate 'proposed plan', we presented customers with 'additional options of investment'. The value of each investment and the cost per year (including and excluding inflation) were presented in the qualitative research. There was more support than not for these optional investment areas, these were later included in our quantitative business plan testing as enhancement cases.

  Our approach and variation from the guidelines were agreed by The Forum, as it aligns with the customer engagement standards and principles set out by Ofwat.

Our results from the standardised affordability and acceptability research in our customer research appendix found that 22% of customers expected to find it easy to afford to pay their proposed water and sewerage bill for the years 2025-2030. In terms of acceptability of our plan, 78% found our plan to be acceptable.

Our own affordability & acceptability testing

We have gone beyond this with affordability and acceptability testing. We have carried out our own affordability and acceptability testing in our customer research appendix in addition to the Ofwat study. After the findings from the Ofwat affordability and acceptability testing focus groups, we decided to proceed with our own study to provide customers with some of the missing pieces they requested within the research, such as more detail on the plan. For this research, we provided specific contextual information on the services provided to customers as part of our proposed plan, and the impact that will have on our performance. Customers could better understand our service targets and where they would be in 2030 across all of our performance commitments.

In turn, the affordability results we received were that 60% of our household customers and 56% of our non-household customers felt their water bill was affordable with this plan. In line with CCWater guidelines, this percentage includes customers who responded with 'I don't mind' as well as 'fairly easy' and 'very easy' to afford. This meets the CCWater affordability threshold of 57% for household customers. Acceptability results were remarkably similar to those found in the standardised research, with 79% of household customers finding our proposed business plan acceptable. Our future customers reported even higher acceptability rates at 84% and, finally, 79% of non-household customers agreed that the plan was acceptable. This gives us confidence that our plan meets the needs of the majority of our customers. We know that affordability remains a concern for many, and that is why we are putting in place our largest ever package of financial support for customers who will struggle to afford their bill.

Further details about this are provided later in this chapter and in Chapter 2

Some additional positives revealed in our own testing – cementing the acceptability of our plan, for household customers:

- 77% like the overall vision
- 72% believe the plan reflects their priorities as a customer
- 76% believe the goals/outcomes are the main areas they expect to see in the plan
- 61% believe the plan seems realistic and achievable (customers felt this was a huge plan and this is a risk to delivery, hence the lower score)
- 81% believe the plan will benefit Yorkshire
- 77% support this plan and what it hopes to achieve
- 58% trust Yorkshire Water to deliver this plan (past performance and perception are impacting this).

Non-household customers and future customers are more supportive of each of the statements outlined above.

Support for each of our outcomes, and each of the PC targets which sit within these, are as follows for household customers:

- Secure, safe, clean water – 86%
- First class customer service – 82%
- Bills everyone can afford – 83% (we outlined the support we are offering)
- Net zero carbon emissions – 83%
- A healthy, natural environment – 85%
- Modern and resilient infrastructure – 84%.

Non-household customers score similarly if not slightly more positive than household customers for each of the above. However, future customers score lower for each of these – they were more likely to score neutrally, reflecting their low engagement and levels of knowledge on the topic more generally.

To conclude, given there is no significant difference in the overall acceptability scores for either study, we can determine that the studies are comparable. However, our Yorkshire Water study goes much further in providing customers with the detail of the plan they requested than the study followed Ofwat/CCWater guidelines. In the absence of another phase of qualitative research, we may conclude that our Yorkshire Water study provided more information and therefore allowed customers to conclude the plan was better value for money or potentially higher quality, hence our higher affordability scores.

Regarding both affordability and acceptability studies, all our previous research told us that customers prefer a flat bill profile and therefore both affordability and acceptability testing studies were carried out on this basis. At the request of our Board, who raised concerns that a flat bill profile might not be the most welcomed given the increases customers are facing this time round, we undertook customer bill profile research. The findings indicate that customers support either a flat bill profile or a natural bill profile, with slightly more support for the natural bill profile. Considering the outputs of this bill research, together with the views expressed by wider stakeholders, we have decided to adopt a natural bill profile in this business plan. This will mean a slightly lower increase in customer bills in the early years of the 2025-2030 period.

For more details see Section 6.4.2

Ofwat/CCWater collaborative research:

- **Customer preferences research:** This collaborative research aimed to test the extent to which common performance commitments (PCs) being considered for PR24 correctly reflect those key service attributes that customers rated as important, and whether any gaps existed. The research found the following areas were the highest priority for customers across England and Wales: water interruption, taste, smell, appearance, do not drink notice, internal sewer flooding and external sewer flooding; these findings are consistent with our own research.
- **Outcome Delivery Incentives:** Ofwat also carried out Outcome Delivery Incentive (ODI) rates research with the intention to use a bottom-up approach to set incentive rates for the common performance commitments. However, due to challenges with mapping service incidents that customers valued, with performance commitment definitions, Ofwat reverted to a top-down approach based on equity return at risk. Further information can be found in their publication here.

Bespoke research studies

In addition to the prescribed research requirements set out above, we have our own ongoing programme of research and PR24 specific research to bolster and triangulate the Ofwat engagement. Examples of this research can be found below, and a full picture of our broad engagement can be seen in **Section 6.3.**

For more details see Section 6.3

- **Valuing Water research:** This report (in our customer research appendix) reveals how household, non-household, stakeholders and future customers feel about the challenges we face as a water company, and what their expectations and priorities are, now and in the future. It identifies focus areas for Yorkshire Water in the short to medium term, as well as validating the strategic direction of travel from 2025 onwards. This has provided the foundations to our plan, as well as the direction of travel for our LTDS. Priorities found, and how they differ from the outputs of the Ofwat/CCWater customer preferences research, can be found in the report.
- **Yorkshire Water Channel strategy**: Our contact channels must meet the needs of our diverse customer base, now and in the future. Through this bespoke study in our customer research appendix, we sought to understand customer views on both digital and non-digital channel choices, both current and desired for the future, in a variety of scenarios. We also used this opportunity to understand how we perform as an organisation in this area, compared with companies outside of the water sector.

To read about how we have applied this knowledge see Chapter 7

- **WaterSupport Enhanced Contribution report part 1**: In September 2022, we commissioned a piece of research to understand bill payers' willingness to contribute to a social tariff in general, but also specifically regarding our current social tariff, WaterSupport. We found customers were prepared to contribute an additional £2 per year toward the social tariff. This was added to bills up to 2025. See our customer research appendix for more details.
- **WaterSupport Enhanced Contribution part 2**: In July 2023, we commissioned another piece of research to inform our plan. This time we wanted to understand any change in willingness to contribute to our social tariff from bill payers. The research concluded that 51% of customers were willing to contribute an additional £8 to support customers who are struggling to afford their bills. Whilst many customers sitting within this threshold opted for the 'neither/nor' category, additional analysis on comments from customers who selected this threshold more than confirmed support for the £8 contribution – an example of comments received from customers selecting neither/nor at an £8 threshold are highlighted below.

For more details see Chapter 2

Customer research appendix

- **Yorkshire Water BR-MeX replica:** This new common performance commitment for English water companies aims to capture both:
  - The experience of end business customers who engage with us directly for a service-related issue (direct contacts) and;
  - The experience of business customers who engage with their retailers for a service delivered by us (bilateral contacts).

This research evaluated the methodology involved in BR-MeX and identified issues with the methodology itself, particularly the inability to obtain interviews from bilateral contacts. It also helped us to understand critical areas of service to non-household customers, and areas we should focus our efforts on to ensure a positive delivery of services going forward. It enabled us to validate non-household customers' interest in reducing water use, the appeal of smart meters and future services such as water use audits.

- **Affordability and Vulnerability study:** With the current cost of living crisis in mind, this study aimed to unpick the drivers of vulnerability, and to understand to what extent financial vulnerability impacts on other vulnerabilities (for details, see our Customer Research Appendix). This study was identified as being sector leading by CCWater – no other company has gone to such lengths to explore vulnerability and affordability and tried to unpick the new challenges facing our customers in today's cost of living crisis. This study allowed us to view the scale of the issue in Yorkshire, indicating how bill changes might impact our customers and helping us shape our support and our affordability and vulnerability strategy. This, alongside other research and modelling, has enabled us to focus the support we offer towards customers most likely to be in financially vulnerable circumstances. The insights also help to shape our community engagement activity, allowing us to reach those customer segments most likely to be in need, but who may be currently struggling to access the support they need. The study identified several improvements we could make to better support our vulnerable customers. Examples include implementing a banded social tariff offering, how to better engage customers in debt to buy in to support rather than avoid it, and how there is a new financially vulnerable cohort of customers who, for the first time, are beginning to struggle and are falling through the gaps. In summary, we found that affordability is a key concern for many households, and while 84% stated they were able to afford their water bills currently, around a third of customers were concerned about their ability to do this in the future.

Customer research appendix

Theme and plan specific research

Our 2025-2030 business plan is fed by several other key plans, particularly our Drainage and Wastewater Management Plan (DWMP), our Water Resources Management Plan (WRMP) and our Long-Term Delivery Strategy (LTDS). We wanted to test our thinking on these plans with customers and stakeholders and feed those findings into our draft business plan.

- **The Water Resources Management Plan:** Our Water Resources Management Plan (WRMP) is a key component of our business plan and our long-term, strategic planning framework. It sets out how we plan to maintain a safe and reliable water supply to customers over the long term. We produce a Water Resources Management Plan every five years, based on the requirements of our regulators. Our latest WRMP planning period set new considerations for regional water supplies. Together with our regional water partners, Northumbrian Water and Hartlepool Water, we are bound to oversee water resources planning for Yorkshire and the North-East of England. We worked together to conduct our Water Resources North (WReN) customer engagement (see our Customer Research appendix for details). This research assesses customer, citizen and stakeholder views of what a best value plan would look like for Water Resources North, including the drivers of investment and how this should be prioritised to ensure a lasting supply of water long into the future. Key learnings from this study tell us that customer priorities are generally unchanged when it comes to water resource management. Leaks are seen as the number one issue as this is an obvious failure and appears wasteful. Next was water supply drought resilience – there is nothing more important than keeping the water flowing – followed by affordability. In addition, customers support demand reduction options over increasing supply, however, should it be needed in future – water trading was welcomed to prevent future supply shortages. This insight fed into our water resources management plan which was further tested through our online community. You can find this in our customer research appendix.
- **The Drainage and Wastewater Management Plan (DWMP):** our DWMP customer research in our customer research appendix informed the DWMP and in turn, our business plan. Our DWMP represents a significant part of our LTDS, highlighting the needs and requirements of our wastewater services for the next 25 years and beyond. Our research tested customer views and priorities across a range of topics within the DWMP and the insight confirms that customers want Yorkshire Water to improve because maintenance would not go far enough for future challenges. Customers are prepared to pay a small increase to

fund improvements and with that they wanted us to exceed statutory measures in the medium to long term. It was felt that a combination blue-green infrastructure and traditional carbon intensive solutions needed to be utilised to solve the problems in the medium to long term. A summary can be found in **Chapter 8.** For more information on our DWMP, see our hub here.

- **Long-Term Delivery Strategy testing:** The LTDS presents our strategy to 2050, a new regulatory requirement by Ofwat for the 2024 price review (PR24). It sets out our vision and ambition for the next 25 years, the outcomes we aim to achieve, and the actions and investments we intend to undertake to deliver them. We have carried out customer testing on our LTDS through our online community, with an external boost for better representation of our region. In summary:
  - 72% of customers are supportive of our overall strategy
  - 80% liked the vision
  - 75% agreed that it aligned with their priorities as a customer
  - 71% felt it was comprehensive
  - 80% believe the outcomes will benefit Yorkshire
  - But only 47% trust us to deliver against the strategy and only 38% felt the long-term forecast bill increase to deliver against the strategy was affordable for them.

  We deviated from the guidance slightly as we did not test alternative pathways. We considered that the level of content required to do this would overwhelm our customers and negatively impact engagement. Our approach and variation from guidance was supported by The Forum.

Online community studies

Our online community, 'Your Water', was set up for PR19 to support agile and efficient testing of specific elements of our business plan. We found this platform invaluable, so we have instated it indefinitely, and we are proud to have over 3,500 individuals now contributing through this community. It supports business-as-usual activity, shaping direction and decision making, as well as supporting with the creation of our PR24 business plan. We engage with members on a variety of topics, including trust, views on designated bathing waters, perception of storm overflows, customer attitudes towards water and much more. The community was an invaluable tool for learning about our customers throughout the pandemic, especially as we moved in and out of lockdowns. It informed the creation of sensitive communication campaigns which explained why our colleagues were key workers, and informed communications which detailed the many ways we could support our vulnerable customers. The community also influenced the support we had to offer for customers who have been financially impacted by not being able to work.

We strive to have a representative sample of customers as part of our online community, and we refresh this group regularly – usually every 18 months to support this goal. While we cannot guarantee a representative sample will respond to every mini study or activity uploaded, we can be sure that the base online community remains a fair representation of our customers.

To promote our online community, we carry out targeted online recruitment through social media. This is an intentional approach to try and access young and future bill payers, who tend to be the hardest to engage. We also use email recruitment campaigns to reach customers who have already signed up to receive marketing information through Yorkshire Water channels, which helps attract new customers into the online community.

Customer surveys

Tracking customer satisfaction on a regular basis is important to us. It allows us to test that the activities we set out in our business plans are providing a real difference to our customers and stakeholders. We have been tracking customer satisfaction, brand perception, and value for money, amongst other things, for more than 15 years, and we regularly use information from this survey to put improvement activities in place. All scores are collected on a 0-10 scale, with 7-10 scores considered to be strong scores. Although scores can fluctuate month to month, annual scores (12 months to August 2023) remain high with 88% scoring 7-10 for satisfaction, 83% for perception and 78% for value for money.

In addition, we have our 'Customer Voice' satisfaction tracking tool. This is a broad-reaching survey sent to customers who have interacted with us, whether this is a phone call relating to a billing query or a visit from a technician after an issue at their home. Customers are invited, via SMS, to complete a short browser-based survey on how satisfied they are with the service. We receive interesting insights from these, for example, through these surveys, we know that dissatisfied customers tend to mention bills, payment issues, missed appointments/calls and recurring problems as reasons for their dissatisfaction. As a result, we actively work to improve in these areas – an example being the work we are doing to support those who are financially vulnerable. Despite this feedback, we have strong satisfaction scores, with our annual score (to September 2023) at 4.51/5.

Following the introduction of C-MeX, D-MeX, R-MeX surveys, our customer experience team also analyses the quarterly data shared by Ofwat to establish action plans and make targeted decisions on how to improve

the experience our customers and stakeholders have with us. We have a dedicated Insight team that supports the business in identifying research opportunities, connecting individuals with research experts, and understanding customer requirements across all types of projects. Our Insight team chairs our internal customer and stakeholder task and finish group meeting, which aims to bring visibility of our customer and community research to key individuals across the business.

Group engagement

We hold regular customer and stakeholder forums, including developer customer forums, market forums, retailer contract meetings and NAV contract meetings, which give us qualitative information on where we can improve our service. These forums are held outside of the business planning process, as part of our ongoing engagement with our customers and stakeholders, but we make sure that key strategic improvement areas are fed into our business plan where appropriate.

Stakeholder engagement

Our stakeholder engagement team proactively engages with key stakeholders across our region, including councils, mayoral authorities, Members of Parliament, community groups, and environmental advocacy and conservation organisations. This programme of rolling engagement provides insight on issues and priorities to be included in our business planning process.

During our stakeholder engagement, we regularly identify areas of shared interest which can form the basis of partnership working. As well as enhancing benefits from existing projects, these partnerships provide an improved understanding of water sector regulation and enable input into our future plans.

Strategic partnerships

Environmental organisations with whom we work in partnership at a strategic level include the National Trust and local and national Rivers Trusts. Our partnership with Rivers Trusts includes representatives of three regional Rivers Trust organisations and the national organisation. As well as holding meetings with strategic partners to understand regional priorities, we have also engaged with environmental groups through the national coalition, the Wildlife and Countryside Link (WCL). We met with members of the coalition, examined its Blueprint for PR24 manifesto, and provided a formal response to the ambitions within that manifesto which can be found in the Yorkshire Water response to the Wildlife and Countryside Link's Blueprint for Water appendix. This includes examples of how we have then responded to these ambitions within this business plan. For example, our focus on WCL's ambition to invest in nature-based solutions can be seen from our WINEP plan optioneering which favour catchment and nature-based solutions where feasible, which we found through our customer engagement is also supported by our customers.

Our partnership working is particularly advanced around flood mitigation. We understand that increased regional resilience provides a positive impact for our customers and stakeholders, as well as helping us to maintain our assets. We therefore participate in multiple partnerships, such as the Calderdale Flood Partnership Board, West Yorkshire Flood Innovation Programme, and the Connected by Water partnership, which includes all local authorities in South Yorkshire. Working with these partnerships, we look to secure wider benefits from our long-term investment, as well as ensuring positive operational relationships.

Our most developed flood mitigation partnership is the Living with Water (LWW) partnership, which includes East Riding of Yorkshire Council, Hull City Council, the Environment Agency, the University of Hull and Yorkshire Water. More information on this partnership and how it feeds into our business plan can be found below.

Interest groups

We also regularly engage with interest groups across the region, including organisations with localised concerns such as the Friends of Bradford Beck and the Ilkley Clean River Group. We also speak with groups and organisations with an interest in a specific topic, such as rural land management, outdoor swimming or animal welfare.

A good example of this process is the consultation that has taken place with stakeholders in the River Wharfe catchment which has supported the development of our investments plans.

For more information on this partnership, see Chapter 8 Section 13

Regional partnerships

While some of our engagement outlined above is carried out on a localised or subject-specific basis, we also work with several region-wide partners. These include the Yorkshire Climate Commission and the Yorkshire Coast Bathing Water partnership. We also engage with 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. The Yorkshire Leaders Board has played a key role in the creation and examination of our business plan, and more information on this work is included in **Section 6.3.4.**

Examples of how our stakeholders have input into our business plan are provided below:

North York Moors National Park Authority (NYMNPA)

During regional engagement, the NYMNPA and Yorkshire Water discussed a project to improve water quality on the River Esk, with the intention of supporting a population of freshwater pearl mussels which are under threat of extinction. Under existing guidance, this project to improve water quality may not have been prioritised but given our commitment to help our natural environment thrive and support biodiversity across our region, following our in-person engagement with NYMNPA, we have included the project within our plan. Our ambition is to target phosphorus removal at Danby wastewater treatment works, reducing nutrients and sediment inputs which might otherwise be a threat to these endangered mussels. A copy of a letter from the Chief Executive of the NYMNPA supporting these plans is provided in the Letters of support for our PR24 Business Plan appendix.

Engaging with community campaigns for bathing water status

We take a proactive approach to engaging with local campaigns for bathing water designation. In two areas within our region, the River Nidd at Knaresborough and the River Wharfe around Wetherby, we have included additional investment in overflow reduction in response to local campaigns, which evidence local support for this. Letters from stakeholders supporting the inclusion of these sites can be found here.

Living with Water (LWW) flood mitigation partnership

The Living with Water (LWW) partnership has resulted in the development of plans to improve the management of surface water in the catchment of Hull and East Riding.

LWW began in 2017, and the collaboration has resulted in the creation of a 'blue-green' nature-based plan. This catchment-scale approach for surface water management in Hull and the surrounding area addresses the significant flood risk, and ultimately reduces spills to the river, through surface water disconnection. Given the specific pressures on our network in Hull, we have included £25 million of investment within our plan to effectively manage flood risk in the area. We propose more sustainable, long-term flood alleviation solutions, such as Sustainable Urban Drainage Systems (SUDs). For more information on our LWW investment plans, see our enhancement case here.

As summarised above, our stakeholder engagement has been extensive, and we are pleased to share letters of support for investment within our business plan from various key stakeholder groups, including the Yorkshire Leaders Board.

These can be found in our **letters of support appendix**

'Your water, your say' customer challenge sessions

Alongside all other water companies in England & Wales, we hosted an initial 'Your water, your say' challenge session in July 2023. We invited our customers and stakeholders to hear about our proposed business plan, ask questions and highlight any issues that they wanted us to focus on. We made sure to extend the reach of this session as far and wide as possible, by promoting it to through our website and social media channels, within our own online community, but also going the extra mile to encourage our retailer and NAV customers to invite their customers.

While they may not be direct customers of Yorkshire Water, the majority of their bills relate to the services we provide them and they are part of our community, enjoying the Yorkshire environment like any other customer. Therefore, just like household customers, we value their views. Following the event, we ensured that the key issues and concerns raised during the session had been reflected in the plan by engaging with colleagues across the business to make them aware of customer and stakeholder priorities for the future. For more information on our summary of 'Your water, your say' event appendix. For further detail, including the minutes detailing the challenges, see our website. We look forward to inviting our customers and stakeholders to our next challenge session in November 2023.

6.3.2 Our research partners

We partner with a variety of external research experts that carry out studies with customers and stakeholders on our behalf. This research helps inform our business plan and allows us to focus us on areas of importance for more immediate action. Our research partners are independent experts and are members of relevant research bodies (Market Research Society and/or Social Research Association). For more information on our research partners, see here.

6.3.3 Using innovative research and engagement methods

As a business, we are committed to continually exploring ways to do things better. Only by thinking differently will we deliver innovative solutions that challenge and improve the way we operate, both now and in the future. Innovation is one of the key driving forces of our business, and features heavily in our LTDS, from the innovative technology we deploy to reduce leakage, to the data and technologies that enable us to tailor our service to our customers. It allows us to deliver more while keeping costs down. It will also help us to improve our level of service into an increasingly unpredictable future, particularly considering the challenges of climate change, population growth and economic pressures.

Being innovative in the way we approach our customer and stakeholder research is important to us. Our goal is not to innovate for innovation's sake, but to be able to engage with our customers better. We aim to:

- Help our customers better understand the topic in hand
- Reach a deeper level of understanding, beyond what our customers are telling us
- Allow for more meaningful engagement
- Unburden our customers by making it easy for them to process information
- better forecast the impact of bill changes on those below the water affordability threshold using our customer research.

To achieve this, we have used a range of innovative methodologies, including:

- **Using innovative tools to delve beyond the conscious:** We have used implicit reaction tools to measure non-conscious information about customers' views towards us. An example is measuring reaction times. This approach can be particularly useful when researching sensitive topics, such as Trust. In our online community study on Trust, participants were shown several organisations, one at a time, and asked if they would consider them trustworthy. They were given a five second window to indicate if they associated the organisation with trust. The tool captured response rates to 0.000 of a second, and therefore revealed which organisations are instinctively associated with trust. The reaction time and percentage of those associating each organisation with trust was then calculated to produce a bespoke quadrant of results. See Slide 10, Trust research, in our customer research appendix.

For the findings of this study see Section 6.4

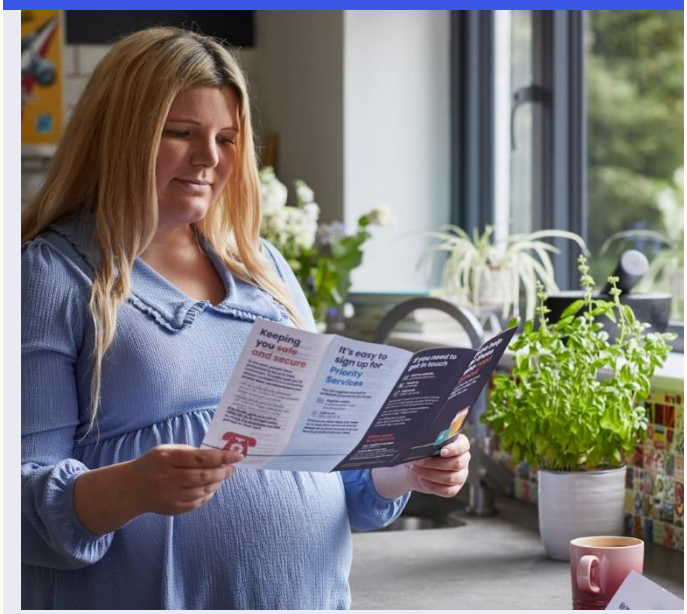
- **Discourse analysis innovation:** A further innovative technique we have used is discourse analysis (DA) to extrapolate more insight from the data. We deployed DA in both our 'Understanding the Impact of Covid Research' [Slide 8] and our

'Valuing Water' study [Slide 5] in our customer research appendix. As a tool, DA bridges the gap between what people say and what they really mean, analysing the use of language to access underlying perceptions, feelings, and intentions in response to questions, and situating language into the context of a wider social meaning. We used the expertise of Dr Nick Gadsby from 'The Answer Insight' to undertake the DA exercise. He listened to a selection of qualitative research recordings and provided a summary of additional insights that would not have been uncovered from more traditional qualitative analysis techniques. This allowed us to really focus in on the key issues faced by customers and stakeholders in these challenging times.

- **Gamification:** Our Living with Water programme involves investing in projects across Hull that tackle surface water flooding schemes. As part of our engagement, we created a bespoke sustainable urban drainage system (SUDs) game. When in the community with our customers testing approaches for reducing flooding in Hull, our team use this interactive game to show options for flooding resilience. This allowed customers to 'play' with solutions at street level and understand the impact of various schemes in terms of look and feel.
- **Water affordability tool calculator:** Through our affordability & vulnerability study in our customer research appendix, led by QA Research, customer survey information was used to develop a predictive poverty impact simulator to understand the impact of changing economic factors, such as inflation and bill changes, and identify how many more (or less) people may fall below the water affordability threshold as a result. By using customer demographics, such as age, number of dependents, water expenditure information and sentiment towards finances in the future, a statistical model was created to identify key drivers for the water affordability threshold which has then been translated into a simulator tool. Our team are using this simulator to model the impact of changes for each key driver, such as bill increases, so that we have full visibility of the impact on our customers. We will use this on an ongoing basis to understand the impact of changes in customer circumstances, whether that be linked to our bill or external factors such as inflation.

6.3.4 Insights are being used now

Example 1: Customer Measure of Experience (C-MeX) analysis



As part of Ofwat's introduction of C-MeX in 2020, water companies are financially and reputationally incentivised to provide our household customers with excellent levels of service. The C-MeX measure comprises of two surveys:

1) The customer service survey which provides insight into the service that residential customers have had during their recent contact with their water company.
2) The customer experience survey, which provides a view from the community on their perception and experience of their water company.

Using data from these surveys, water companies are placed in league tables each quarter and outputs from the surveys are shared with water companies, with a summary and report published annually on Ofwat's website here.

This ongoing engagement is carried out by a third party and the survey output is extremely valuable to us. Using this data, and other insights gathered by us (customer perceptions/satisfaction tracker, customer contacts etc.), we build robust action plans that drive improvement in the short, medium, and long term.

Example 2: Providing financial support to our customers

Listening to our customers has confirmed that affordability is a growing concern for many.

Our June 2022, Valuing Water research in our customer research appendix found that affordability was the biggest concern amongst households, with 61% of household customers expecting their financial situation to worsen over the following 12-months [Slide 24, Valuing Water] and 18% saying that they already could not afford their water bill [Slide 29, Valuing Water] We re-tested affordability in 2023 through our affordability & vulnerability research (also in our customer research appendix) using qualitative and quantitative methods across a total of 3,872 customers, including customers on financial schemes and those registered to priority services. We found that around half of customers in our region are struggling financially [Slide 11, Affordability & Vulnerability], with those on financial schemes being hit the hardest. While 84% of customers reported that they were still able to pay their water bill, there was growing concern for the future across a third of our customers [Slide 13, Affordability & Vulnerability].

Rather than wait for the 2025-2030 period to start making changes, we conducted a study exploring customers' desire to continue contributing to social tariffs, and the appetite to increase their contribution of support. Results were conclusive: most customers were happy to contribute an additional £2 per year to support those who are struggling to afford their bills.

Because if it helps people with their bills then that's a good thing, we all need to help each other.

6.4 Our approach to business plan customer research

Our research programme is vast, taking learnings from collaborative research; conducting company-specific research studies; carrying out regular testing via our online community studies, our day-to-day customer engagement via Customer Voice, social media and customer contacts; and also taking feedback from The Forum and Yorkshire Leaders Board. We have conducted over 80 bespoke projects, each with a specific objective to inform our future plans. Our studies ranged from understanding the long-term impact of Covid-19 on our customers to getting their opinions on government consultations to inform our position on various issues, for example, plastic wet wipes. Between April 2020 and July 2023, we have had over 54,000 quality conversations with our customers through surveys, focus groups and in-depth interviews.

For more details on the variety of our engagement activities see Section 6.3

The water sector is making a move towards a more collaborative approach for customer research within the business planning process, as can be seen by the customer preferences research undertaken by Ofwat and CCWater. We have also been working with other water companies, where possible, on elements of our customer and community engagement. An example of this is our Water Resources North engagement, and engagement we carried out with our regional partners, Northumbrian Water and Hartlepool Water. We also engaged with retailers alongside Thames Water, United Utilities and Market Operator Services Limited (MOSL) – the aim of this was to explain the PR24 methodology, frame the upcoming challenges, and provide useful input into the Ofwat framework. Collaborating with others on customer engagement is vital to achieve success in the sector and region.

6.4.1 Alignment to Ofwat's PR24 customer engagement policy

We have adopted the customer engagement standards and principles, as set out by Ofwat, to ensure that our engagement output meets the published requirements and provides us with vital information on how to inform our business plan and day-to-day operations.

Information on how we have aligned to Ofwat's customer engagement standards, including examples where our research provides evidence of this, is included in the alignment with Ofwat's customer engagement standards.

We have also assessed our alignment with Ofwat's customer engagement principles appendix.

6.4.2 Reaching a wider audience through our business plan engagement

We are mindful not to only focus our customer engagement activities on bill paying household customers, as we believe this would provide a limited view. It would exclude those who pay bills indirectly, use our services but do not have a say on the bill or those who will become direct bill paying customers in the future. So, we wanted to go further. The example below illustrates how our research covered a diverse customer base.

Example 1: NAV Research: 'Ways of Working' Short-term and future needs in our customer research appendix

We carried out a series of in-depth interviews with active NAVs in our region to understand how we can support their short-term and longer-term needs. It was also an opportunity to understand how we can develop a strategic partnership with NAVs to benefit all customers in Yorkshire.

In general, our NAV customers' perceptions of Yorkshire Water were varied, with responses from us being proactive and pragmatic to wanting Yorkshire Water to take a lead in the market on consistency and transparency.

NAVs are telling us that the key areas for them in the short term are to continue to be proactive and responsive, to work closely on projects to manage issues or frictions, work together to improve Water Quality data sharing and to continue to develop closer operational communications, so NAVs can support their customers better during events.

For the longer term, NAVs are looking for a collaborative approach to data sharing and would like to work more closely with our operational teams to support water efficiency initiatives and manage incidents. It was also highlighted that our incumbent bulk supply tariffs for the 2020-2025 period have been bespoke, and there is not standardisation across the sector. We will continue to work with the Ofwat led Bulk Charges Working Group to develop common approaches to the setting and transparency of bulk charging arrangements for NAVs.

6.4.3 How our business plan research is scrutinised and challenged

Research alone does not validate our plan. To provide opportunity for scrutiny and challenge before feeding into the plan, we adopted our three-point check and challenge approach.

Triangulation

As part of the business planning process, we have built a triangulation database in our customer research appendix. It details our high-level company vision and outcomes, which map to different customer engagement research projects, and provides assurance that the areas we are focusing on have multiple sources of customer data. For example, one area of key interest for our 2025-2030 business plan is the use of combined sewer overflows (CSOs). We have triangulated views on this from multiple sources, including from online community research studies, DWMP testing, our valuing water research and Ofwat's collaborative research on customer priorities. As a result, we concluded that this area is supported for enhanced funding and therefore have included over £1 billion of investment in the next five years to investigate and improve CSOs. While the bulk of this investment is focused on over 211 of our priority CSOs, £300 million is accelerated funding to tackle CSO impact on coastal bathing waters. 78% of household customers found this plan acceptable following Ofwat guidelines and 79% through our own AAT study. Our triangulation process has been extremely beneficial in validating output from our research studies, and while it is not fully mature, we are committed to continue improving its application to our customer insights.

Assurance forums

The Yorkshire Leaders Board (YLB) is made up of council leaders and chief executive officers from each of the regional local authorities, as well as regional Mayoral Combined Authorities. We have engaged with the YLB on important regional topics such as flood resilience, and we are a member of their flooding sub-group. In 2021, we instigated a major project with the Yorkshire Leaders Board to ensure that our business planning for PR24 meets the needs of the region, as determined by the councils and mayoral combined authorities.

Since 2021, engagement with the YLB has taken place at two levels: firstly, with the Yorkshire Leaders Board Executive which is made up of council leaders, mayors and chief executive officers; secondly, with a regional roundtable made up of subject matter experts from each authority. The regional roundtable has allowed in-depth discussions on key topics within the plan. Updates on regional roundtable discussions were provided to the main Yorkshire Leaders Board, as well as updates regarding wider business planning and performance.

We consulted with the YLB at several stages during the business planning process, including at the very beginning, to understand local authority priorities for Yorkshire Water's business plan. In 2021, representatives from the local authorities stated that their priorities for the business plan were to ensure it meets the unique needs of the region, allowing increased regional resilience; supports partnership working (including existing flood mitigation partnerships); and regional growth. At a July 2022 regional roundtable on Ofwat's Draft Methodology, these aims were reaffirmed, and later formed the basis of a response to Ofwat's consultation, which was submitted by the YLB. The response can be found in our engagement with YLB appendix.

Other regional roundtable sessions included river water quality, affordability and vulnerability, and our draft business plan. Sessions were also hosted on our draft Drainage and Wastewater Management Plan and draft Water Resources Management Plan. Due to the importance of these subjects – and the opportunity for collaboration – there were two occasions for local authorities to contribute. The information gathered from the regional roundtable sessions was important for understanding local authority priorities on issues such as economic growth and aligning key areas of our plan. We were also able to ensure local issues and priorities were included within our planning, as contributed by the local authorities.

Our engagement with the YLB continues. The primary areas of discussion and the timeline of this engagement can be found in our summary of engagement with Yorkshire Leaders Board appendix. After our extensive engagement and action to align elements of this plan with the strategic and tactical priorities of the YLB, we are pleased that the board has written a letter of endorsement for investment within our plan, which can be found in our letters of support for our PR24 Business Plan appendix.
The letter again highlights subjects of Importance to local authorities in the region and supports investment in projects such as Living with Water, and action to support net zero.

Yorkshire Forum for Water Customers (The Forum): Since their inception in PR14, regular engagement with our independent challenge group, The Forum, is part of our business-as-usual and accelerates in business planning periods. Ahead of PR24 the Forum terms of reference were updated, giving them a more in-depth role on matters related to customer engagement and research, providing independent assurance to the Board of Yorkshire Water on these matters. Throughout the development of our 2025-2030 business plan, they have been consulted on the majority of core PR24 research studies. We always welcome their views and challenge on our approach, always helping to make our studies more meaningful and understandable to our customers.

Figure 3: How our business plan is scrutinised and challenged

A summary of the topics discussed and log of challenges posed by the Yorkshire Forum for Water Customers and our responses to these challenges can be found here in Yorkshire Forum for Water Customers engagement timeline and log of challenges.

6.4.4 Our approach to incorporating collaborative research

We understand the benefits of carrying out sector-wide collaborative research, allowing more effective comparison across water companies. However, we are also conscious of validating such research with our own data, to truly understand the synergies and potential differences for our own customer base.

Using the Ofwat and CCWater customer preferences research carried out in April 2022 we know that the most important service areas for customers are water interruptions, taste, smell and appearance, do not drink notices, internal sewer flooding and external sewer flooding. Our own Valuing Water research in our customer research appendix presented a similar list of priorities to a range of our customers and stakeholders.

Our top six customer priority areas according to our valuing water research (in order of most important) are:

1) Providing a continuous supply of water that is safe to drink
2) Keeping bills affordable for all
3) Preventing sewerage from entering homes and businesses
4) Preventing pollution of rivers or streams from sewage pipes
5) Reducing the release of untreated sewerage mixed with rainwater into rivers and streams during times of heavy rainfall
6) Treating wastewater to a high standard to ensure good quality water in Yorkshire's rivers and beaches

The direct comparison between our customer priority research and the Ofwat/CCWater customer preferences research is set out below.

Priority service area as defined by Ofwat in Customer Preferences Research	Customer priority rating based on Ofwat/CCWater's preferences research	Customer priority rating based on Yorkshire Water's Valuing Water research	Corresponding priority service area as defined in Valuing Water research
Water interruptions	High	Medium	Preventing interruptions to the supply of water (e.g. planned works, burst pipes, leaks and outages) that cause problems ranging from low pressure to no water
Taste, smell and appearance	High	High	Providing a continuous supply of water that is safe to drink
Do not drink notices	High	High	Providing a continuous supply of water that is safe to drink
Internal sewer flooding	High	High	Preventing sewage from entering homes and businesses
External sewer flooding	High	Medium	Preventing sewage entering gardens and public spaces from pipe collapses or blockages
River water	Medium	High	Three of our river impact measures sit in the top 6 out of 20 priorities (preventing pollution, preventing storm overflow use, improving discharge compliance)
Pollution	Medium	High	Preventing pollution of rivers or streams from sewage pipes
Bathing waters	Low	High	Treating wastewater to a high-quality standard to ensure good water quality in Yorkshire's rivers and beaches
Affordability	Medium	High	Keeping bills affordable for all

Alignment | Some misalignment | Significant misalignment

Table 2: Comparison of Ofwat/CCWater collaborative research on customer preferences and Yorkshire Water's priorities research

Carrying out additional research on customer priorities for our own customer base has been useful in triangulating what is most importance to customers. We can see some definite synergies in the two research studies, as can be seen above, but we also acknowledge that there are some differences. There are some considerations to bear in mind when looking at this. The methodology of the two studies is not identical and the studies were not carried out in the same time period. In addition, while similar performance commitments were tested, the structure of the survey, the language used, and the customer base differed.

An example of how the two research studies differ is across the priority of bathing waters. The Ofwat/CCWater research was explicit on the area of bathing waters, whereas our own research combined the importance of water quality in rivers and beaches. While this is still applicable to bathing waters, only a small number of rivers are classified as designated bathing waters and this may have affected the overall response to this service area.

6.5 Linking our research into our plan

Our customer research programme has been wide-ranging, spanning several engagement methods and customer types to ensure we gain as much insight as possible to inform our business plan for 2025 - 2030. Our business plan is the culmination of our extensive engagement, and the diagram below illustrates what we have carried out since 2021 alone.

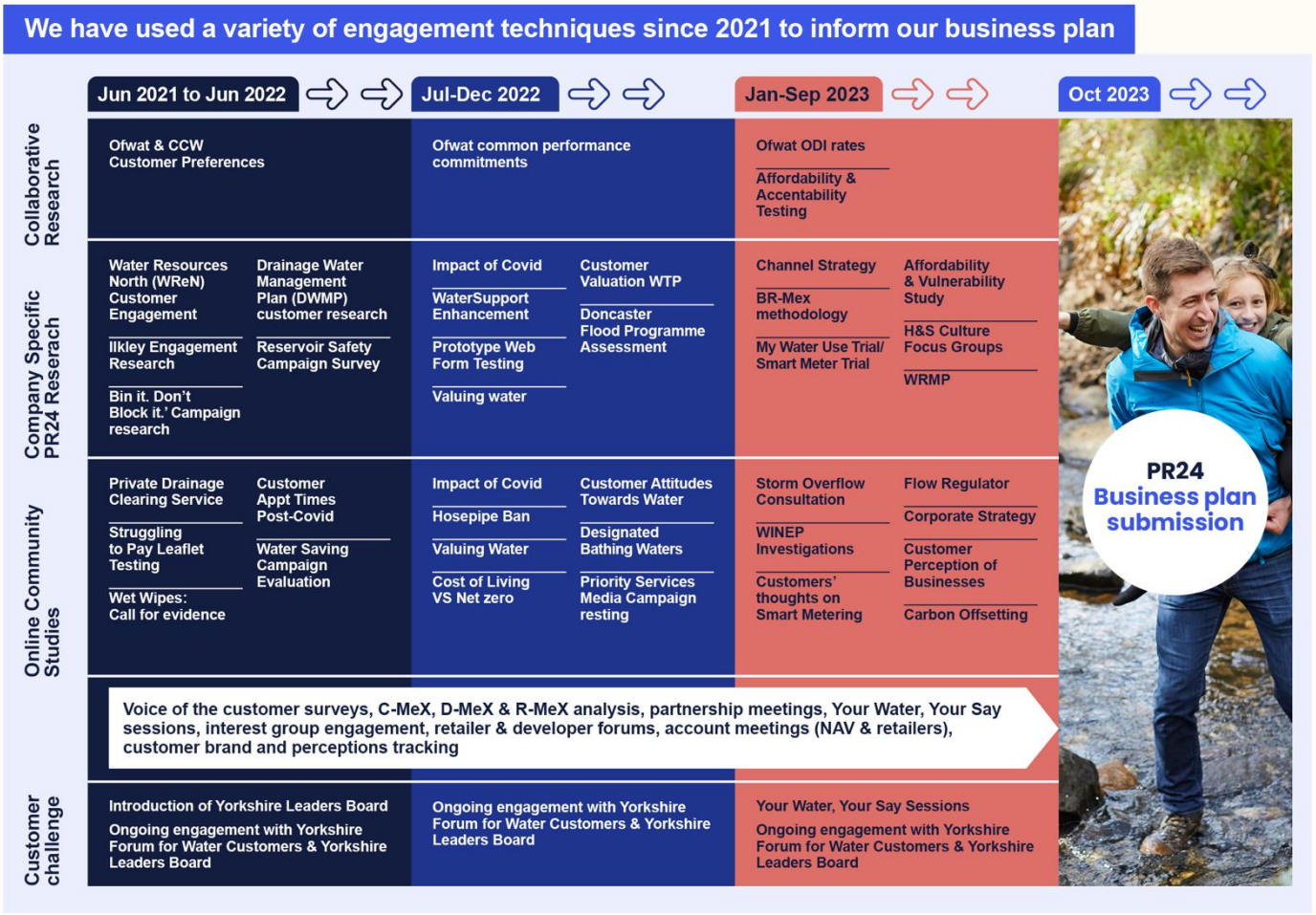


Figure 4: Our engagement techniques

6.5.1 Why it is important that we act on our engagement

As a responsible organisation, our customers and communities trust us to act on the information and feedback that they provide us with. A series of societal events, from the cost of living crisis to Brexit and the Ukraine war, have converged to create an environment of low consumer trust with large organisations, see Slide 5, Yorkshire Water Trust report in our customer research appendix. Research shows that consumers feel that they have been hit hard financially and are therefore sensitive to signs that companies are not looking out for their best interests, see Slide 6, Yorkshire Water Trust Report in our customer research appendix. In March 2023, we carried out a study on trust in the water sector, via our online community.

We scored comparatively well – trust in Yorkshire Water is higher than the sector overall (50% trust Yorkshire Water vs. 35% for the water sector as a whole). Despite challenges facing the NHS, it remains top of the list for most trusted organisation for customers (80%) followed by education (58%) and charities (55%). Below this sit banks (28%), telecoms (22%), railways (21%) and government (15%). The energy sector sits bottom of the table (12%).

The finding that we score higher than the water sector overall is consistent with findings by CCWater that

individuals associate higher levels of trust with their own water company, compared to the wider water industry (see CCW research into perception and trust of water companies). Although our trust levels look comparatively positive, as a sector we need to continue to do more. We want to continue to build a positive and trusting relationship with our customers and community.

6.5.2 How we have responded in our business plan

Conversations with customers and stakeholders underpin our plan. Here, we summarise some key decisions we have made following our engagement with them.

How we are profiling bill impacts of our investment decisions

We know, especially in this current economic climate, that any increase in bills needs to be carefully and sensitively addressed, with consideration for how we can spread any impact across multiple years.

We have carried out research with our customers to understand preferences for how bill increases, which will secure a better service for our customers, should be profiled across future years.

In July 2023, we carried out customer engagement with 835 people, split across our 'Your water' online community, as well as a boost from third-party panel respondents (see Billing Profile in our customer research appendix). We tested three bill profile options, which would cover the period 2025-2030, to understand which was most manageable for our customers.

- **Option 1:** Spread the cost evenly over the 5-year period. This would represent a step up in bills in 2025 but the bill would remain the same beyond this up to 2030 ["Average/Flat"]
- **Option 2:** Spread the cost to reflect the money that we will spend on improvements during that time. This would represent a slightly smaller step up in bills in 2025 and a slight increase across the five-year period up to 2030 ["Natural"]
- **Option 3:** This would represent a much smaller bill increase from 2025 followed by a rising bill which increases year-on-year up to 2030 ["Rising]

Our research told us that overall customers had a slight preference for a natural bill profile, lessening the initial impact of bill increases in the early years of the 2025-2030 period. For our customers in financially vulnerable circumstances, we are offering more financial support than ever before.

For more details see Chapter 2

The views of our customers have informed our decision to adopt a natural bill profile in AMP8.

Supporting customers in vulnerable circumstances

One area which is an extremely prominent challenge area for many is affordability. Having engaged our customers on this topic in June 2022 see Valuing Water and again in 2023 Affordability and acceptability testing – Ofwat and YW Report, Affordability & Vulnerability Research Debrief in our customer research appendix, we know that our customers are concerned about how they will be able to pay their water bill in the future. We also know from our Covid-19 research Impact of Covid Research Report in our customer research appendix, that asking customers to help contribute financially across some areas, such as the environment, may be difficult [Slide 132].

Our affordability and vulnerability research provided useful insight into our customers views on affordability and supporting those in difficult financial circumstances. The research uncovered several areas where we are missing the mark with regards to supporting our customers. You can see how we are responding in our future business plan below:

What our customers suggested	What we are doing
Develop additional support for customers with 'below average' bills who may otherwise be excluded from financial support	We are evolving our social tariff so that it is banded based on income rather than average bill value. By 2030, we aim to be supporting 90,000 customers with our social tariff each year.
Build a more holistic debt management approach for those that need it	Alongside our debt schemes offered to these customers, we will be signposting people to external debt support and promotion of support through more than one financial support scheme if applicable. Additionally, we will then offer our social tariff and/or the installation of a meter to reduce our customers' future bills.
Extend our priority services reach	We will use third-party information to help extend this support to those who need it, but who otherwise may not have registered.
Collections letters to customers	The research suggested that letters sent in 'red' can be disengaging for customers who are struggling with debt. Customers told us these letters can increase worry and debt avoidance. Listening to our customers, we have completely removed 'red' letters from our debt recovery processes. Instead, our customers will continue to receive letters which include more supportive language and signposting to help, encouraging customers to engage with their debt and come to Yorkshire Water to discuss support.

Table 3: Meeting the needs of our financially vulnerable customers

As indicated in **section 6.3**, we have already put support in place for customers in these situations, but it is also a key feature of this business plan.

Financial and non-financial support schemes

Our aim is to make accessing any financial and non-financial support from the Company as simple as possible. Customers can face barriers accessing support services, particularly with filling in forms and returning documents to us. We have listened to our partners and stakeholders through our Inclusive Service Expert Evaluation Performance Commitment Research in our customer research appendix as well as through engagement with the Yorkshire Leader's Board, and we want to improve these processes. As part of this business plan, we will improve the application processes for financial support schemes across all contact channels, making it easier, quicker, and more accessible for customers and timelier and more efficient for us. In fact, we had already made headway on this – we have significantly reduced the time it takes to get on to one of our financial schemes by allowing customers to submit photographs of documents to evidence their requirements.

We will also simplify the application process for our priority services register (PSR). In addition, we will introduce further data sharing opportunities with third party organisations so we can add customers to our PSR without them needing to contact us.

A key area of feedback from this research was that we should do more in the community, and with partners, to respond to our more difficult to reach customer types. In response, we are continuing and expanding our Community Engagement activity with external organisations across the region, who will provide financial support to more than 12,000 customers each year on our behalf. These organisations can reach customers who may need help the most, but we are struggling to reach them through our traditional routes.

For more information on how we are supporting customers in vulnerable circumstances, see **Chapter 2.**

Social tariffs

We have always been proud to offer our customers support via our social tariff, WaterSupport. This scheme enables targeted support for eligible households to reduce their water bills. WaterSupport has helped around 54,000 householders by providing a reduction in annual bill payments for eligible customers. Our social tariffs are funded through both customer bills and from business funded financial investment. Customers contributed £4 per year to social tariffs and given the change in landscape, we felt this should be reviewed. In October 2022, we carried out customer research into WaterSupport, which tested customer views on social tariffs generally, but also their views on WaterSupport more specifically WaterSupport Enhanced Contribution Report]. We found that 64% of customers were willing to contribute an extra £2 towards a social tariff, bringing our total cross-subsidy to £6 (Slide 20, Water Support Enhanced Contribution Report) in our customer research appendix – we implemented this level of support up to 2025.

For the 2025-2030 period, we wanted to go further and do more for customers in terms of financial support. Indeed, many indicators that 'things were getting worse' were a key trigger for this – significant increases in the numbers of customers asking for support and our research telling us that more, and also new customers are struggling to afford to live comfortably. We decided to undertake a new wave of WaterSupport enhancement research, the results of which would inform the PR24 business planning period. In July 2023 we launched a regionally representative survey, following guidance from CCWater and endorsed by The Forum. The results told us that 51% of customers supported an additional uplift in their cross-subsidy to £8, bringing our total customer contribution to £14 per year. More can be read about this research in our WaterSupport PR24 Enhancement report in our customer research appendix.

In addition to customers' willingness and generosity to contribute to customers in vulnerable financial circumstances, we are committing to continue Yorkshire Water's funding towards the social tariff. We are also increasing our contribution from £2 million to £2.5 million per year up to 2030. Following our customer recommendation in our Affordability and Vulnerability study, we aim to maximise customer willingness to pay by distributing it in a more tailored way, using a banded approach with three different tariff values. This should help more customers obtain an affordable bill.

For more information on how we are approaching supporting low-income households in the 2025-2030 regulatory period, see **Chapter 8** and **Chapter 2**.

Making decisions on operational priorities based on our customer feedback

While our operational priorities need to consider our statutory obligations, we have made sure to incorporate our customer and stakeholder insight in our business plan investment decisions.

We know, through multiple research studies, that our customers highly value the following operational areas:

- Providing a continuous supply of water that is safe to drink
- Preventing sewage from entering homes and businesses
- Enhancing the quality of water within our natural environment

We have used this insight to make decisions on where we should propose additional investment cases outside of those which relate to our statutory obligations, as well as decisions on targets ambition across AMP8.

For example, we know that internal sewer flooding is one of the worst things we can put a customer through. Indeed, they understandably tell us that it is a violation, causing disgust and concern regarding the health implications (see Ofwat's Yonder Preferences research). We are also aware that we can do better in this area, having missed our PR19 targets in the first three years of this current regulatory period. As such, we have set ourselves a target to be upper quartile performers in this area, improving performance by 22%. We will do this by prioritising several activities, including:

- Installing customer sewer alarms and main sewer sensors
- Targeted use of CCTV and other techniques (for example, radar) for sewer investigations in high-risk areas
- Proactive and optimised sewer cleaning driven through data insights
- Targeted behavioural campaigns
- Working in partnerships to improve flood resilience

Other examples of how we are responding to our customer insight through activities proposed within our business plan are provided in the summary table at the beginning of this chapter.

For further information on what our plan will deliver see Chapter 8

Setting ourselves stretching but achievable performance targets

Our extensive customer engagement has given us significant insight on what is important to our customers. As such, we have been able to target specific areas to focus, both for our next business planning period, but also as part of our LTDS. Our performance commitments are ambitious but achievable and aligned with what our customers tell us are priorities. Examples of these performance targets include:

- 26% reduction in interruptions to supply
- 35% reduction in spills from storm overflows
- 22% reduction in the number of internal sewer flooding incidents
- 51% improvement in pollution incidents

For more information on what we plan to achieve across the 2025-2030 period and how our customer insight and feedback shaped these plans, see **Chapter 8.**

How ODIs link to our investment decisions

Given the collaborative customer preferences research carried out by Ofwat and CCWater proved unsuccessful at obtaining Outcome Delivery Incentives (ODIs), Ofwat then applied a top-down approach to ensure companies had ODI rates to use for business planning. A summary of this approach can be found in Ofwat's Using collaborative customer research to set outcome delivery incentive rates. Through our own Valuing Water research, in our customer research appendix, we have carried out a cross-check on the 'high, medium and low' customer priorities. These are priorities Ofwat has used in allocating percentages of Return on Regulatory Equity (RoRE) at risk to each performance commitment (PC). Since the customer priorities from our research do not materially differ from Ofwat's, as per our assessment above, we have used the Ofwat top-down ODI rates to analyse the impact that our performance has on our PCs and made investment decisions accordingly.

Customer research appendix

For more information on how we are delivering outcomes for our customers see Chapter 7

Chapter 7
Performance commitments and outcome delivery incentives

We are absolutely focused on delivering the best service for our customers and have used insight gained from our customer engagement to propose improved performance in the provision of safe water and a focus on the environment.

As one of only three water and sewerage companies in England and Wales in the 2020-2025 period to build a voluntary contribution into our plan to support customers in financially vulnerable circumstances, we are increasing this contribution to help reduce bills for those most in need.

Customer protection is provided through our proposed price control deliverables, to ensure we are delivering investment on time, and compensating customers where we fail to do so.

Chapter 7
Performance commitments and outcome delivery incentives

Supporting appendices

Detailed performance commitments

7.1 Overview

As shown in Figure 1, we have set out six outcomes that encompass how we aim to achieve our vision of 'A thriving Yorkshire: right for customers, right for the environment'.

The purpose of this chapter is to set out our approach to performance commitments (PCs) and our proposed performance commitment levels (PCLs). PCs are metrics of the service we deliver for our customers and the environment. Our package of PCs for the next five years will hold us to account to deliver improved outcomes where it matters most.

In PR19, companies proposed a series of common and bespoke PCs. We developed a package of 44 PCs for AMP7 (for the period 2020-2025) to align with our ambitions and challenge us to change the way we work. These were designed to meet both customers' expectations and the complex long-term challenges that we face as a business.

Since 2020, we have improved our performance in line with the PCs agreed at PR19, but still not as much as we would have liked to. Within our 2022/23 Annual Performance Report (APR) we have reported meeting the targets of 22 of our 44 PCs.

In April 2023, we published a performance action plan covering areas where we had not met targets. We have faced a difficult external environment, including cost pressures on energy and chemicals, as well as the unprecedented dry and hot weather in 2022 followed by a freeze-thaw event. These factors have impacted our ability to improve performance in a sustainable and efficient way.

Despite this, we have achieved improvements across areas of high importance to our customers; we continue to bring down leakage, reduce the incidence of sewage in homes from internal sewer flooding, and mitigate our impact on the environment. We know, however, that we must accelerate our performance across more areas, particularly where it matters most to our customers.

Through efficient and innovative working, we are setting ourselves up to deliver sustainable performance improvements in the next five years and beyond. As discussed in **Chapter 4,** several significant business and internal programme changes have been undertaken within this regulatory period, including:

- Our customer-supported refreshed company strategy (presented in our 2022/23 APR), which focuses on our customers and the environment and sets out our ambition for the 2023-2033 period.

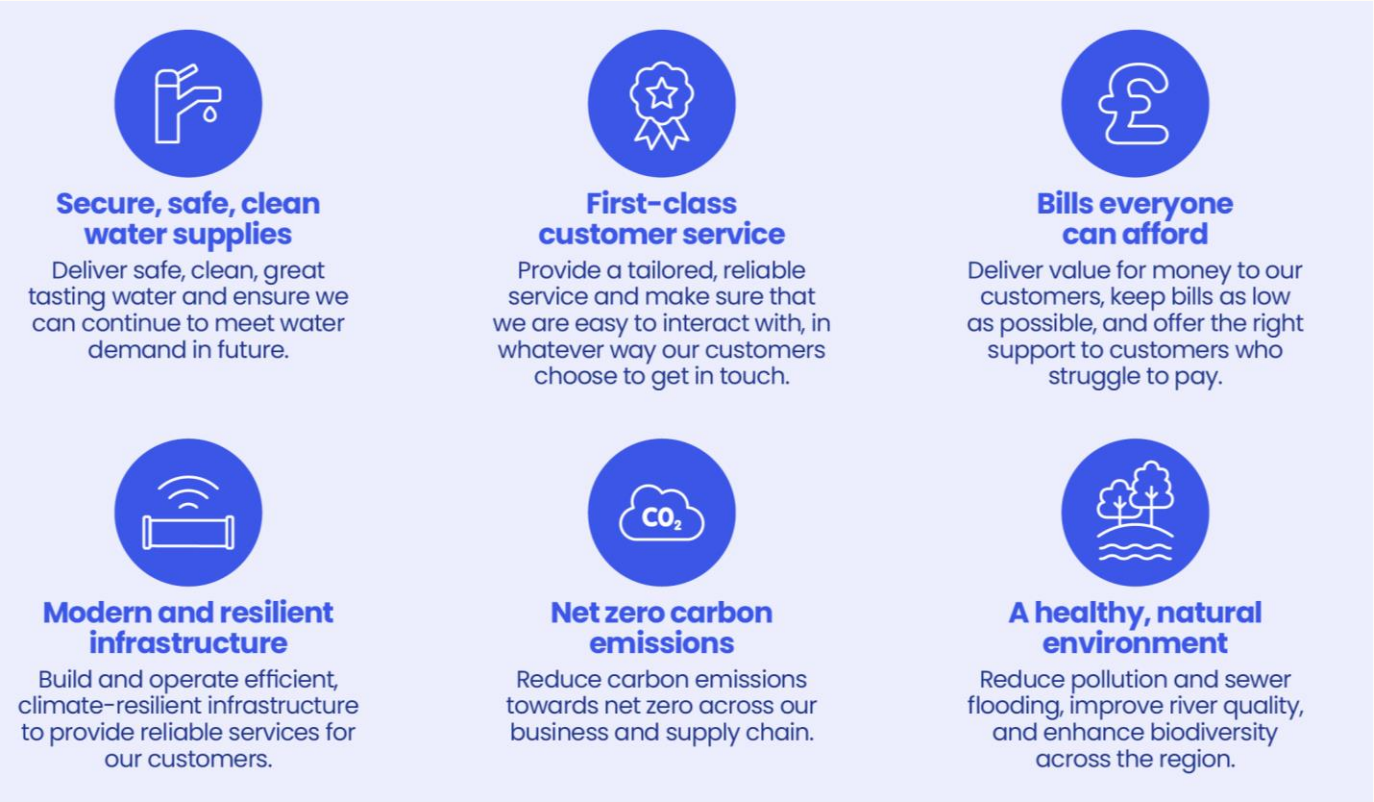


Figure 1: Our six outcomes

- The modernisation programme, which focuses on improved planning and scheduling of our field teams and moves us to proactive rather than reactive asset management.
- Our Performance Excellence programme, which is applied throughout the business, ensuring that we are all pulling together, with a clear escalation route for ideas for improvement from every area of the business.
- Our large investment programme, which is supported by our shareholders, to improve the health of our bathing waters and high priority river sites over the next seven years.

For the next five-year period (2025-2030), we will measure our performance against the 23 PCs that are common across all water companies. Figure 2 below illustrates how these PCs map against our outcomes.

After careful consideration, no bespoke PCs are proposed for the 2025-2030 period. The decision was made to focus on the delivery of our core services and an extensive enhancement programme, delivering the outcomes of greatest importance to our customers and the environment.

However, we propose that we work with Ofwat between this submission and the final determination to develop a targeted, embedded carbon PC that meets the requirements.

Figure 2 Performance commitments mapped against our outcomes which will help deliver our Long-Term Delivery Strategy and our vision for Yorkshire

7.2 Accelerating our performance where it matters most for our customers

7.2.1 Customer research has been used to inform our plan

Ensuring our customers, communities and stakeholders have been consulted on our business plan is important. In PR24, customer priorities on PCs largely stem from the collaborative research as set out by Ofwat/CCWater Customer Preferences Research. We have validated this research with our own customer preferences research (see Valuing Water Customer Priorities Research Final Report in Customer research appendix), and found that, broadly, the top priorities established by Ofwat are consistent with those of our customers.

For more details see our **Customer research appendix**

Using the Ofwat/CCWater Customer Preferences research, we know that while customers find all PC activities important, they tend to place a higher level of importance on those that most affect them personally. This includes water supply interruptions, taste, smell and appearance of water, 'do not drink' notices, and internal and external sewer flooding. The methodologies were not the same but when we tested similar priority preferences with our own customer base in our Valuing Water Customer Priorities Research (see Valuing Water Customer Priorities Research Final Report in Customer research appendix), we found that many of the top priority areas were aligned.

Our customers also strongly valued affordability, and several measures which address the quality of water in Yorkshire's rivers and seas. Find more information on our customer engagement, including further detail on customer, community and stakeholder priorities in **Chapter 6.**

For more details, see Chapter 6

7.2.2 Performance commitments will deliver improvements

The package of PCs will deliver improvements across a wide range of the services our customers receive, especially in their priority areas.

We are proposing an acceleration in performance where it matters most to our customers:

1) Our customers' number one priority – continued safe water:
   - Water supply interruptions.
   - Customer contacts about water quality.
   - Drinking water quality (as measured by the Drinking Water Inspectorate's Compliance Risk Index (CRI)).
   - Leakage, as we head towards our long-term ambition to halve leakage by 2050.
2) Secondary – environmental priorities:
   - Internal sewer flooding and external sewer flooding.
   - Pollution incidents.
3) Supported priorities – delivering beyond statutory requirements for WINEP and storm overflow performance. It is also supported by the Yorkshire Leaders Board which is the Business in the Community strategic leadership team for Yorkshire.

Their letter of endorsement for our plan, and how these service issues are addressed, can be read in our **Letters of support for our PR24 Business Plan appendix.**

We are also prioritising improvements in our asset health PCs, since the resilience of our network and prevention of service failures are also of great importance to our customers, as they believe they will have a positive impact on all other service measures.

Our customers support our plan, the approach taken to prioritising our PCs and the targets we have set for each. In affordability and acceptability testing following Ofwat/CCWater guidelines, 78% of customers supported our plan. We also undertook our own affordability and acceptability testing study which outlined the PCs and the targets for each. In this study, 79% of customers, and non-household customers supported our plan, with a greater number of future customers (84%) supporting our plan. Across the board, the PC targets proposed in our plan were supported by the vast majority of all customer types surveyed.

7.2.3 We are looking to the long term

Our customer supported our LTDS, which forms part of our PR24 Business Plan submission and sets out our vision and ambition for the next 25 years, as well as the performance outcomes we aim to achieve by 2050.

We recognise there are several long-term challenges and future uncertainties we face as a business, but we are confident that the outcomes we propose to deliver for customers in the 2025-2030 regulatory period will place our performance on the right track towards achieving our long-term ambition and creating value for customers and the environment.

7.3 Approach to setting performance commitment levels

7.3.1 Targets that are ambitious but deliverable

We have taken a pragmatic approach to setting ambitious targets that are stretching, while remaining deliverable. Customers will continue to see improvements in the service they receive, as we deliver our best ever service.

We have used Ofwat's definitions and guidelines for PCs. In establishing the PCLs, several factors were considered, including:

1) The priorities of our customers and their willingness to pay for improvements.
2) The regulatory requirements for performance levels.
3) Our performance to date.
4) Our current performance, in relation to that of the industry, and likely top quartile performance levels.
5) The impact of Yorkshire-specific factors, quantified through modelling.
6) The service delivered through enhancement programmes.
7) The service delivered through base expenditure.

We have reviewed our performance against historical targets, as well as against other similar companies in the industry, to understand where we are underperforming. We have based our proposed PCLs on the proposed investment programme, including allowances for proposed performance adjustments and cost adjustment claims (CACs) where appropriate.

We have also listened to our Board's challenges on the level of stretch, aiming to strike the right balance between ambition and delivery.

In the subsequent section and our **Detailed performance commitments appendix,** we set out the specific drivers for each PC.

7.3.2 Impacts of base and enhancement expenditure on performance commitment levels

In completing the service contribution between base maintenance and enhancement expenditure, we have invested in the prime purpose, but also reflected the free secondary benefit to other associated performance areas. This is most prevalent in the case of clean water, where 'quality compliance' driven investment in the Drinking Water Inspectorate (DWI) agreed programme of activity has led to free service benefit reflected in defined commitment PCs. It should be noted that, should 'performance improvement' have been delivered as the prime objective (instead of compliance), we may have chosen to invest in different locations or assets.

As part of the 2025-2030 period's detailed programme construct, we have evaluated the service contributions delivered through 'base' and 'enhancement' expenditure categories. Due to the level of uncertainty in the future service projections, and changes to relevant legislation, we have assumed the same 2025-2030 percentage split between base and enhancement for all future periods.

The table below shows the clean water service improvements that are being delivered split by base maintenance and enhancement expenditure.

Performance commitments	2024-25	2029-30	Total benefit	% base	% enhance-ment
Water supply interruptions	00:07:15	00:05:20	00:01:55	100%	0%
Unplanned outage	2.50%	1.60%	0.90%	72%	28%
Compliance Risk Index	3.50	2.51	0.99	65%	35%
Water quality contacts	0.97	0.64	0.33	70%	30%
Mains repairs	211.6	199.3	12.3	100%	0%
Leakage	13.7%	27.4%	13.7%	46%	54%
Per Capita Consumption	2.6%	5.0%	2.4%	0%	100%
Business demand	0.6%	2.5%	1.9%	0%	100%
Operational GHG – CW	111,475	101,245	10,230	99%	1%

Table 1: Service improvements – clean water

Water Supply Interruptions and Mains Repairs are forecast to improve by 26% and 6% respectively. These improvements will come from base maintenance alone, with investment in operational field changes and the mains replacement programme.

Unplanned Outage and Compliance Risk Index are forecast to improve by 36% and 28% respectively, through the mains replacement programme, clean water tank replacement, instrumentation, control and automation replacement and filtration improvements.

A 34% improvement in Water Quality Contacts is also forecast by the end of the regulatory period. These improvements will result from customer engagement initiatives and the mains replacement programme.

PCs closely linked to the Water Resource Management Plan (WRMP) are forecasting no improvements through base maintenance (improvements for these are funded through enhancement spend). These are Per Capita Consumption and Business Demand. Leakage, which is also closely related to the WRMP, is forecast to improve as a result of both base and enhancement expenditure.

The water quality improvements programme has forecast improvements to Unplanned Outage, Water Quality Contacts and Compliance Risk Index (CRI). We forecast a reduction in the number of shutdowns at WTWs caused by water quality failures. Trunk main conditioning will reduce discolouration and therefore taste and odour contacts, and we expect a reduction in CRI failures in the 2025-2030 period, from the sites included in our DWI submission.

Improvements to Leakage, Per Capita Consumption and Business Demand are all forecast from the supply-demand enhancement case through the WRMP submission. All initiatives focus on driving down demand by reducing the quantity of water lost in the network, smart meter installation, and influencing household and non-household customers to reduce consumption.

No service improvements to water supply interruptions and mains repair are forecast from enhancement expenditure.

The table below shows the wastewater service improvements that are being delivered split by base maintenance and enhancement expenditure.

Performance commitments	2024-25	2029-30	Total benefit	% base	% enhance-ment
Internal sewer flooding	2.25	1.76	0.49	100%	0%
External sewer flooding	18.07	18.61	0.54	100%	0%
Total pollution	18.56	9.13	9.43	100%	0%
Serious pollution	2	0	2	100%	0%
Discharge permit compliance	99.04%	100%	0.96%	100%	0%
Sewer collapses	13.06	8.77	4.29	100%	0%
Biodiversity	0	0.85	0.85	0%	100%
Storm overflows (pre unmonitored adjustment)	41.32	26.86	14.46	91%	9%
Operational GHG – WW	177,607	200,259	22,652	95%	5%

Table 2 Service improvements – wastewater

Internal Sewer Flooding is forecasting a 22% improvement, with the target adjusted for exogenous variables such as combined sewer length and cellared properties, funded through base, and driven through increased visibility of the network. This visibility is achieved through sewer alarms and use of CCTV analytics, sewer cleansing, targeted customer behaviour campaigns and partnership working, such as the Living with Water collaboration in Hull.

External Sewer Flooding is forecasting that we are already at top quartile, based on an adjustment for exogenous variables, and therefore we propose to hold performance stable across the 2025-2030 period. The activity will involve similar interventions to ISF.

For pollution, we are forecasting to deliver a 51% improvement, maintaining us near to top quartile service. Our plans include interventions such as improving asset health through targeted operational maintenance; use of analytics and data to predict future performance and risks of failure; investing in people to ensure better responses; and partnership working to enable a more joined-up approach with external stakeholders. These include community groups engaging on river health matters. Serious pollution will be managed to ensure zero incidents.

Discharge Permit Compliance at treatment works will maintain 100% compliance throughout AMP8 and includes activities such as increased monitoring of our final effluent discharges, allowing us to respond earlier to issues; enhanced resilience through improvements to our preparedness for mitigation processes, meaning that we can more quickly deploy process units if required; and ensuring all wastewater treatment works comply with their dry weather flow permits where growth is forecast.

Sewer Collapses is forecasting a 33% improvement from the end of AMP8, with activities to target sewer rehabilitation and renewal as well as minimising impacting failures through increased visibility of the network and the use of CCTV analytics.

We are proposing a 35% reduction in the average number of spills per Storm Overflow including the benefits of our AMP7 programme from base and a further 8% through enhancement (pre unmonitored adjustment) to ensure they meet the requirements of the Environment Act through a mixture of grey and blue green storage solution, activity to upgrade schemes, sustainable attenuation in the network and source surface water separation.

We will increase Bathing Water Quality compliance by 12% through targeted activity on specific coastal bathing waters, such as improving our assets and working with other stakeholders to prevent beach pollution.

For River Water Quality, we will ensure 76% phosphorus load removal from a 2020 baseline through complying with the requirements of WINEP by removing phosphorus from final effluent through a mixture of treatment processes and nature-based solutions.

Our net zero programme will reduce process emissions, at a number of our larger operational wastewater treatment and sludge treatment sites, as well as installing renewable sources of energy. Overall, our market-based emissions will reduce from measures such as electricity purchase and decarbonisation of our supply chain, but the data shows, in line with the reporting methodology, a net increase of 100% in location-based emission. This is due to the significant impact of the WINEP programmes in the 2020-2025 period and the 2025-2030 period, particularly in relation to heavy chemical usage and significant construction of new assets.

We will increase our Biodiversity units by 0.85 through our planned investment across our chalk stream restoration programme, our wetland rehabilitation programme and our Sites of Special Scientific Interest (SSSI) management programme.

7.3.3 Adjustments to common performance commitment levels (PCLs)

Ofwat has identified ten PCs for which it will set a common PCL that can be delivered through base expenditure at PR24. Only nine of these are relevant to Yorkshire Water (excluding Business Customer Experience in Wales).

We recognise the benefits to Ofwat and customers in being able to directly compare company performance and support this where a fair comparison between companies can be made. However, we remain concerned that setting some PCLs at a common level does not allow a fair comparison. We believe that targets should account for:

- Factors outside of company control such as geography, rainfall and demography.
- Factors effectively outside of control due to the scale of investment required to change the characteristics in the short-to-medium term (legacy asset bases, materials, asset age).
- PCLs agreed at previous price controls and funded through enhancement expenditure.

Ofwat recognises in its econometric cost models that not all companies are the same, reflecting this in some variables, but not when setting common PCLs. Without accounting for these differences when setting PCLs, some companies are being stretched more than others.

Such differences in performance cannot be accounted for within the cost assessment. As the cost models are based on historic expenditure, and do not contain service variables, they measure only how the variables impact on cost across the industry, and not on how they impact on relative performance.

We ask Ofwat to consider using adjusted common PCLs where appropriate to ensure that exogenous factors are considered. This would benefit customers by leading to a more consistent challenge across companies, improving the incentive regime and allowing companies to allocate resources more appropriately.

This issue, and a proposed framework for approaching it, was set out by United Utilities in its submissions to the ideas lab in 2022, and we endorse the approaches described within.

Making the cost assessment framework resilient to future challenges (United Utilities) Section 2.3

What lessons can we learn from cost assessment at PR19 (United Utilities) Section 2

We have specifically made cases for PCL adjustments in our plan, in very limited circumstances. Internal Sewer Flooding (ISF) and External Sewer Flooding (ESF) are two cases where we believe that exogenous variables have a significant impact on the ability of companies to achieve a common PCL.

We have presented cases for the ISF and ESF performance adjustments in Section 7.12

In our Detailed performance commitments appendix we set out the modelling we have undertaken to understand how different variables drive performance. We also show how we have used these models to demonstrate why the alternative proposed target is appropriately stretching for us.

Detailed performance commitments appendix

We have observed that companies with higher proportions of combined sewers experience higher costs *despite* relatively worse performance. So, while our proposed performance adjustment in this area covers similar variables, it is distinct from our cost adjustment claim on Combined Sewers as there is no service within the base cost modelling.

We have completed a similar exercise for the Storm Overflows PCL. Although this not identified as a common PCL in Ofwat's final methodology guidance, we provide evidence to justify why a common industry average spill target in the 2025-2030 regulatory period is not appropriate.

7.4 Retiring performance commitments from AMP7

We have aligned our proposed performance measurements to the Ofwat-defined common PCs, with no submitted bespoke PC measures for the 2025-2030 regulatory period. In doing so, we have retired any bespoke PCs agreed as part of the PR19 final determination process, as these do not form part of our PR24 plan.

Our previous PR19 bespoke PCs have either evolved into the common definition for PR24, such as length of river improved, or have been retired, as they no longer meet the criteria for bespoke PCs.

Where PCs have been retired, we have embedded learnings from the delivery of our 2020-2025 period bespoke PCs to ensure we continue to deliver the outcomes important to our customers, even if they are no longer monitored through the PCs.

7.5 Knowledge sharing statement

We will continue our active involvement in industry forums such as Water UK and United Kingdom Water Industry Research (UKWIR), using these to share information as well as learn from knowledge shared by the wider water sector, including companies, consultants and others involved in the supply chain.

We actively shared knowledge during the 2020-2025 period. For example, in our well-publicised Clifton Wetlands nature-based solution scheme, we showcased how a natural, sustainable, low-carbon solution can be utilised as an alternative to conventional treatment. This was undertaken as a joint venture and in full collaboration with the Environment Agency. We sought knowledge from both international and UK experts to develop the design.

Information was shared through multiple channels, including:

- BBC Breakfast and ITV Calendar
- Utility Week seminar in 2021
- Liaison based on specific enquiries, for example, Anglian Water, Don Rivers Catchment Trust, Ofwat, EA
- Awards ceremonies:
  - CIRIA Awards 2022: Innovation winner and overall winner 'First WwTW wetland in England to treat all flows and the first ever Biodiversity Net Gain positive WwTW'.
  - Water Industry Awards 2022: 'Wastewater Innovation Project of the Year' and 'Natural Capital Initiative of the Year'.
  - Constructing Excellence Yorkshire and Humber Awards 2022: 'Net Zero' category winner.
  - Institution of Civil Engineers, Yorkshire & Humber awards: Certificate of Excellence.

Figure 2 Clifton wetlands

7.6 Performance commitments

The subsequent sections detail our PCs presented alongside our customer supported outcomes, as previously illustrated in Figure 2.

Secure, safe clean water supplies.

- First-class customer service.
- A healthy natural environment.
- Net zero carbon emissions.
- Modern and resilient infrastructure.

Our **Detailed performance commitments appendix** presents evidence to support our PCs

7.7 PCs delivering secure, safe clean water supplies

Performance commitment	Unit	PR24 proposed target				
		2025/26	2026/27	2027/28	2028/29	2029/30
Water supply interruptions	(HH:MM:SS) per property	00:05:56	00:05:47	00:05:38	00:05:29	00:05:20
Compliance Risk Index (CRI)	CRI Score	3.30	3.10	2.91	2.71	2.51
Customer contacts about water quality	Number of customer contacts per 1,000 population	0.90	0.84	0.77	0.71	0.64
Per Capita Consumption (PCC)	Percentage reduction against 2019/20 baseline	-2.6%	-3.3%	-4.0%	-4.5%	-5.0%
Leakage	Percentage reduction against 2019/20 baseline	-16.6%	-19.1%	-22.0%	-24.9%	-27.4%
Business demand	Percentage reduction against 2019/20 baseline	-0.9%	-1.1%	-1.5%	-2.0%	-2.5%

Table 3: Summary of our proposed performance commitment levels

7.7.1 Introduction

The PCs within this section set out how we will ensure secure, safe clean water supplies. A summary of our proposed PC levels is set out in Table 3.

Undoubtably, clean safe drinking water is our customers' number one priority when it comes to the services we provide, our research tells us this, time and time again. Our own affordability and acceptability testing research found that 86% of customers supported this outcome and the PCs and PC targets set out within this it. In fact, 79% of customers found our overall plan including this outcome and these measures to be acceptable.

You can read more about our engagement in Chapter 6

7.7.2 Water supply interruptions

Water supply interruptions are defined as the average number of minutes lost per customer, for the whole customer base, for interruptions that last for three hours or more. Delivering on this PC will provide customers with a reliable service they can count on.

- The Ofwat/CCWater Customer Preferences Research shows that water supply interruptions are ranked a high priority service area for customers. Our own 'Valuing Water' customer priorities research found a continuous supply of safe drinking water is our customers' number one priority, we see this across numerous studies. However, given that the likelihood of experiencing interruptions is seen to be low for customers – indeed the majority of customers struggle to remember ever having their water supply interrupted – this specific PC is of medium importance to both household and non-household customers.

For this PC, we are proposing a target of 00:05:56 per property in Year 1, falling to 00:05:20 in Year 5. While we performed well against our targets in the 2015-2020 regulatory period, as the target has continually reduced across the 2020-2025 period, we have not been able to achieve the 2025 end target of 00:05:00 per property. This shortfall is the result of several exceptional weather events, including Storm Arwen, and unexpectedly dry summers, showing the importance of being able to respond quickly when things go wrong. We are currently ranked 10th out of 17 companies, and our performance against historical targets has been impacted by a number of exceptional events. For example, in 2021/22, ten impacting events added 4 minutes and 30 seconds to our performance in that year.

Further information on the reasons for our historical performance can be found in our **Detailed performance commitments appendix**

Renewing our worst-performing mains will reduce the chance of supply interruptions. However, due to the length of our network (32,300km), an investment to replace 0.66% of our network length will be insufficient to hit our targets in isolation.

Our investment plans in this PC include:

- Procurement of Arlington Trailer configurations (x6) providing temporary supply to customers in the event of an interruption.
- Creation and implementation of a new supply interruption procedure for Arlington tank utilisation.
- Development of a clear benefits realisation approach to inform future tanker fleet investment strategy.
- Creation of a highly competent, technically capable team of reactive response technicians to manage reactive network incidents, with working patterns that meet demand, and ensure optimal response on a 24/7 basis, as part of the Water Distribution 2025 change project.

Beyond the 2020-2025 period, we are planning to invest in renewing the assets that fail the most frequently, as well as developing more effective operational response techniques such as greater use of tanker fleets and enhanced field working patterns.

We will use the ODI rates proposed by Ofwat.

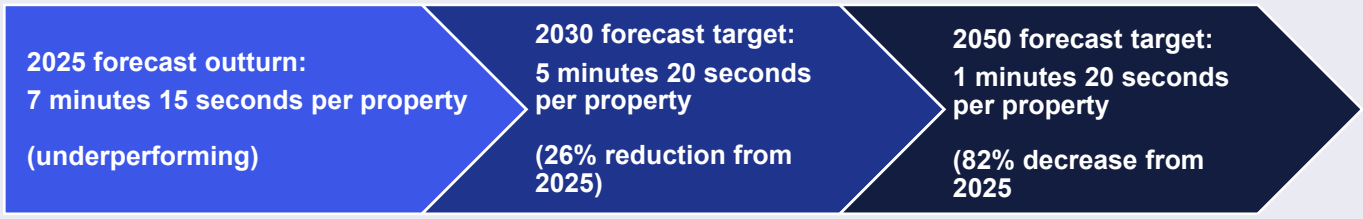
Please refer to the **Detailed performance commitments appendix** for details of this PC.

Key message

Historically, we have, or are forecast to have, underperformed against our targets in the 2020-2025 regulatory period. We are proposing a significant improvement in our performance across the next five years (with a forecast 26% reduction in water supply interruptions).

Our infrastructure renewal CAC will improve water supply interruptions performance.

For more details see our **Cost Adjustment Claim appendix**



7.7.3 Compliance Risk Index (CRI)

The Compliance Risk Index (CRI) is a measure designed to illustrate the risk arising from treated water compliance failures. It is measured as the sum of all individual CRI scores for every compliance failure reported during the year. Like health and safety, we aspire to achieve a target of zero, but recognise this is extremely difficult. We have set a deadband to allow us to do this.

According to the Ofwat/CCWater Customer Preferences Research, this PC is considered a top priority for customers and the 'quality of water' falls into our customers most important area of service as prioritised in our Valuing Water Customer Priorities Research Final Report (see Customer research appendix) – continuous supply of clean safe water. We therefore have an ambitious plan for this PC.

For Compliance Risk Index (CRI), we are proposing a target score of 3.30 in Year 1, falling to 2.51 by the end of the 2025-2030 period. We are currently underperforming against our target in the 2020-2025 period, where the target is a score of 1.50 by the end of 2025. We have not been able to achieve these targets due to several coliform detections, as well as aesthetic metal failures (aluminium, iron and manganese).

Our performance has historically been similar to the median for larger companies.

Our plan for the 2025-2030 regulatory period includes several initiatives to deliver on the proposed targets. These include:

- A significant increase in the rate of cast iron water mains renewals to reduce regulatory iron failures.
- A significant increase in water treatment capability, both at sites where raw water quality is already impacting performance, and where trends in raw water quality forecast performance impacts in the 2025-2030 period, or early in the 2030-2035 period.
- An additional targeted allowance, via Cost Adjustment Claims is being sought to improve asset health (water mains, service reservoirs and clean water tanks), which will positively impact CRI in the 2025-2030 period and beyond.

Chapter 8, Section 5 outlines the investment needed to deliver this PC level, including a targeted allowance cost adjustment claim.

For more details see Chapter 8 section 5

Beyond the 2025-2030 period, additional future enhancement funding will be required to address asset health and resilience issues in order to ensure long-term improvement. With additional investment, we forecast that CRI could reach 1.5 by 2050.

We will use the ODI rates proposed by Ofwat.

Ofwat are proposing the use of a deadband for this PC, and we are in full agreement with the use of a deadband for this PC.

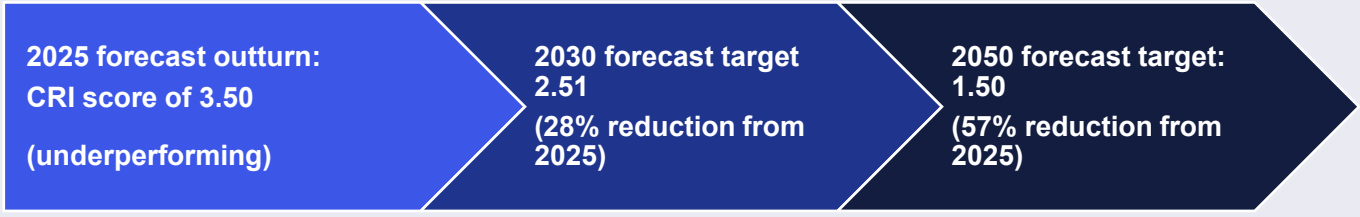
Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Historically, we have, or are forecast to have, underperformed against our 2020-2025 period CRI target. However, we are proposing a significant improvement in our CRI score across the next five years, with a 28% improvement.

Our non-infrastructure renewal CAC of £200m will contribute towards improving CRI performance.

For more details see our **Cost Adjustment Claim appendix**



7.7.4 Customer contacts about water quality

This PC is defined as the number of times that the company is contacted by consumers due to the taste and odour of drinking water, or because the drinking water is not clear, reported per 1,000 population.

Our customer priorities research (see Valuing Water Customer Priorities Research Final Report in Customer research appendix), shows that customers value the safety of water highly and place a medium importance on the aesthetics of water. As water quality contacts cover both issues, we should see this PC as an important one.

Please refer to the **customer research appendix**

Assessment criteria for customer contacts about water quality is due to change in the next five-year period but, using the existing criteria, we are proposing a target of 0.90 contacts per 1,000 population, falling to 0.64 contacts per 1,000 population. Our target for the last year of the 2020-2025 period was 0.81 contacts per 1,000 population; this is compared with our forecast performance of 0.97 contacts per 1,000 population in the last year of the period. We are currently underperforming against our 2020-2025 targets due to historic challenges around asset conditions.

There is little published by way of records of performance of other companies using identical data. However, the DWI's Total Acceptability to Consumers measure has reported annually for an extended period. It is notable that, although improvement has occurred nationally, Yorkshire Water has outperformed the industry in the scale of improvement. We plan to achieve our proposed 2025-2030 targets through:

- An enhanced flushing programme.
- Additional trunk main conditioning.
- A programme of work to improve infrastructure control automation resilience.

Beyond the 2025-2030 regulatory period, we propose a programme of works including an enhanced programme of targeted mains renewals and investment in raw water reservoir monitoring in order to reduce the level of customer contacts about water quality to 0.44 contacts per 1,000 population.

The investment needed to deliver this PC level is outlined in Chapter 8 section 5

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Although we started the 2020-2025 period by outperforming our target and achieved a year-on-year reduction in the number of customer contacts about water quality per 1,000 population, we have underperformed against our target in the 2020-2025 period. This is partly because the target has become more ambitious, year-on-year.

We are aiming for a significant improvement for this PC over the 2025-2030 period, with a proposed 34% reduction in the number of customer contacts about water quality. To achieve this, we are seeking a CAC of £250m of funding which will contribute towards improving performance against this PC.

For more details see our **Cost Adjustment Claim appendix**

2025 forecast outturn: 0.97 customer contacts about water quality

(underperforming)

2030 forecast target: 0.64 customer contacts about water quality (34% reduction from 2025)

2050 forecast target: a 0.44 customer contacts about water quality

(55% reduction from 2025

7.7.5 Per Capita Consumption (PCC)

This PC is defined as the percentage reduction of three-year average per capita consumption in litres per person per day from the 2019/20 baseline. Three-year average values are calculated from annual average values for the reporting year and two preceding years expressed in litres per person per day.

We understand PCC is a lower priority PC to customers. However, once explained, customers understand the role they themselves play in reducing overall demand for water. Our customers support education and smart metering activities to help them reduce their usage, these are therefore included in our plan to achieve this target.

In order to achieve our stretching targets, we plan to pursue the following activities:

- Undertaking household 'Smart Water' visits and virtual visits, using smart data from increased smart meter penetration to determine which customers would be offered a visit.
- Installing flow regulators for households in Yorkshire using smart data from increased smart meter penetration to determine which customers have high pressure so would benefit from an install.
- Increased educational delivery of water efficiency in our schools programme. Water efficiency is currently touched on in our educational visits but we would like to extend the scope by offering schools water efficiency visits as well.

We are proposing a relative change in the percentage reduction in business demand of 3% across the 2025-2030 period.

For more detail see Chapter 8 section 5

Our customer preference research (Valuing Customer Priorities Research) shows us that customers value support to reduce their water use as below average.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Historically, this has been a challenging target for the industry to meet, meaning we have underperformed against our targets in AMP7; this is partly a result of changes in consumption patterns as a result of Covid-19 which has affected the whole of the water industry. Despite this, we are the industry leader with the lowest per capita consumption in 2022/23, and we plan to improve further on this in the next regulatory period.

We are proposing a stretching increase in our performance over the next AMP period (with a forecast reduction in per capita consumption of 3% across the period, from 124.9 l/p/d at the end of the 2020-2025 period to 121.7 l/p/d at the end of 2030). We are seeking an additional investment of £12.7 million across the 2025-2030 period.

2025 outturn forecast : 124.9 l/p/d (a 2.6% reduction against baseline)

(currently underperforming in AMP7)

2030 forecast target: 121.7 l/p/d (a 5.0% reduction against baseline)

(a 3% reduction in PCC across AMP8)

2050 forecast target: 104.5 l/p/d (a 18.5% reduction against baseline)

(a 16% reduction compared with 2025)

7.7.6 Leakage

This PC is defined as the percentage reduction of three-year average leakage in megalitres per day from a 2019/20 baseline. Three-year average values are calculated from annual average values for the reporting year and two preceding years and expressed in megalitres per day.

In Ofwat/CCWater preferences research, leakage is a medium-level priority, and this is the same result in our own priorities research 'Valuing Water'. However, in our WRMP research, leakage was the number one issue with Yorkshire Water. Leaks are seen as wasteful and inefficient, impacting perceptions, and therefore they are something we need to tackle with intensity.

For leakage, we are proposing a target of a 16.6% reduction against the 2019/20 baseline in the first year of the 2025-2030 period, and a 27.4% reduction against the 2019/20 baseline by the end of period. Although we have met our targets in the initial years of the 2020-2025 period, we are not currently forecast to meet our end of AMP7 target of 268.0 Ml per day, with our performance forecast to be 272.0 Ml per day. We have not been able to achieve our 2020-2025 targets due to the challenges in meeting very ambitious reduction targets (only 9 of the 17 water companies have been able to meet the leakage target).

We plan to achieve our proposed 2025-2030 targets through:

- **'Point of Interest' leakage strategy** – this will be enabled by additional sensing (acoustic loggers and pressure sensors), meters and analytics, which will drive leakage efficiency and reduce the average leak life.
- **Pressure management** – through wider coverage and maturity of control. Implementing more advanced methods of pressure control and transient identification and mitigation will reduce background leakage and improve burst rates.
- **Smart metering** – we will target customer side leakage and improve DMA prioritisation through techniques such as water balancing and dynamic night use models.
- **Mains replacement** – there will be a leakage benefit of the mains replacement programme proposed under our CAC.

Further details are in our **Cost Adjustment Claim appendix**

- Beyond 2030, we plan to reduce leakage by 50% by 2050. This will be achieved through the development and implementation of a least cost investment plan.

We will use the ODI rates proposed by Ofwat.

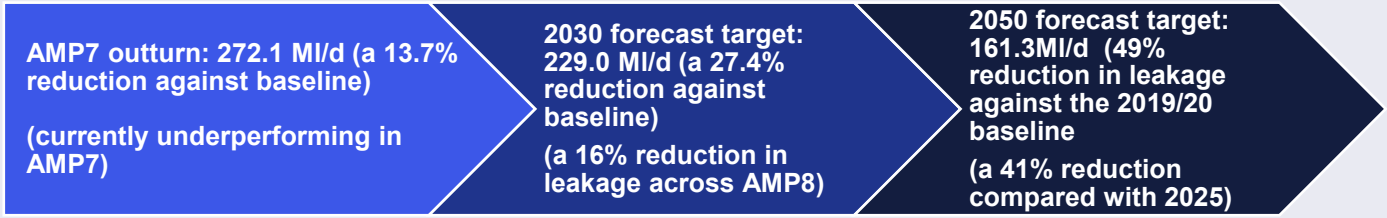
Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Historically, we have underperformed against our targets in AMP7; Achievement of our target is dependent upon our submitted CAC for water mains replacement.

For more details see our **Cost Adjustment Claim appendix**

The Ofwat/CCWater Customer Preferences Research shows that customers consider this PC to be of medium importance, when compared against a wider list of performance commitment areas.



7.7.7 Business demand

The business demand PC is defined as the percentage reduction of three-year business demand in megalitres per day from a 2019/20 baseline. Three-year average values are calculated from average values for the reporting year and the two preceding years expressed in megalitres per day.
While helping to reduce usage sits as a low priority amongst non-household customers (Valuing Water research), we know from undertaking investigative work for BR-MeX that non-household customers would welcome usage audits and smart metering to better understand where they can save money and water. To reduce demand overall, these actions are included in our plan to achieve this measure.

For business demand, we are proposing a target of a 0.9% reduction against the 2019/20 baseline in Year 1, and a 2.5% reduction against the 2019/20 baseline in Year 5. We plan to reduce business demand in the 2025-2030 period through:

- targeted media campaigns.
- undertaking efficiency audits targeting schools, leisure centres and hotels.
- providing business retailers with support and financial incentives to reduce water consumption.
- exploring opportunities to reduce the potable water demands of new industries.

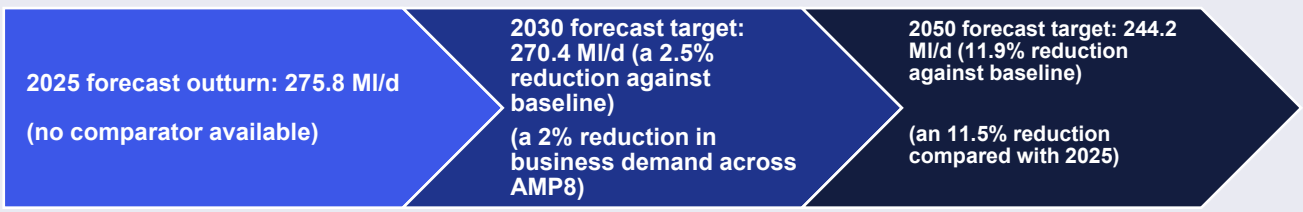
Beyond 2030, our long-term target for a reduction in business demand is a 11.9% reduction from the 2019/20 baseline by 2050.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Business demand is a new PC for the 2025-2030 period, and therefore it is not possible to make a comparison of our performance against a 2020-2025 target.



7.8 PCs delivering first-class customer service

7.8.1 Introduction

The PCs within this section set out how we will deliver first-class customer service.

Ofwat is currently proposing changes to each of the experience PC definition. A consultation which sets out Ofwat's initial proposals is due to close on 26 September.

7.8.2 Customer measure of experience (C-MeX)

Ofwat's proposed changes for C-MeX include amending the relative weights within the survey so that there is a stronger focus on customers that have experienced operational incidents.

There are also proposals to remove the higher performance gateways for enhanced payments and instead make greater use of cross-sector benchmarks to determine relative performance and ODI rates.

Since C-MeX ranking and ODI rates are determined by performance relative to other companies in the sector, we are not proposing a target for the 2025-2030 period.

Our research tells us that our customers rate good customer service as essential, considering it a basic essential, rather than a specific area to prioritise, in the same way as other PCs (Ofwat/CCWater Customer Preferences Research).

Customer experience remains a core focus for us as we move into the 2025-2030 period. We propose to improve our performance through the enhancement of our customer systems, channels and processes. This will see us become more proactive in our communication, deliver simple and reliable customer journeys and provide a more digitally enabled experience to meet our customers' needs and expectations.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

7.8.3 Developer measure of experience (D-MeX)

Ofwat's proposed changes for D-MeX include increasing the weight of competitors and larger developers in the qualitative component of the score and reducing the weight of the quantitative component. There are currently no proposals to move away from operating D-MeX as a relative incentive.

For the last reported year of AMP7 (2022/23), Yorkshire Water was ranked last (17th) in the industry, meaning that it was in penalty for this PC. This can be explained by the company's reliance on manual processes and systems which are not integrated. This is resource intensive and companies with highly systemised and automated systems tend to outperform those that rely on manual systems and processes.

For the 2025-2030 period, we are not currently proposing a target for D-MeX since performance will be measured through ranking against other companies in the sector.

To improve our performance in the 2025-2030 period, we will invest in digital transformation, colleague capabilities and organisation design.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

7.8.4 Business and retailer measure of experience (BR-MeX)

The business and retailer measure of experience (BR-MeX) is a new PC for PR24, and we understand that its specification will be set out in the PR24 draft determinations in June 2024. We are not proposing a target since performance will be measured through ranking against other companies in the sector.

During the 2020-2025 reporting period, we have targeted our service improvement at existing Market Performance Framework measures, namely timely and accurate data, operational service, supporting the market and R-MeX, as well as delivering multiple improvement projects, including a new retailer information portal. Our approach has been successful, and during the 2020-2025 period, Yorkshire Water has been ranked between 2nd and 6th place in the industry on R-MeX as well as in the mid or top quartile on other market measures. As we move into the 2025-2030 reporting period, we propose to continue with our approach to continuous improvement on data, operational service and supporting the market. We will supplement this, conditional to the revised WRMP, with new smart meter and water efficiency services.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

7.9 PCs delivering a healthy natural environment

7.9.1 Introduction

The PCs within this section set out how we will deliver a health natural environment. A summary of our proposed PC levels is set out in Table 4.

Outside of having clean safe drinking water, this outcome – healthy natural environment – ranks highly amongst customers. In our own affordability and acceptability testing research, 85% of customers supported this outcome and the PCs and PC targets set out within it and 79% of customers found our overall plan, including this outcome and these measures, to be acceptable.

You can read more about our engagement in Chapter 6

Performance commitment	Unit	PR24 proposed target				
		2025/26	2026/27	2027/28	2028/29	2029/30
Serious pollution incidents	Total number of incidents	0	0	0	0	0
Total pollution incidents	Number of incidents per 10,000km of wastewater network	16.58	14.72	12.86	10.98	9.13
Bathing water quality	Weighted average bathing water quality score	73.5%	73.5%	73.5%	82.3%	82.3%
Storm overflows	Number of spills per storm overflow	34.98	32.11	30.02	28.43	26.86
Discharge permit compliance	Percentage compliance	100.0%	100.0%	100.0%	100.0%	100.0%
River water quality	% reduction of P against 2020 baseline	72.12%	75.35%	75.93%	76.11%	76.11%
Biodiversity	Biodiversity units per 100 km^2	0.17	0.34	0.51	0.68	0.85

Table 4: Summary of our health natural environment performance commitments

7.9.2 Serious pollution incidents

This PC is defined as the total number of serious pollution incidents (categories 1 and 2) in a calendar year, emanating from a discharge or escape of a contaminant from a water company sewerage asset or water supply asset, affecting the water environment.

Our current proposals are based on our interpretation of the current Environmental Performance Assessment (EPA) guidance and PC definition. Should there be any changes to this methodology or the associated guidance, a review of our performance forecast and associated investment for the 2025-2030 period would be required.

The Ofwat/CCWater Customer Preferences Research found that pollution was of medium importance to customers as this does not directly impact them. However, through our own Valuing Water Customer Priorities Research and our DWMP Research (detailed in our Customer research appendix), we understand that pollution of any kind is a high priority and totally unacceptable, and the goal should always be to have zero incidents. When testing our plan with customers, through our own affordability and acceptability testing, 79% were supportive of our goal to have zero serious pollution incidents across the board.

For serious pollution incidents, we are proposing a target of zero incidents in each of the 2025-2030 delivery years.

To achieve the proposed PC levels in the 2025-2030 period, we have identified several key initiatives which will help to reduce the risk of serious pollution:

These include:

- Embedding our intelligent alarms process developed through Year 3 and 4 of the 2020-2025 period. Automated alarms inform a swift operational response where we are not passing forward the required flows at wastewater treatment works. This reduces the risk of premature spills from storm tanks.
- Specifically focusing on rising mains (RMs), including increased inspection of high-risk mains and follow up rehabilitation/renewal and/or installation of new sensors/air valves as required. We will also embed new processes following our increased visibility of RMs, and pumping stations, through the sensor deployment we began in the current 2020-2025 period.
- Engaging with stakeholders for early identification of potential issues which could lead to a serious incident.
- Designing and implementing a new environmental Management of Change process.
- Implementing the various initiatives identified in the total pollution PC to decrease overall numbers of serious incidents.

Our Pollution Incident Reduction Plan (PIRP) has been recently updated to reflect our latest understanding and adopt industry best practice. We regularly liaise with other water companies to share and discuss pollution reduction approaches and learning. Our PIRP will improve both serious and total pollution performance.

We expect that this area will remain a key priority for our customers into future regulatory periods, and therefore will continue to strive to deliver zero serious pollution incidents beyond 2030.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

This is a new PC for the 2025-2030 period, but we can use EPA data to understand performance over time and across the industry. We are proposing a target of zero serious pollution incidents per year across the 2025-2030 period. We recognise that this is extremely stretching, having not achieved zero serious incidents performance to date, however, we have seen sustained reduction in incidents through from AMP6 into AMP7.

7.9.3 Total pollution incidents

This PC is defined as the total number of pollution incidents (categories 1 to 3) in a calendar year emanating from a discharge or escape of a contaminant from a water company sewerage asset affecting the water environment, per 10,000km of sewer length from wastewater assets for which a company is responsible.

Based on Ofwat/CCWater Customer Preferences Research, customers consider this PC to be of medium importance, when considering it within a wider list of PC areas. However, when taking into consideration customer understanding of pollution through other customer engagement we've carried out, this is a much greater priority for our customers. Our acceptability & affordability qualitative research, for example, found that not meeting targets on pollution was 'inexcusable' and that the areas they would most like Yorkshire Water to focus on was reducing pollution and leakage (further details are in our Customer research appendix). This aligns with our ambition to significantly reduce pollution against our Year 5 AMP7 performance, which will also place us in a good position to deliver against our LTDS.

Therefore, for pollution incidents, we are proposing a target of 16.58 incidents per 10,000km of the wastewater network at the beginning of the 2025-2030 period, improving to 9.13 incidents per 10,000km of the wastewater network. In the 2020-2025 period, we are outperforming the targets that were set in PR19; our company performance for Year 5 is forecast to be 18.56 incidents per 10,000km of the wastewater network, compared with a target of 19.50 incidents per 10,000km of the wastewater network. Our performance has exceeded the pollution incidents target for each of the three years reported to date in the 2020-2025 period.

To achieve our proposed 2025-2030 PC levels, we will implement investment plans and decision making processes in line with the current EPA methodology and interpretation, as set out by the Environment Agency. Should there be any changes to this methodology or the associated guidance, a review of our performance forecast, target, and associated investment for the 2025-2030 period would be required.

For the 2025-2030 period, we plan to achieve our proposed levels through:

- **Improving asset health** – enhanced asset maintenance through our new maintenance system, improving the health and resilience of our assets.
- **Using data** – the use of better asset performance data and enhanced analytical capabilities to predict failure and enable a proactive response.
- **Investing in people** – investing in the training and development of our operational teams to ensure an effective operational response for both planned and reactive work.
- **Partnership working** – taking a more joined-up approach with external stakeholders, including community groups, to engage on river health matters and identify proactive interventions.

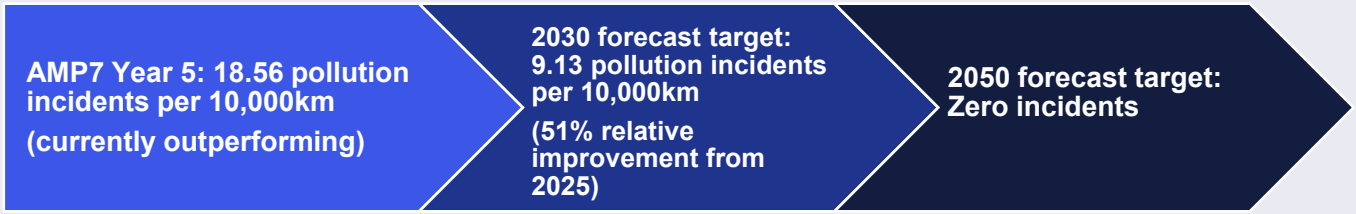
Improving pollution performance and reducing our potential impact on the water environment will continue to be a high priority post 2030. We are targeting a rate of zero pollution incidents per year by 2050.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Historically, we have outperformed our total pollution target, and are forecast to do so by the end of the 2020-2025 period. We are proposing to reduce the number of pollution incidents to 9.13 incidents per 10,000km of sewer by the end of the 2025-2030 period, an improvement of 51% when compared to Year 5 of AMP7.



7.9.4 Bathing water quality

This PC is defined as the measurement of bathing water quality at designated bathing water sites within the Company's area, including coastal and inland designations. The performance is calculated as a single overall average 'score' for bathing water quality, based on the calculation methodology defined by Ofwat. This utilises the bathing water classification calculations in line with the Bathing Water Regulations, 2013, with the inclusion of samples discounted under short-term pollution incidents.

From Ofwat/CCWater Customer Preferences Research, we understand that customers consider bathing water quality to be of low importance compared to other PCs. However, our own customer preference research (our Valuing Water research is presented in our Customer research appendix) suggests that river/sea water quality is of high importance because our service areas which impact on water quality, such as storm overflows, quality of discharges and pollution, are all in the top tier category of what we should prioritise when pitched against all other areas of service. Customers support the additional improvements we want to make to bathing waters as can be seen through our acceptability testing results and other research studies undertaken through our online community. More can be read on our engagement in **Chapter 6.**

For the 2025-2030 period, we plan to achieve our proposed PC levels through:

- **Reducing coastal storm overflows** – a programme to reduce eligible coastal storm overflows down to two spills per bathing season, on average.
- **Improving our asset health** – prioritising our base maintenance investment to further protect the performance of our coastal bathing water assets.
- **Reducing river storm overflows** – a programme of investment for the UK's first riverine bathing water at the River Wharfe at Cromwheel, to reduce eligible storm overflow discharges to one spill per season on average.
- **Increasing capacity** – increasing and enhancing our wastewater treatment capacity.
- **Partnership working** – continuing to investigate impacts to bathing water quality and maximising opportunities for partnership working through the Yorkshire Bathing Water Partnership.

Beyond 2030, improving bathing water quality performance and reducing our impact on water quality will continue to be a high priority. We will continue to work in partnership and deliver infrastructure improvements where required to support improvements in bathing water quality.

We will use the ODI rates proposed by Ofwat.

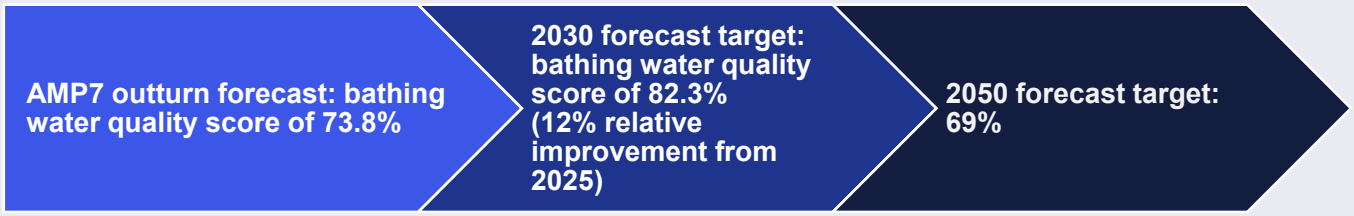
Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

We have underperformed our bathing water quality PC in the 2020-2025 period. However, this is a new PC definition, and for that reason not directly comparable to our 2020-2025 definition. We are proposing an improvement in the 2025-2030 period from 73.5% to 82.3% by the end of the regulatory period.

To deliver this 8.8% improvement, we propose a programme of interventions through both base and enhancement programmes.

Further details on this, and how we have calculated the proposed scores, can be found in our **Detailed performance commitments appendix**



7.9.5 Storm overflows

This PC is defined as the number of spills per storm overflow (which uses a 12 hour/24 hour counting method). The average number of storm overflows will be calculated as the number of monitored spills divided by the total number of storm overflows, with the addition of an adjustment factor to account for unmonitored storm overflows.

According to the Ofwat/CCWater Customer Preferences Research, storm overflows is considered by consumers to be within the least important group of service areas. However, our own research tells a different story (our Valuing Water Customer Priorities Research is presented in our Customer research appendix). Our customers rate reducing the use of storm overflows highly – it sits in the top tier of customer priorities. In addition, other engagement including our consultation on storm overflows and our affordability and acceptability testing show that customers support an accelerated programme of work to reduce the overall spills. 79% of customers find our plan acceptable (78% when following Ofwat guidelines). More can be read about our engagement in **Chapter 6.**

Our plan will meet the requirements of the storm overflow discharge reduction plan, which is a statutory requirement. We have chosen to exceed the minimum requirement for storm overflow spill reduction at bathing waters, which our own research identified as a high priority to our customers and something they support.

We are proposing a PC level of 34.98 spills per storm overflow, improving to 26.86 spills per storm overflow by the end of the 2025-2030 period, assuming that each unmonitored overflow, over a year, on a pro rata basis, spills 100 times. The PC incorporates the improvements we will make in monitor uptime from 91% to 98% in the 2025-2030 period. This is a new PC for the period, and therefore there are no comparable targets against which to compare our previous performance. Our analysis indicates that the starting position for each water company will vary due to regional factors as well as how permits have historically been set.

To achieve our proposed 2025-2030 period PC levels, we will:

- Retrofit blue green infrastructure/sustainable drainage. 20% of our interventions will encompass blue green solutions in the 2025-2030 period, increasing to 50% beyond 2030.
- Disconnect surface water from our sewer network and slowly discharge the surface water to the environment.
- Use nature-based solutions to treat storm overflows (subject to agreement with the Environment Agency).
- Use active system control of the network and storm tanks to maximise sewer network storage.
- Construct storage on the combined sewer system at the overflow and return it back to the sewer network.
- Increase treatment capacity of our wastewater treatment works.
- Reduce infiltration (through lining) and inflow of surface water (disconnect known points) into the combined sewer system.

Beyond the 2025-2030 period, we plan to implement our programme to reduce storm overflow spills per overflow in line with our submitted plan as part of our LTDS to meet the storm overflow discharge reduction plan and requirements of the Environment Act.

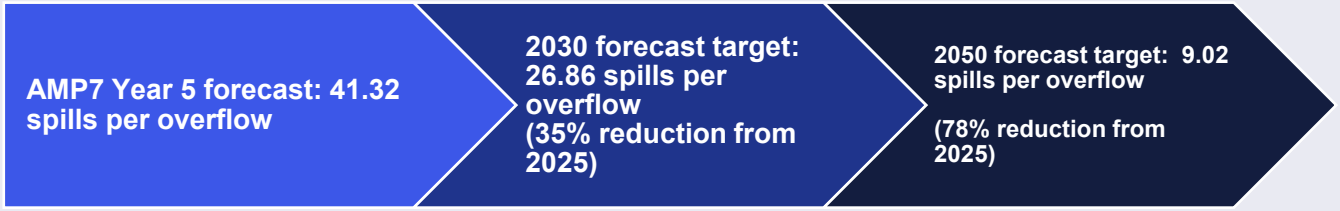
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC, including our compelling evidence for why it is not appropriate for Yorkshire Water, for 2025 performance, to be expected to be at a regional average of 20 spills.

Key message

This is a new PC for the 2025-2030 period, and therefore there are no historical targets or comparators from other water companies against which to measure our performance.

We are proposing a 23% reduction in the monitored average number of spills per storm overflow across the 2025-2030 period. This is a 35% improvement accounting for the unmonitored adjustment. To achieve this, we are proposing a large enhancement programme of work.



7.9.6 Discharge permit compliance

This PC is defined as the performance of wastewater treatment works (to treat and dispose of sewage) and water treatment works (for the water supply service) in line with their numeric discharge permit conditions. The discharge permit compliance is reported as the number of failing sites, and not the number of failing discharges.

The Ofwat/CCWater Customer Preferences Research showed that consumers considered many of the outcomes linked to discharge permit compliance to be high or medium levels of importance.

- Our own Valuing Water Customer Priorities Research (in our Customer research appendix) places this in the top tier of priorities. In addition, our own affordability and acceptability research outlined that our plan is to achieve 100% compliance for this measure – 79% of customers found our plan to be acceptable.

You can read more about our engagement in Chapter 6

For discharge permit compliance, we are proposing a target of 100% in each of the 2025 to 2030 delivery years, on the assumption that a deadband will be proposed by Ofwat for this PC. We note the likelihood that it will not be able to achieve a score of exactly 100% in each year of the period.

In the 2020-2025 period, the target was 100% in each delivery year, with a performance deadband of 99.0%. We have performed within the deadband in each reported year to date and are forecast to achieve a compliance rate of between 99.0% and 99.7% in the last delivery year (1-3 failing works).

In the 2025-2030 period we will achieve our proposed PC level through:

- Increased monitoring of our final effluent discharges, allowing us to respond earlier to issues.
- The use of new processes for optimising phosphorus removal, as well as the introduction of new processes for 'above ground asset maintenance' to allow closer monitoring of asset conditions, as previously presented in **Chapter 4.**
- Enhanced resilience through improvements to our preparedness for mitigation processes, meaning that we can more quickly deploy process units if required.
- Ensuring all wastewater treatment works comply with their dry weather flow permits where growth is forecast.

Beyond the 2025-2030 period, discharges will be subject to ever tighter permit limits and additional discharge permit requirements. Despite this, we will continue to target 100% compliance for this measure beyond 2030.

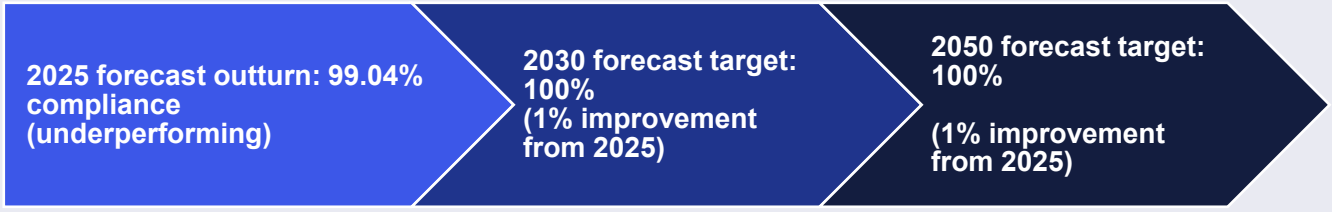
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

The 2020-2025 period target for this PC was 100%, with a deadband of 99%. Historically we have not met the 100% target but have performed within the deadband.

For 2025-2030, we are proposing a target of 100%. Relatively, this is around a 0.9% improvement on our forecast performance in 2025.



7.9.7 River water quality

A new PC has been introduced to quantify the phosphorus load removed from continuous wastewater discharges. The load removed from continuous wastewater discharges will be prevented from entering the environment, reducing the potential for algal blooms to develop. Algal blooms have the potential to cause harmful episodes of eutrophication, causing a lack of oxygen to local flora and fauna.

The PC will use annual Monitoring Certification Scheme for Equipment, Personnel and Organisations (MCERT) compliant measured WwTW flow and final effluent phosphorus concentration sampling data, where available, to calculate the phosphorus load discharged during the observed year. This value will then be used to derive the load removed by comparing it to the load discharged in 2020.

The Ofwat/CCWater Customer Preferences Research shows this PC is considered to be of medium importance to customers, when considered against a list of other PC areas. Our own customer preference research (Valuing Water Customer Priorities Research is presented in our Customer research appendix) suggests that river water quality is of high importance. This is because our service areas which impact on river water quality, such as storm overflows, quality of discharges and pollution, are all in the top tier category of what we should prioritise when pitched against all other areas of service. More can be read about customer priorities in **Chapter 6.**

For river water quality in the 2025-2030 period, we are proposing a PC level to reduce phosphorus emissions by 72.12% against a 2020 baseline in Year 1, improving to 76.11% of phosphorus removal against the baseline by the end of Year 5. Investment through the AMP8 phosphorus removal programme will not be fully realised until Year 1 of AMP9, when the newly constructed phosphorus removal sites start operating against their new permits.

This is a new PC definition for the 2025-2030 period (the previous PC was defined as length of river improved) and therefore it is not possible to compare our performance in the previous period against a target consistent with the new definition.

We will deliver our proposed PC levels through our WINEP programme. Phosphorus removal will be delivered primarily through the installation of additional treatment facilities in existing sites, as well as via nature-based solutions.

Beyond 2030, we propose to meet our phosphorus targets in line with the requirements of environmental legislation. This will be delivered through:

- The development of catchment-based solutions.
- Optimising our assets to remove additional phosphorus above permit.
- Delivering maximum river water quality benefits within expenditure allowances.

At the time of WINEP submission, only traditional solutions were proposed. This was due to the tight timescales involved in WINEP24 development. Our intention is to develop catchment solutions post-submission and implement these within period. We have gained experience in this area within the 2020-2025 period, via the delivery of a Catchment Nutrient Balancing (CNB) solution on the River Doe Lea and a Catchment Permitting (CP) solution on the River Aire. Our intention is to expand on this experience and implement more CNB and CP solutions within future periods.

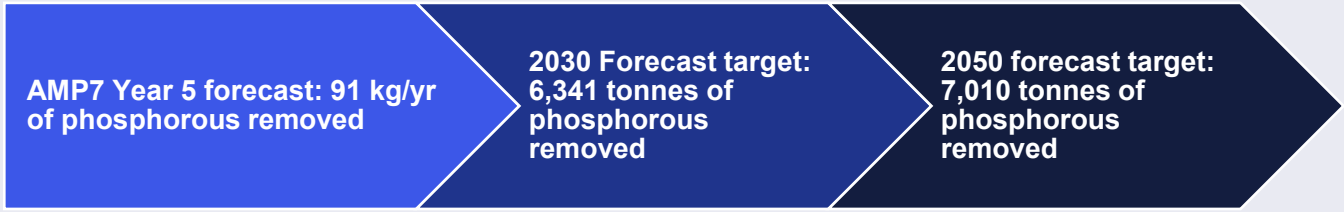
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

This is a new PC for PR24, and as a result it is not possible to provide an overview of our historic performance against 2020-2025 targets or other water companies.

We are proposing to remove 6,341 kg/yr of phosphorus from our rivers by the end of the 2025-2030 period. To do so, we will continue to meet our regulatory requirements in WINEP.



7.9.8 Biodiversity

Biodiversity is defined as the net change in the number of biodiversity units per 100km^2 of land in the company's area. A biodiversity unit is defined by Defra as a measurement of an area's value to wildlife. It is based on the size and quality of habitats, and whether the habitat is sited in an area identified as being of strategic significance to nature.

The Ofwat/CCWater Customer Preference Research shows that customers consider this PC to be of medium importance. Our own research tells us that biodiversity is important to customers because of the wider benefits to the environment.

You can read more about our research in Chapter 6

For the 2025-2030 period, we are proposing a PC level for biodiversity of 0.17 biodiversity units per 100km^2, rising to 0.85 biodiversity units per 100km^2 by the end of the period. This is a new PC, and therefore there is no equivalent target from 2020-2025 against which to compare our performance.

To ensure transparency, biodiversity outcomes will only be claimed under this commitment when approved by our external steering group, comprising of the Wildlife and Rivers trusts operating across Yorkshire. Existing data is already publicly available at https://www.yorkshirewater.com/environment/biodiversity/ with this map to be updated throughout the pricing period to reflect biodiversity outcomes.

We will achieve our proposed PC level for the 2025-2030 period predominantly through:

- Our planned investment across our chalk stream restoration programme.
- Our wetland rehabilitation programme.
- Our Sites of Special Scientific Interest (SSSI) management programme.

In addition to the above, there will likely be additional biodiversity value generated across our wider biodiversity programme, through general management of our land and through our investment in nature-based solutions to mitigate wastewater pressures.

Looking beyond the 2025-2030 period, our long-term ambition for biodiversity is an increase to 8.35 biodiversity units per 100km^2 by the end of 2050. This will be facilitated by further investment in the use of nature-based solutions across our wastewater assets, and moving more of our land into conservation management.

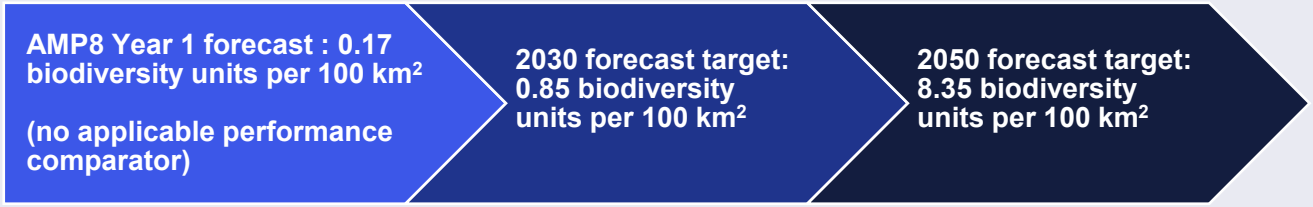
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

This PC is new across the industry, and therefore it is not possible to provide a comparison of Yorkshire Water's performance against the rest of the industry or against targets set in the 2020-2025 pricing period.

In consultation with the Yorkshire-based Rivers and Wildlife Trusts, we are proposing a target to achieve 0.85 units per 100 km^2 by the end of the 2025-2030 period.



7.10 PCs to deliver net zero carbon emissions

The PCs within this section will help deliver our outcome of net zero carbon emissions. A summary of our proposed PC levels is set out in Table 5.

Wider engagement undertaken by Yorkshire Water on net zero and climate change more generally highlight customers would like to see us do our bit to strive for net zero, despite bill impacts and cost of living challenges. In our own affordability and acceptability testing research study, 83% of customers supported this outcome and the net zero operational carbon targets. 79% of customers found our overall plan including these measures to be acceptable.

You can read more about our engagement in Chapter 6

Performance commitment	Unit	PR24 proposed target				
		2025/26	2026/27	2027/28	2028/29	2029/30
Operational greenhouse gas emissions (water)	Percentage reduction from 2021/22 baseline	-6.9%	-8.7%	-10.4%	-12.2%	-13.9%
Operational greenhouse gas emissions (wastewater)	% increase from 2021/22 baseline	11.0%	13.7%	16.5%	19.2%	22.0%

Table 5: Summary of our net zero carbon emission performance commitment

7.10.1 Operational greenhouse gas emissions (water)

This PC is defined as the reduction in operational carbon emissions from water operations; tonnes of carbon (CO2e) reduction from a 2021/22 baseline, reported to two decimal places.

Based on the findings the Ofwat/CCWater Customer Preferences Research, this PC is considered to be of a low priority to customers, when compared with a wider list of PC areas. However, our own engagement on climate change, our actions to reduce emissions and achieving net zero highlight a different picture. In fact, customers opted to include additional funding for this measure in our affordability and acceptability testing research and the majority of customers accepted this plan (78% when following Ofwat guidance).

You can read more about our engagement in Chapter 6

For operational greenhouse gas emissions (water), we are proposing a target of a 6.9% reduction against the 2021/22 baseline for the first year of the 2025-2030 period, increasing to a 13.9% reduction by the end of the period. This is a new PC definition (previously there was a single operational greenhouse gas emissions reduction target), and for this reason we have not been able to compare our performance in the 2020-2025 period against our target.

Actual reduction will be greater than this, using location-based emission factors for actual years rather than the fixed 2022 emission factors required for the PC (however, we recognise that this is undertaken for comparative purposes). We will report separately in our annual report and financial statement on our annual audited emissions in line with the ISO14064-1 standard, using both location and market-based emissions reporting approaches.

For the 2025-2030 period, we intend to achieve our stretching target through:

- The reduction of the use of chemicals.
- Energy efficiency and the use of renewable energy.
- The development of low-carbon assets.

We propose to move towards net zero by 2050 through the continued reduction of chemical usage, energy efficiency and use of renewable energy.

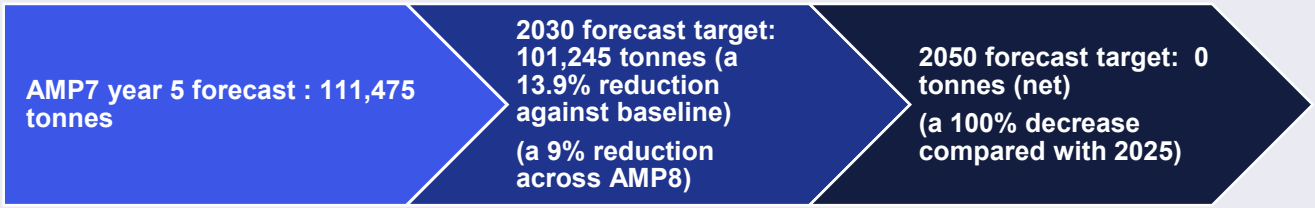
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

This is a new PC definition for PR24 (previously there was a combined operational greenhouse gas target). Therefore, we are not able to provide an assessment of our performance against the 2020-2025 target, or other water companies, for this PC.

We are proposing a reduction of reduction 9% between 2025-2030. To deliver this target we have included in our plan, a net zero enhancement case of £17.6 million.



7.10.2 Operational greenhouse gas emissions (wastewater)

This PC is defined as the amount of greenhouse gas emissions expressed in tonnes of CO2e (carbon dioxide equivalent) and the percentage change since 2021/22. The PC is also reported as kgCO2e per megalitre of volume of wastewater received at sewage treatment works.

From the Ofwat/CCWater Customer Preferences Research, we understand that this PC is a lower priority for customers, when compare with a wider list of PC areas. However, our own engagement on climate change, our actions to reduce emissions and achieving net zero highlight a different picture. In fact, customers opted to include additional funding for this measure in our affordability and acceptability testing research and majority of customers accepted this plan (78% when following Ofwat guidance). You can read more about this and our engagement in **Chapter 6.**

For operational greenhouse gas emissions (wastewater), we are proposing an increase of 11.0% against a 2021/22 baseline and an increase of 22.0% against a 2021/22 baseline by the end of the 2025-2030 period. This is a new PC for the 2025-2030 period (the previous PC for carbon emissions reduction was a combined operational carbon metric), and therefore there is no equivalent 2020-2025 period target against which to compare our performance. Actual reduction will be greater than this using the location-based emission factors for actual years rather than the fixed 2022 emission factors required for the PC (however, we recognise that this is required for comparative purposes). We will report separately in our annual report and financial statement our annual audited emissions in line with the ISO14064-1 standard using both location and market-based emissions reporting approaches.

It is worth noting that, due to the scale of our WINEP programme, our greenhouse gas emissions for wastewater are forecast to increase. We have therefore set a PC level which accounts for both additions and reductions in emissions across the business.

We have calculated a high-level estimate of the impact that moving between market-based and location based emissions could have on our forecast emissions in 2030, and found that it could be around 40,000 tonnes of carbon.

We will achieve our proposed level through a balance of base and standard investments for asset replacements. In making these investments we will focus on energy and chemical use efficiency, as well as vehicle fuel switching – including the use of electric vehicles. Further net zero enhancement funding will be used to fund process emission reduction and fund the delivery of renewable energy production.

Beyond the 2025-2030 period, our aim is to reduce emissions from operational wastewater activities to 0 by 2050, in line with our net zero ambitions. We will achieve this through a continued focus on reduction of process emissions, use of chemicals, energy efficiency and the use of renewable energy.

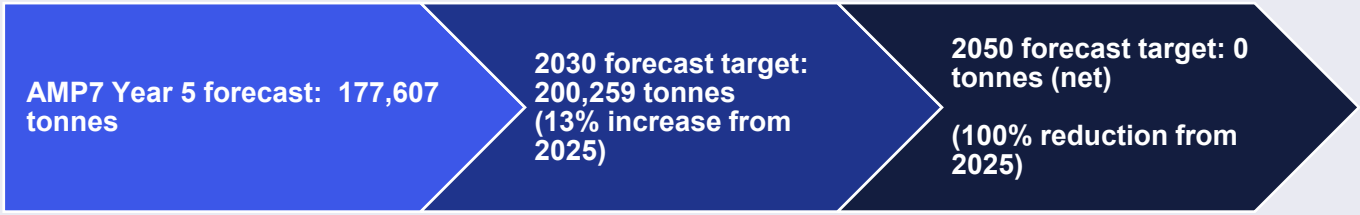
We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

This is a new PC definition for the 2025-2030 period (previously there was a single combined PC for both water and wastewater operational greenhouse gas emissions). Therefore, it is not possible to provide a historical comparison of our performance against the 2020-2025 period targets, or other water companies.

We are proposing an increase of 13% across the 2025-2030 period. This increase is largely a result of additional carbon emissions we are likely to make as a result of the WINEP programme, in order to limit any rise in wastewater greenhouse gas emissions above that proposed.



7.11 PCs delivering modern and resilient infrastructure

The PCs within this section deliver a modern and resilient infrastructure. A summary of our proposed PC levels is set out in Table 6.

Our engagement on resilience cements that this outcome and the PCs that sit within it are of medium priority for customers, when compared with a wider list of PC areas. This is because other service areas pose more immediate challenges/consequences. However, once discussed in detail, as per our DWMP Research (see our Customer research appendix), our customers concluded that this is an important area of service because improvements in this area will have knock-on benefits for lots of other services areas. In our own affordability and acceptability testing, 85% of customers supported this outcome – delivering modern and resilient infrastructure and the PCs that sit within it – and 79% found our plan acceptable overall.

You can read more about our customer and stakeholder engagement see Chapter 6

Performance commitment	Unit	PR24 proposed target				
		2025/26	2026/27	2027/28	2028/29	2029/30
Mains repairs	Number of repairs per 1,000km of mains	204.1	202.9	201.7	200.5	199.3
Unplanned outage	Percent of peak week production capacity	2.32%	2.14%	1.96%	1.78%	1.60%
Sewer collapses	Collapses per 1,000km of sewer network	10.12	9.68	9.25	8.82	8.77
Internal sewer flooding	Number of incidents per 10,000 sewer connections	2.20	2.13	2.08	1.91	1.76
External sewer flooding	Number of incidents per 10,000 sewer connections	20.92	20.30	19.72	19.16	18.61

Table 6: Summary of our modern and resilient infrastructure performance commitment

7.11.1 Mains repairs

This reports the number of mains repairs per 1,000km of the water main network. Delivering this PC will help us towards our goal of achieving modern and resilient infrastructure.

While mains repairs were not specifically tested in The Ofwat/CCWater Customer Preferences Research, the report indicates this was low on people's radar and only occasionally came up in conversation. Our own research tells us that the impact of mains repairs, such as the interruption to supply, is seen as medium priority and something that would have positive knock-on benefits for other service measures. Our Valuing Water Customer Priorities Research is presented in our Customer research appendix.

For mains repairs, we are proposing a target of 204.1 mains repairs per 1,000km of mains network, improving to 199.3 mains repairs per 1,000km of mains network. We are currently not meeting our 2020-2025 targets; our performance in 2024/25 is forecast at 211.6 mains repairs per 1,000km of mains network, compared with a target of 175.8 mains repairs per 1,000km of mains network.

We have been unable to achieve our 2020-2025 targets due to challenging external factors such as dry weather and freeze thaw events that increase the number of failures. Throughout the 2020-2025 period, we have installed a significant number of pressure release valves across our mains network to reduce bursts. However, over time the benefits of these new valves have been eroded, as assets across the mains network have continued to age. Our investment plans balance the need for a targeted 'fast' renewals aimed at the assets most likely to fail, with a long-term programme of renewals. The targets set in PR19 represented a historic step change in performance that we have not been able to achieve without sufficient investment water infrastructure, in such a short period of time.

Compared to other water companies, our performance is lower quartile. The most significant factor in this performance is our legacy of cast iron mains, and the vulnerability of the material to failures caused by ground movement and network events, such as rapid changes in pressure.

In the 2025-2030 period, we plan to achieve our targets of 191km per year of mains renewals, by:

- Increasing the rate at which we renew our water mains from 0.05% to 0.66%, prioritising investment in the worst performing areas.
- Continued best practices of relining where possible and deploying pressure management as part of our leakage reduction programme.
- Continuing to ensure all necessary employees and partners undertake Calm Network Training.
- Continuing to work with partners to develop innovative ways of repairing mains; for example, internal repairs and other forms of trenchless technology to make this process more efficient.
- Continuing to embed Smart Networks principles as previously presented in **Chapter 4.**

Chapter 8.8 outlines the investment needed to deliver this PC, which includes our base investment and an additional targeted allowance of £250m, and how customers will be protected through a PCD.

Beyond 2023, our sustainable mains renewal programme will allow a year-on-year improvement to this PC. Over the long term, it should allow the company to improve from having the second highest number of mains repairs per 1000km in the industry.

We will use the ODI rates proposed by Ofwat.

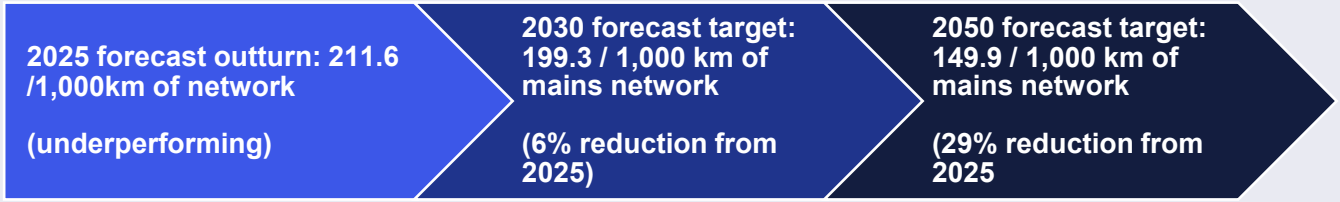
Refer to the **Detailed performance commitments appendix** for details of this PC.

Key message

Our performance has been historically poor, however, as mains repairs are of considerable importance to a resilient asset base, we see the need to significantly improve across the next five years (6%).

In addition to our base maintenance programme, we are seeking funding of £250 million associated with the infrastructure health CAC to meet these targets.

For more details see our **Cost Adjustment Claim appendix**



7.11.2 Unplanned outage

This PC is defined as the unplanned loss of peak week production capacity. It reports this loss as a percentage of the overall company peak week production capacity. The unplanned outage PC provides an appropriate incentive for the company to ensure that treatment works are maintained, to reduce the risk of outages when capacity is required.

Based on the Ofwat/CCWater Customer Preferences Research, this PC is considered to be an average priority for customers when compared with a wider list of PCs. In our own affordability and acceptability testing research, we included the proposed improvement that will be made with this measure – 79% of customers supported our plan, including this target.

You can read more on our customer engagement in Chapter 6

For unplanned outage, we are proposing a target of 2.32% improving to 1.60%. We do not expect to meet our target for the last year of the 2020-2025 regulatory period (we are forecasting a performance level of 2.50% against a target of 2.34%). However, it is worth noting that we have outperformed our target in Years One to Four of the 2020-2025 period, achieving a steep reduction in performance over the five-year period.

In the 2025 to 2030 period, we will achieve our proposed forecast performance level through:

- Increased identification, provision and management of critical spares, new techniques for monitoring asset health (as previously discussed in Chapter 4) combined with a proactive response to reduce time taken to return assets to service.
- Creation of the UPO Hub and associated dashboard, which also increased awareness of current outages and their root cause.
- Establishment of the Filter Management Group as an expert panel to continuously monitor and review clean water filter performance and advise on remedial work to reduce reactive failure.

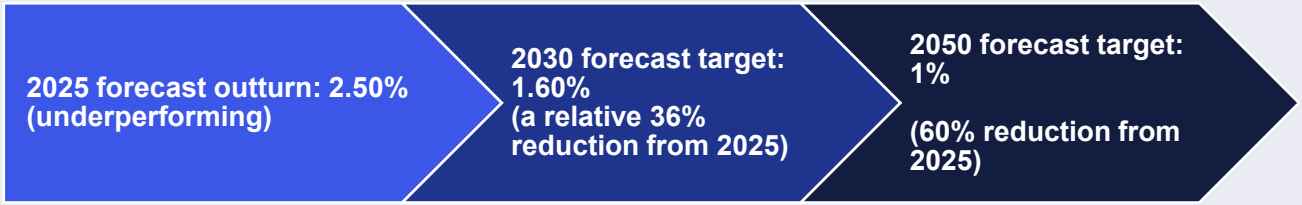
Beyond 2030 additional funding will be required to address asset health and improve resilience. Our non-infrastructure CAC forms part of a 10-year plan which includes ambitious proposals to reduce unplanned outage even further beyond that proposed in the 2025 to 2030 period. With consistent, additional funding over multiple pricing periods, it is forecast that we could have a sustainable unplanned outage rate of 1% by 2050.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

We have historically outperformed our target (although are forecast to underperform in the last year of the 2020-2025 period). We are proposing an improvement in the 2025-2030 period, with a forecast relative increase of 36% in our performance across the period.



7.11.3 Sewer collapses

This PC is defined as the number of sewer collapses per 1,000km of sewer network that have not been proactively identified by the company, impacting on customers or the environment. The measure seeks to reflect failures in assets that require replacement or repair to reinstate service, while maintaining incentives for the company to proactively investigate asset quality.

While this PC was not specifically tested as part of the Ofwat/CCWater Customer Preferences Research, we know that the impacts from sewer collapses, such as internal and external sewer flooding, are considered by customers to be high importance. In our own affordability and acceptability testing research, we included the proposed improvement that will be made with this measure – 79% of customers supported our plan, including this target.

You can read more on our customer engagement in Chapter 6

For the 2025-2030 period, we propose a PC level for sewer collapses of 10.12 collapses per 1,000km of sewer network in Year 1, improving to 8.77 collapses per 1,000km of sewer network. In the 2020-2025 period, we have substantially outperformed our targets; we are forecasting to achieve 13.06 sewer collapses per 1,000km of sewer network compared with the PR19 target of 15.39 collapses per 1,000km of sewer network.

Our current investment plans include:

- The installation of sewer alarms, leading to a greater level of proactive responses.
- Proactive jetting and cleansing.
- Surge mitigation.
- A focus on accurate reporting.
- A targeted capital investment programme, including a mixture of renewal and structural relining.

Beyond 2030, we propose to achieve a further 10% improvement in the 2030-2035 period, leading to a linear improvement in the 2045-2050 period, with 5.73 reportable collapses per 1,000km of sewer by 2050.

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

Historically, we have outperformed against our targets for sewer collapses. For the 2025-2030 period, we are proposing a reduction in sewer collapses of 33%.

7.11.4 Internal sewer flooding

Internal sewer flooding is defined as the number of sewer flooding incidents per 10,000 sewer connections. It includes flooding due to overloaded sewers (hydraulic flooding) and other causes, such as sewer blockages and collapses. Properties with cellars are particularly vulnerable to internal sewer flooding and Yorkshire has a high proportion of these types of properties compared to other water industry regions. Severe weather can adversely impact internal sewer flooding and we often see a 'spike' in events after heavy rainfall.

Customers view internal sewer flooding as a high priority. This is evidenced both through the Ofwat/CCWater Customer Preferences Research, and through our own research (our Valuing Water Customer Priorities Research is presented in our Customer research appendix). For the latter, household consumers have told us that they consider internal sewer flooding to be their third highest priority for consideration and the one failure they would most want to avoid. Both affordability and acceptability testing research studies (our own and the one undertaken following Ofwat guidelines) included this proposed measure and target – both plans were supported by the majority of customers (79% for our own study and 78% for the Ofwat study). For more information on our customer engagement, please see **Chapter 6**.

For internal sewer flooding, we are proposing a target of 2.20 incidents per 10,000 sewer connections in Year 1, improving to 1.76 incidents per 10,000 sewer connections in Year 5. In the 2020-2025 regulatory period, we are not currently meeting the PR19 targets, with company forecast performance expected to be 2.25 incidents per 10,000km of sewer network, compared with a target of 1.34 incidents per 10,000km of sewer network.

We have seen one of the fastest improvements in the sector, but we maintain our position that industry top quartile is not appropriate for a company with our specific regional factors, such as number of cellared properties, urban rainfall and combined sewer length which, when in combination in areas in West and South Yorkshire, lead to a higher risk of sewer flooding incidents.

As such, we propose a performance adjustment to reflect exogenous factors that make Yorkshire Water different to the majority of the companies able to achieve top quartile performance. Our analysis shows that a normalised target of between 1.96 and 3.44 incidents per 10,000 properties is appropriate for a company with similar characteristics to ours. Please see our Detailed performance commitments appendix for more details of our proposed performance adjustments.

These improvements are also reliant on an adjustment of £88 million totex to reflect the impact that combined sewers have on our efficient costs. Please refer to the cost adjustment claim in **Chapter 8 section 6** and the Cost Adjustment Claim appendix.

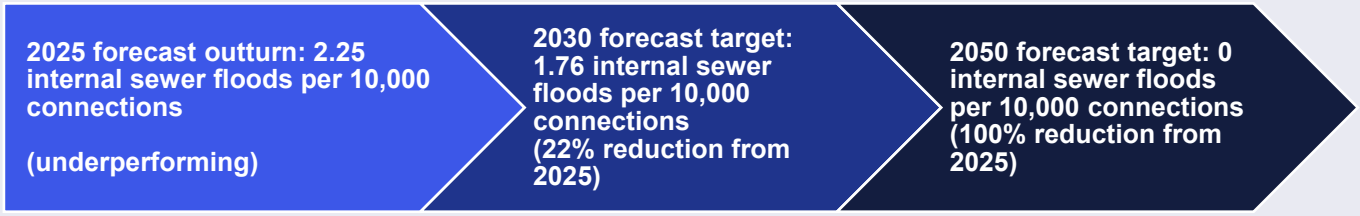
In the 2025-2030 period, we anticipate meeting our proposed performance commitment levels through a combination of interventions, building on the learning and application of work through the 2020-2025 period. Examples of these activities include:

- Customer sewer alarms, main sewer sensors and timely response – targeting high risk areas close to properties.
- Rehabilitation trials to increase speed and reduce cost.
- Targeted use of CCTV and other techniques (for example, radar) for sewer investigations in high-risk areas.
- Proactive and optimised sewer cleansing driven by insight.
- Targeted behavioural campaigns.
- Working in partnerships to increase flood resilience.

Beyond 2030, our long-term ambition for internal sewer flooding is a reduction to 0 incidents per 10,000 connections by 2050. This will be facilitated by further investment in proactive interventions, sewer

Key message

We are currently underperforming against our targets set in the 2020-2025 period, although we have seen some of the fastest improvement in the industry. We are proposing a significant improvement in internal sewer flooding incidents per 10,000 connections of 22% from 2025-2030.



rehabilitation, surface water separation targeting the use of more nature-based ‘blue green’ solutions, and partnership working. This is covered in more detail in **Chapter 8, Section 6.**

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

7.11.5 External sewer flooding

Defined as the number of external sewer flooding incidents per 10,000 sewer connections, this measure includes flooding due to overloaded sewers (hydraulic flooding) and other causes. It includes sewer flooding caused by severe weather events.

The Ofwat/CCWater Customer Preferences Research shows that this PC is considered a high priority for customers. Our own research shows that this is considered an average priority for Yorkshire Water customers (our Valuing Water Customer Priorities Research is presented in our Customer research appendix). However, we understand this is highly unpleasant and something we must strive to improve. In our affordability and acceptability testing research, we included the proposed improvement that will be made with this measure – 79% of customers supported our plan, including this target. For more information on our customer engagement, please see **Chapter 6. Chapter 6** provides further information on customers' views and preferences.

For external sewer flooding, we are proposing a target of 20.92 incidents per 10,000 sewer connections in the first year of the 2025-2030 regulatory period, improving to 18.61 incidents per 10,000 sewer connections by the end of the period. In the 2020-2025 period, we have exceeded our external sewer flooding targets; our forecast performance in Year 5 is 18.07 incidents per 10,000 sewer connections, compared with a target of 24.37 incidents per 10,000 sewer connections.

Due to our regional circumstances and in particular the proportion of combined sewers, we propose a performance adjustment. Yorkshire Water faces unique exogenous factors, including a high number of repeat properties flooding, a high number of combined sewers, and a high proportion of flooding from transferred assets and those with a small diameter. Our analysis shows that a normalised target for a company with Yorkshire Water's unique factors could be between 18.60 and 28.40 incidents per 10,000 properties.

This performance is reliant on an adjustment of £88 million totex to reflect the impact that combined sewers have on our efficient costs (please see our Detailed performance commitments appendix for further details).

For the 2025-2030 period, we will achieve our proposed target through a combination of interventions, building on the learning and application of work through this pricing period. Examples of these activities include:

- Customer sewer alarms, main sewer sensors and timely response – targeting high risk areas close to properties.
- Rehabilitation trials to increase speed and reduce cost.
- Targeted use of CCTV and other techniques (for example radar) for sewer investigations in high-risk areas.
- Proactive and optimised sewer cleansing programmes, driven by data insights, targeting higher risk areas.
- Targeted behavioural campaigns to reduce disposal of unsuitable items in sewers.
- Partnership working to increase flood resilience.

Beyond 2030, our long-term ambition for external sewer flooding is a reduction to 8.61 per 10,000 connections. This will be facilitated by further investment in proactive interventions, sewer rehabilitation, surface water separation and partnership working which is covered in more detail in **Chapter 8 section 6.**

We will use the ODI rates proposed by Ofwat.

Please refer to the **Detailed performance commitments appendix** for full details of this PC.

Key message

We are currently outperforming the External Sewer Flooding targets set for us at the last price review. Our proposed performance levels in AMP8 reflect both Ofwat's view that a more comparative target should be set for this PC and the fact that exogenous regional factors impact on our relative position in the industry.

The targets proposed in this plan are a 20% reduction on the (PR19) target and a c9% improvement on where we believe our performance will be in 2026 (noting the uncertainty of forecasting this PC in the short term).

7.12 Setting Outcome Delivery Incentives

Outcome Delivery Incentive (ODI) rates

We have used the ODI rates provided by Ofwat, in our business plan. We have used Ofwat's view of indicative marginal benefits, and indicative benefit sharing factors.

Ofwat has worked with the industry to try to achieve consistency in how it sets ODI rates across the sector. It has attempted to set indicative ODI rates that reflect customer priorities and provide the right incentives to companies to improve their performance.

Initially Ofwat used collaborative customer research to try to generate customer valuations for each of the common PCs. While the research gave valuable insight into customer priorities, the regulator concluded it was not possible to set indicative ODI rates by relying on the results of the research alone.

Ofwat decided to instead draw on customer preferences using a "top-down" approach based on equity return at risk. The collaborative customer research will continue to be used to inform the ODI rates, with a higher proportion of regulated equity assigned to the areas more highly prioritised by customers.

We have carried out our own customer research to see what our customers' priorities are. This has been a useful cross-check on the 'high, medium and low' customer priorities metric which Ofwat has used in allocating certain percentages of RoRE at risk to each PC. The customer priorities from our research do not materially differ from Ofwat's with, at most, one priority level difference for any particular PC (for example, high versus medium).

We have therefore used the ODI rates, exactly as given by Ofwat, in our business plan. We have used Ofwat's view of indicative marginal benefits, and indicative benefit sharing factors.

Deadbands

Yorkshire Water has not set deadbands on any of its PCs. We acknowledge that Ofwat will set the level of the deadband for Compliance Risk Index (CRI) in its draft and final determinations based on the latest available data.

Caps and collars

We acknowledge that Ofwat will set caps and collars on a subset of PCs at draft determination, as well as employing an aggregate protection mechanism. We agree that this is an appropriate way to mitigate some of the risk of materially high or low ODI payments. We have not proposed any alternative caps and collars alongside our PCs.

Enhanced ODIs

We acknowledge that we could apply enhanced outperformance ODIs to the PCs specified by Ofwat in its methodology. However, we have chosen not to set any enhanced thresholds in the data table OUT7.

Price control deliverables

As part of our process for establishing price control deliverables (PCDs), we have considered how ODIs interact with, and incentivise, the delivering of enhancement programmes.

In **Chapter 8** and the Introduction to enhancement cases appendix we set out the price control deliverables (PCDs) proposed to support our enhancement expenditure.

For more details see Chapter 8

For more information see the **Introduction to enhancement cases appendix.**

7.13 Bespoke performance commitments

Ofwat has set out its criteria for the inclusion of bespoke, company-specific PCs. In April 2023, the regulator asked us to submit our definitions for commitments that met its criteria. After careful consideration, we took the decision not to propose any bespoke PCs and to focus our plan for the 2025-2030 period on delivering our core services and an extensive enhancement programme, prioritising outcomes of greatest importance to our customers and the environment.

We noted that bespoke PCs may become appropriate for Yorkshire Water in future price reviews, as circumstances change, and alternative evidence of customer needs become available.

Ofwat provided feedback on bespoke PC submissions in June 2023, at both an individual company and industry level. Within this, the regulator stated that:

“We strongly encourage more companies to come forward with bespoke PCs focused on incentivising reductions in embedded GHG emissions. In doing so, we encourage companies to develop targeted approaches that are linked to external verification and accreditation standards.”

We are keen to engage with Ofwat on how a bespoke carbon PC could be defined for Yorkshire Water, however we have not been in a position to develop a robust PC proposal since this feedback was provided. There have been significant ongoing changes in both Ofwat’s collection of embedded carbon in annual reporting, and in the requirements of carbon reporting through PAS2080:2023 by which we currently validate our plan. It is not yet clear how these may impact any baselining activity we would do.

Between this submission and the final determination, we propose that we work with Ofwat to develop a targeted embedded carbon PC that meets the requirements.

Chapter 8
Details of our plan

Part 1
How we built our plan

Part 2
What our plan will deliver

Part 3
How we will deliver our plan

Guide to reading this chapter

This chapter sets out our planned expenditure for the next five years, explaining how we meet the long-term priorities of our customers, government targets, and regulatory requirements.

We have structured the chapter in 3 parts:

Part 1

How we built our plan

8.1 Our approach: This section sets out how we have approached building our plan.

8.2 How we have built our plan: This section explains how we have implemented our Decision-Making Framework (DMF) to make the best value decisions for our customers.

8.3 Assessing efficient costs: This section sets out efficient costs, Ofwat's approach to assessing these costs, and other factors affecting costs including frontier shift efficiency and unmodelled costs.

Part 2

What our plan will deliver

8.4 Overview of the plan: We set out details of how strategic planning frameworks have influenced the plan.

8.5 Wholesale water: This section sets out our plan for delivering water services through base and enhancement expenditure, the Cost Adjustment Claims we have requested.

8.6 Wholesale wastewater: This section sets out our plan for delivering wastewater services through base and enhancement expenditure, the Cost Adjustment Claims.

8.7 Cross plan expenditure: This section sets out investments that span price controls; net zero, technology and health and safety.

8.8 Bioresources: Within this section we discuss the bioresources service we will deliver through base and enhancement expenditure, our strategy for bioresources and how this feeds into our long-term plan.

8.9 Retail: Within this section we discuss the retail service we will deliver through base to ensure we meet our customers' priorities and the impact of bad debt pressures on our plan.

8.10 Developer Services: We present the service proposals for Developer Services to ensure we meet our customers' priorities.

8.11 Wholesale Non-Household and NAV Market Services: Within this section we discuss the non-household service we will deliver through base.

Part 3

How we will deliver our plan

8.12 Our plan: We provide an overview of how we have considered the delivery of our plan.

8.13 Partnerships: We are working in partnership to deliver service improvements. We explain how this has worked in the current plan period (2020-2025) and what we are proposing in this plan.

8.14 Markets summary of proposals: We present our approach to delivering service improvements through the use of markets.

8.15 Direct Procurement for Customers summary of proposals: We discuss how we have applied Direct Procurement for Customers (DPC) to our proposed expenditure programme, and what schemes we are proposing to use DPC for in this plan.

8.16 Delivering the plan: Finally, in this section we discuss how we will deliver our plan through our operational and capital programmes.

Chapter 8
Part 1: How we built our plan

Appendices

Oxera cost modelling

Real Price Effects appendix

Frontier shift appendix

Part 1: How we built our plan

Key points

- Our plan meets all statutory requirements and is aligned to the priorities of our customers and regional stakeholders, reflecting what they have told us is most important. We have sought to achieve the best outcome to accelerate our performance improvements, meet statutory targets for environmental improvements, ensure supply of safe, clean water, secure the long-term resilience of our assets and with affordability for existing and future customers.
- To meet these objectives and deliver the best outcomes for customers, we have considered multiple options. The options included in this plan are those we consider offer best value to customers and the environment. This means we take account of the whole life cost as well as environmental and social impacts over a suitable timeframe. This also means we are considering the future and the long-term impact of our decisions for future generations of customers.
- Our plan costs for 2025-2030 are efficient, evidenced and stretching. Our wholesale base costs align with what we expect Ofwat's econometric modelling will determine as an efficient allowance.
- We have engaged fully with the cost assessment process and provided evidence to help Ofwat develop its cost modelling approach. We have applied a stretching but realistic frontier shift efficiency to our plan and propose a real price effect in retail to reflect labour cost increases.

8.1 Our approach

In preparing our plan, we have taken great care to find the right balance across many dimensions, principally:

- **The need to balance long-term needs with affordability.** To help us to make the right investment decisions for customers, we have developed an LTDS that sets out our planned investments and activities over the next 25 years. The first five years of the LTDS forms the basis for our business plan for 2025-2030.

For more information on Long Term Delivery Strategy see Chapter 5

Long-Term Delivery Strategy (LTDS)

The bill values throughout this plan are affordable for the vast majority of Yorkshire Water customers (Frontier Economics affordability appendix). For those customers who find it hard to pay, Yorkshire Water provides additional support to make bills affordable for all. See **Chapter 2** for details of our social tariff, which supports customers with low income, as well as information about our debt support and other initiatives to support customers in water poverty or with low household income.

For more details see Chapter 2

- **Responding to customer priorities and acceptance of proposed expenditure.** To ensure that our business plan reflects the needs of our customers, community and stakeholders, we have carried out research on customer priorities and acceptability of our expenditure. Following Ofwat guidance for affordability and acceptability testing, we know the vast majority of customers found our plan to be acceptable (78%), supporting what we plan to deliver. Further information on all our customer engagement, including customer priorities and acceptance of expenditure, can be found in **Chapter 6.**

For more details see Chapter 6

- **Producing a credible plan that it is both stretching and achievable.** To identify the optimal programme of investment, we use our Decision Making Framework (DMF). It enables us to deliver what is required against service levels, PCs and statutory requirements. The DMF supports an efficient and consistent comparison of thousands of solution options to give our customers the greatest benefits, while meeting financial and service constraints. This approach to optimisation means that we can select the best value options to deliver statutory requirements and we can identify and prioritise those activities which have the greatest benefits. Our deliverability assessment, which confirms that our approach to deliver the programme of investment is viable and the plan is achievable.

For more details see Section 8.15

- **Creating a plan which utilises the most appropriate delivery methods to achieve best value.** We do not assume that we are best placed to deliver the entirety of the plan. The solution options that we assess using the DMF covers the full range of delivery methods including in-house, partnership-based, market-based, supply chain-based, DPC and other delivery methods.

8.2 How we built our plan

Our plan for the 2025-2030 period is based on what we expect will be the most efficient and effective ways of delivering the best value and service to our customers, in line with their priorities. To ensure all our proposed activities and investments are efficient, we have undertaken robust analysis, including implementing our DMF to make best value decisions and cost modelling where appropriate to verify cost efficiency throughout our investments. Our proposed activities and investment include our base expenditure to improve our day-to-day business processes, and ensuring we deliver a reliable, efficient service to our customers. It also includes enhancement expenditure, which will be used to improve our quality and/or capacity of services further, or to meet new statutory or regulatory requirements such as new or tighter environmental targets. The solutions put forward in each of our enhancement cases are those we have analysed as the best value options.

The approaches we have used are outlined in the **Introduction to enhancement cases appendix**

The approach we took to assess their efficiency and effectiveness is described in the section below. The DMF is the main tool that we use to identify the optimal programme of investment to deliver what is required against service levels, PCs 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 affordability and regulatory 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 then quantified using our Service Measure Framework (SMF). The SMF has been developed together with our customers and provides both a framework for scoring service impacts consistently, but also a means of monetising those service impacts across six different dimensions (known as the six capitals) so that the economic benefit of potential investment can also be consistently assessed. The additional advantage of monetisation is that the relative benefits of investments can be compared across service categories with different units of measure and scale; for example wastewater discharge compliance can be compared to unplanned interruption to supply on the distribution network. The DMF uses pre- and post-investment SMF scoring and monetisation to search for the optimal programme of investment by looking to maximise monetised benefits in a given scenario.

8.2.1 Making efficient decisions using our DMF

Introduction

The DMF is an evolution of our historic approach to making totex investment decisions. It was successfully implemented and used for the first time at PR19, and the approach has matured further over time. The implementation of the DMF aims to deliver best value investments based on robust information – this involves people, processes, governance and systems in an integrated manner as illustrated in the diagram below.

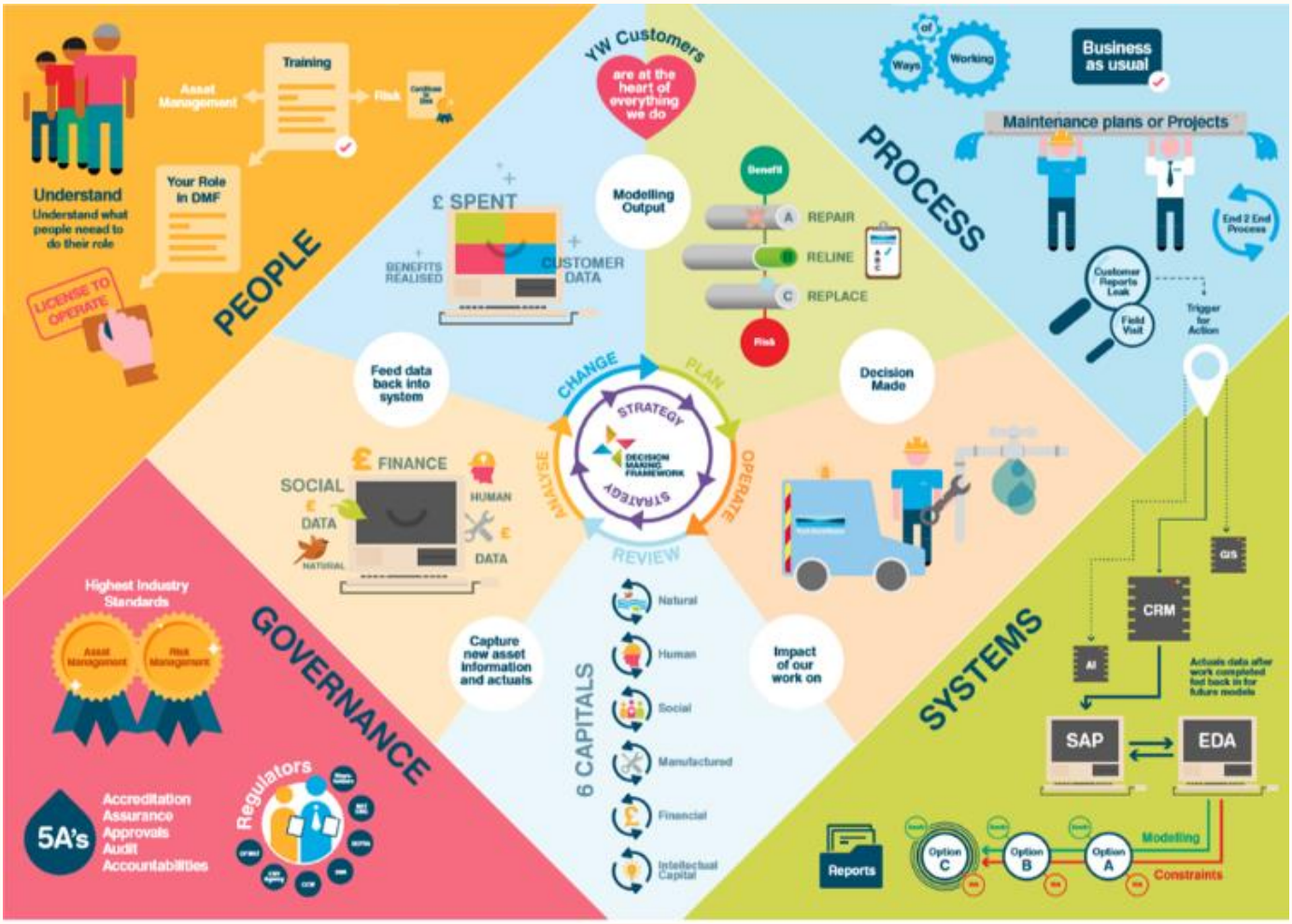


Figure 1: The overall DMF process

Figure 1 illustrates the overall DMF process. Further details on each element of the process are provided in the subsequent sections.

Asset modelling of risks and solutions

Asset modelling builds an understanding of how the health of our existing asset base is likely to change over time. We employ a suite of asset deterioration models to estimate the likelihood of asset failure, the expected impact on our service levels as quantified using the SMF, and the possible options to mitigate. Our asset deterioration models cover:

- Non-infrastructure assets (treatment works, pumping stations etc.)
- Water network structural mains
- Wastewater network – structural
- Wastewater network – hydraulic flooding
- Wastewater network – rising mains.

Asset models are continuously developed, refreshed and refined by collecting and analysing contemporary real life data from our asset inventory and work management systems. The data helps us to refine our understanding of the factors that lead to asset failure.

We then use that to predict and estimate asset failure rates, whilst ensuring the consequence of failure is also modelled and quantified consistently using our SMF. Some of the key data inputs used in asset modelling include:

- Asset attributes (material, age, location, install date, operational status)
- Failure and intervention history (work orders, maintenance history)
- Historic repair costs
- External attributes (such as weather, soil type, etc.)

The predictive asset models provide a robust forecast of asset failure under different operating and investment conditions, to best achieve a desired service level. The models provide tangible insight into asset health and performance, which have been used extensively as part of our targeted allowance submission for infrastructure and non-infrastructure assets.

For more details see Section 8.5

Figure 2: The six capitals

Project Charter risks and solutions

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 that are created outside of the asset models 'Project Charters'.

Assessment is typically carried out by subject matter experts and scored against the six capitals using the SMF. Using the SMF ensures that the assessment output is aligned with that of the modelled risks and helps ensure that both modelled and non-modelled risks can be considered consistently by the DMF's downstream optimisation processes.

Producing an efficient plan

The data generated through both asset modelling and the project charter process allows us to identify the expected service 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 solution costs are defined following the process outlined below. 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.

Quantifying the cost of our plan

We predict and forecast the majority of our capital expenditure costs using our unit cost models, which are collectively managed through our Unit Cost Database (UCD). These models have been developed using actual costs from delivered capital projects and schemes, adjusted to current price base, giving a unit cost for various types of physical assets across our portfolio. There are well over 500 models which have been used to quantify our capital schemes, which provide us with the ability to build detailed project scopes down to equipment levels. We believe our UCD costs are efficient based on the fact that they represent true outturn costs to deliver a specific scheme, thus not needing additional risk 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. The operational overheads linked to those capital schemes are also considered, based on historical outturn costs.

SAs 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.

For some schemes (particularly where we do not have any historical outturn costs) we have costed capital solutions based either on:

- Partner estimates based on a specific design.
- Pro rata'd costs based on external data sources from outturn costs (for example for wetland schemes).

We have also made use of WRc's 'Cost Information for Water Supply and Sewage Disposal' Technical Report 61 (TR61) where UCD costs are not available for specific equipment or assets. This database is used across the industry for cost estimation in strategic business planning and capital delivery.

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 2 above. 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. The service measures and valuation framework were extensively reviewed and updated in the 2020-2025

period, with support from external partners (Stantec and ICS Consulting), which has resulted in contemporary monetary values across the six capitals. Changes in each service level are monetised using these rates, giving a quantified assessment of the benefit of these changes, comparable across all risks and solutions.

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 us to evaluate creative long term, innovative solutions against more traditional solutions on an equitable basis. We apply this approach as a framework across our whole investment programme, not just as an assessment on individual solutions.

The output of the application of the six capitals framework is an annualised monetary benefit valuation which can then be combined with financial costs to give a net present value. This is used to derive the overall cost benefit of a given solution.

Portfolio optimisation

When we have gathered all the data from asset modelling and project charter development, and quantified costs and benefit, we move on to the active decision-making phase of our process. The Enterprise Decision Analytics (EDA) asset optimisation engine is used to assess all our collected data through the EDA Portfolio Optimisation Model.

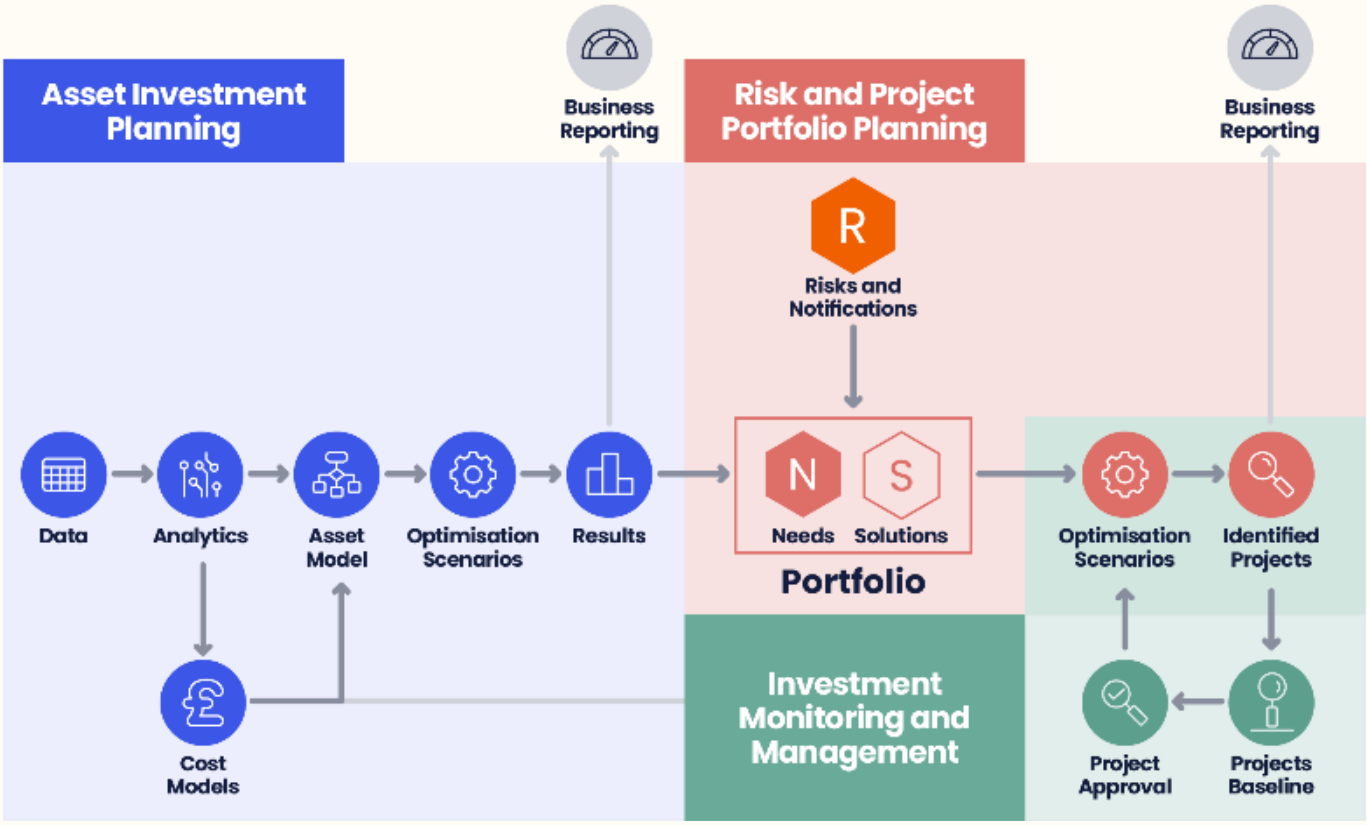


Figure 3: Portfolio optimisation process (DMF)

The EDA Portfolio Optimisation Model is used to run a series of calculations. It applies all the SMF valuation rates to select the best mix of solutions for our given objectives (cost and service constraints). Tens of thousands of calculations are made, and options are ranked for the overall best net-benefit. This ensures 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. For example, it's possible to request 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 requirement for cost efficiency, we continuously run, review, and rerun optimisations in an iterative way. This helps us to deliver our investment needs effectively across our entire asset base, whilst ensuring a robust, empirical view of investment benefit is measured and quantified, as part of our plan.

8.3 Assessing efficient costs

Cost assessment is an integral part of the price review process. In this section we discuss Ofwat's base cost modelling approach, our prior engagement with Ofwat on this and the implications on our plan. It is important that the expected costs of delivering the programme are as closely related to the real world as possible to ensure that we will have the funds we need to deliver for our customers over the five years of the plan, and not too much or too little.

It is also important that costs falling outside of Ofwat's modelling (such as business rates) are fully accounted for. These are costs that we are not able to control and cannot mitigate through, for example, improved productivity. We set out details of our unmodelled costs and our views on how Ofwat should assess these.

We also outline our assumptions on frontier shift and share our views on real price effect considerations.

8.3.1 Ofwat's base cost modelling approach

Ofwat consulted on its approach to econometric base cost modelling in April 2023 and we provided detailed responses to the multiple questions raised, supporting some elements and challenging others.

We welcomed the creation of top-down wastewater models which help mitigate cost allocation and structural differences between companies. We were also pleased to see Ofwat recognise that the modelling was unlikely to cover the ongoing additional costs of operating solutions delivered through our AMP7 Water Industry National Environment Programme (WINEP) investment programme. We have proposed a cost adjustment claim **(Section 8.6)** and the Cost Adjustment Claim appendix for these additional costs but recognise Ofwat could alternatively choose to address this by providing a cost benchmarked post-modelling adjustment for the treatment costs, as this is a common issue for all companies.

For more details see Section 8.6

Cost Adjustment Claim appendix

The concerns we raised in our consultation response remain, and we summarise below some of the critical areas that we ask Ofwat to reflect on, and adjust for, when assessing the industry's efficient base cost allowance:

- The modelling is very similar to that undertaken at PR19. The models do not **incorporate service or maintenance drivers**, which can have material impacts on costs. It is not uncommon for such drivers to be incorporated into cost models in other sectors.
- **Trade-offs between sewage treatment (SWT) and bioresources (BR) models** could lead to unrealistic benchmarks being set. A combined model (bioresources plus) would appear to be the best way to account for these.
- **The '% combined sewers' variable,** which cannot be considered endogenous in any meaningful way, should not be excluded from the modelling and is not made redundant due to the urban rainfall driver captured in the proposed Sewer Network Models. Our plan includes both a cost adjustment claim (to account for the cost differences seen in the historic spend due to this variable, despite performance differences) *and* proposed adjustments to our sewer network PC levels (to account for differences between companies' operating circumstances)
- **Determining the appropriate benchmark –** the stringency of the benchmark should be based on the confidence in the modelling rather than by targeting a specific industry efficiency challenge.
- **Ensuring that cost modelling accounts for the inflationary pressures experienced in the 2020-2025 period –** Companies have experienced inflation above Consumer Price Index, including owner-occupiers' housing costs (CPIH) in many input

prices in recent years. The modelling approach will not fully reflect these costs, as the historic dataset is only partially influenced by them.

We have not included a cost adjustment claim for this, as we believe it is an industry-wide issue rather than something specific to Yorkshire Water. Also, the value is difficult to quantify because of the uncertainty on the benchmarking approach and the future trajectory of both the CPIH and input price indices.

We recommend that Ofwat includes an adjustment pre- or post-modelling to ensure that the prices being experienced by companies at the time of the determination are funded by the base modelling, rather than the average prices over the modelling period.

As part of our PR24 Econometric Base consultation response, we provided a report from KPMG that includes worked examples on how this could be done for energy costs. A similar approach could be adopted for other costs.

We also propose in **Section 8.3.2** and in the RPE appendix that, following this adjustment, a wider uncertainty mechanism should be introduced to protect customers and companies from future volatility in input prices.

For more details see Section 8.3.2

We commissioned Oxera to provide an independent, top-down assessment of both Ofwat's proposed modelling approach and Yorkshire Water's efficient allowances against potential econometric models. Oxera has considered the wholesale and residential retail cost models that Ofwat proposed at the PR24 cost modelling consultation. They have developed an alternative suite of models that perform well against Ofwat's modelling criteria and which reflect Yorkshire Water's operational characteristics more accurately. Oxera has also taken into account the industry's feedback on Ofwat's PR24 consultation models, where appropriate, in developing alternative models.

The Oxera report can be found in the **Oxera cost modelling appendix**

8.3.2 Frontier shift efficiency and real price effects

Frontier shift efficiency

At PR24, companies must reach a view on their overall scope to make efficiency savings. This has two elements:

- Catch-up efficiency (the efficiency 'gap' between an individual company within the industry and the efficiency benchmark); and
- Frontier shift (the efficiency savings that even the most efficient firm can make in the 2025-2030 period due to assumed productivity gains).

We have commented on how Ofwat should assess catch-up efficiency in **Section 8.3.1**, and challenged ourselves to meet the totex efficiency of an expected benchmark company (after Yorkshire Water specific cost adjustments are applied).

For more details see Section 8.3.1

Our proposed frontier shift is based on an economic analysis of the sector level scope for productivity improvements. Together with a consortium of other water companies, we commissioned Economic Insight to produce an independent report into this topic.

In the report, Economic Insight notes that the UK has experienced 15 years of falling and low productivity performance consistently across all UK industries since 2008. At the same time, UK regulators have been setting increasingly challenging frontier shift targets.

The report then undertakes a comparator analysis, using total factor productivity (TFP) data, to arrive at estimates for an appropriate frontier shift challenge for water companies at PR24.

The estimation sets out both a *plausible* range of frontier shift for the wholesale water value chain of between 0.3% - 0.8% p.a., and a *likely* frontier shift range of between 0.3% - 0.7% p.a. The corresponding likely range for the retail water value chain is 0.3 to 0.6% p.a.

For both the wholesale and retail price controls we have proposed the use of the upper end of the likely ranges (0.7% p.a. for wholesale and 0.6% for retail). While numbers at the lower end of the range could be justified, choosing values at the top of the range is in line with a stretching and ambitious plan, and also accounts for uncertainty or alternative productivity assumptions that could be made.

We believe our proposed frontier shift is particularly stretching, when we consider that the following two

elements (discussed in sections 3D and 3E of the Economic Insight report) are not included when estimating the likely range:

- **Performance improvements through base**: The total of any efficiency estimates must be allocated between cost reductions and quality improvements to avoid a double count. Performance improvements (as expected through base expenditure) themselves are productivity gains if no additional allowance is provided to achieve them.
- **Productivity in CPIH**: Another important consideration is that CPIH itself (to which the wholesale price controls are indexed) must capture some productivity gains. Changes to consumer prices will in part include efficiency gains achieved by companies producing these goods and services. Neither Economic Insight nor Yorkshire Water has estimated this double count in the plan, but we ask Ofwat to consider this in ensuring that a reasonable frontier shift is assumed in its final determinations.

We do not apply frontier shift efficiency to the unmodelled costs outside of company control, namely business rates, service charges and IED compliance charges.

We therefore believe that our proposed Frontier Shift efficiency is justified and realistic yet stretching.

Real Price Effects

The 2020-2025 period has seen input prices in energy, chemicals and materials increase significantly relative to CPIH, and has shown that CPIH is not a very good proxy for water company input costs (particularly in the short term).

Companies have an opportunity to request Real Price Effect (RPE) adjustments to totex allowances to reflect future differences between input prices (energy, labour, chemicals, materials) and CPIH. However, both input prices and CPIH from 2024-30 are likely to remain extremely volatile (see KPMG and First Economics Reports in our Real Price Effects appendix), which makes assessing RPEs difficult. Incorrect adjustments at the PR24 stage could negatively impact customers or companies in the 2025-2030 period.

We therefore do not propose any wholesale RPEs for 2025-2030. Instead, for the wholesale price controls, we propose that Ofwat considers a true-up mechanism that will adjust totex allowances to reflect actual company costs. This will protect customers and companies from windfall gains or losses due to future volatility of input prices relative to CPIH.

Such a true-up mechanism is only appropriate from a starting allowance that fully accounts for the inflation seen in recent years. As described earlier in this section, the base econometric models do not currently reflect this, and we urge Ofwat to ensure that the current price of energy, chemicals and materials is reflected in its modelling.

The retail price control is different from the other price controls in that there is no indexation to CPIH. Wage inflation is the key input cost driver in retail, and it is less volatile than energy, chemicals or materials. On both a historical and forward-looking basis, wage inflation in the UK is generally positive and non-zero. We therefore include a RPE for retail labour costs.

The Real Price Effects appendix contains analysis completed to support and quantify this adjustment, summarised in Table 1

	2025-26	2026-27	2027-28	2028-29	2029-30
Labour input price pressure forecast (OBR)	**1.66%**	**2.06%**	**2.48%**	**3.49%**	**3.60%**
Proportion of retail costs assigned to labour	**33.27%**	**33.27%**	**33.27%**	**33.27%**	**33.27%**
RPE adjustment	**0.55%**	**0.69%**	**0.83%**	**1.16%**	**1.20%**

Table 1: Proposed Real Price Effect adjustment for retail labour

The Real Price Effects appendix contains analysis completed to support and quantify this adjustment, summarised in the table below.

We ask Ofwat to consider whether differences between company and regulator views on real price effects should be included in the ambition assessment of company plans. Approaches are based on an economic analysis of independent actual and forecast data and are not necessarily reflective of the ambition or lack of ambition of a company. In the case of RPEs, we are proposing an adjustment mechanism which would ultimately change our cost allowances to reflect true differences between input prices and CPIH.

8.3.3 Unmodelled costs

We broadly support the approach that Ofwat took to assessing the areas of unmodelled costs at PR19 and have provided further narrative to explain our approach to assessing our proposed efficient costs and some of the uncertainty around the areas of business rates, traffic management and abstraction licences in the following section.

As discussed earlier in this section, it is not appropriate for frontier shift efficiency to include unmodelled costs outside of company control, namely business rates, service charges and IED compliance charges. These

costs are not within management control and hence cannot be subject to productivity improvements.

Business rates

Business rates (local authority rates in Ofwat tables) have changed and continue to change in scope, regulation, and administration. This brings significant uncertainty to future costs during the 2025-2030 period, increasing financial risk. Rates have gone through the government's promised 'Fundamental Review' since PR19, with the biggest change affecting our industry, and liabilities being moved to three-yearly revaluation reviews (resulting in two revaluation events in the 2020-2025 period). This includes the introduction of a new 'declaration' duty that shifts the responsibility of finding a liability from the local charging authority and or Valuation Office Agency onto the ratepayer (i.e., the water company). These are reflected in our Cost Expenditure methodology and assessment approach. This is significantly different to the business rates of PR19, creating more uncertainty as to future costs after April 2026. Therefore, we consider the local authority rates sharing mechanism should reflect the increased uncertainty and be set at 10:10.

There is clear evidence of this volatility from the 2023 Revaluation, where our clean water assessments reduced by 26%, whilst our wastewater assessments increased by 32%. Should the 'decapitalisation factor' be included as part of the wastewater assessments to reflect cost of capital change between the 2023 revaluation figure and the pre-2017 figure, that would add 14% to wastewater sites rates payment liability from April 2026. This is considered a possibility, given current interest rate increases.

Our Cost Expenditure methodology for business rates follows the established valuation practices agreed with HMRC Valuation Office Agency. Our assessment is supported as appropriate by peer review and audit. The first year of the 2025-2030 period will be in the 2023 Rating List that came into effect from 1 April 2023, so the current rating assessments are known. The next revaluation has been confirmed by government to take effect from the second year of the pricing period (2026 revaluation), with a further revaluation from the final year of the period (2029 revaluation). The effects of these revaluations are difficult to forecast and model because of the different basis of each specialised property asset, and other determining factors to be decided by HM Treasury for Central Government and economic markets. These uncertainties include:

- The Annual Business Rate multiplier and Transitional Relief, decided each year in the autumn spending statement that impacts each property bill, where the 'multiplier' currently increases year-on-year by inflation, which is assessed to ONS CPI, rather than CPIH as used in the regulatory settlement.
- The 'decapitalisation rate/percentage' that is decided by government (without a technical consultation for the 2023 revaluation, in contrast to the 2017 revaluation) that impacts wastewater treatment properties.
- The economic market impacts on wastewater treatment assessments and non-specialised property assessments through change in construction prices and property rental values, respectively.
- The financial outcome of the PR24 price review will directly impact the clean water assessment, as this has regard to permitted financial returns to the company.

It is therefore difficult to forecast and model these elements and effects for the 2026 revaluation, and even more difficult to forecast for the 2029 revaluation. In our plan we have sought to forecast the rating assessments (with assumptions on government decisions, and market price movements on rents and construction costs) to cost the business rates liability change from the second year of the 2025-2030 period.

For the last year of the 2025-2030 period, and the 2029 revaluation, we have sought to forecast wastewater assessments with assumptions on government decision and market price movements on construction costs. For clean water, the assessment will be calculated from the PR24 Final Determination financials which, given the variability of the outcome at this stage, has not been forecast but is assumed to be 'neutral' from 2026. It is covered in the 10:10 mechanism.

We consider there will be a significant increase in liability from the second year of the 2025-2030 period, resulting from both the 2026 revaluation and the change in rating regulations being implemented by the Non-Domestic Rating Act 2023.

Non-Domestic Rating Act 2023

We expect the wastewater treatment assets assessments to increase, due to continued and sustained increases in construction costs, and we expect the clean water assessment to increase from the 2023 Rating List, assuming a reasonable price review outcome.

The non-specialised rating liability is included within the clean water and wastewater treatment assessments, proportioned between Price Controls.

There are a number of uncertainties regarding the specific details of the Non-Domestic Rating Act 2023, so we have forecasted and modelled 'new' extra cost liability for physical changes on rateable properties, taking a 'likely case' scenario, and assuming that the cost effect will be from the second year of the 2025 - 2030 period. However, it is possible that the new duty, and therefore cost, could be implemented earlier than 2026, and could have a retrospective commencement

date back to asset completion. We consider this cost risk and uncertainty is most appropriately covered in the Risk Reward, which we consider should be 10:10.

New 2025-2030 investments in rateable assets will incur extra cost liability from the date of asset completion; these costs are forecasted in the totex plan.

Traffic Management Act

The 2004 Traffic Management Act (TMA) places a duty on local authorities to make sure traffic moves freely and quickly on their roads and the roads of nearby authorities. Water companies who want to carry out street works must apply to the highway authority for a permit. Water companies incur costs relating to the permits themselves, as well as the administration of the permit schemes.

The forecast for TMA costs includes the cost of the permit, inspection fees and costs directly associated with issuing the permit. The forecast does not include implementation or administration costs.

TMA costs are driven by the number of times we dig in the highway. Yorkshire Water does not expect any additional councils to start charging fees, over and above those from whom we have received charges during 2022/23. The forecasts for TMA costs in 2023/24 and beyond are based upon the current councils and current actual job prices incurred (re-priced to 2022/23 prices) and are aligned to expected levels of activity for 2023/24 forecast in our 2020-2025 plan.

We have used this approach for our forecasts of TMA costs because base volumes of activity through the 2025-2030 period are expected to remain in line with 2022/23 levels of activity. Actual costs incurred in year 1 and year 2 of PR19 were impacted by a reduction in jobs during lockdown periods, however we believe that run rates towards the end of the 2020-2025 regulatory period will provide a good indication of costs moving forward into the following period.

Abstraction

The Environment Agency and the Canal & River Trust impose abstraction charges on water companies to recover their costs of managing and regulating abstractions and discharge consents. The cost included within the water resources price control relates to abstraction charges, with costs in other price controls relating to discharge consents.

The Environment Agency abstraction charges saw a significant step up in 2022/23 – almost doubling in price – and will remain at this higher level into the PR24 period. No further step changes in price are expected outside standard inflation. During year 1 and 2 of the 2020-2025 period, until the introduction of the price increase, actual charges were in line with PR19 allowances and the business forecast. Base operating costs in relation to abstraction charges are therefore expected to continue into PR24, in line with 2022/23 levels of expenditure.

The WRMP for the 2025-2030 period includes two new river abstractions and three new boreholes. Operating costs in relation to these have been included in the WRMP cost forecasts and will form part of our enhancement expenditure.

Industrial Emissions Directive (IED) permits & administration

We include a small cost associated with IED permits from the Environment Agency, and administration costs which we expect to be assessed as an unmodelled cost.

Chapter 8
Part 2: What our plan will deliver

Appendices

Part 2: What our plan will deliver

Key Points

- Our plan includes investment of £7.9 billion (pre-frontier shift and real price effects). We are spending £4.7 billion on base and £2.8 billion on enhancement and propose delivery of further enhancement schemes through a programme of direct procurement for customers (DPC) to deliver our statutory obligations and to improve our performance as measured by the performance commitments. We have prioritised those areas our customers and stakeholders have told us are of the highest importance
- The activities in our plan focus on improving infrastructure health, increasing resilience, while seeking to reduce our carbon emissions and improve biodiversity. The plan includes both nature-based solutions that align to customer and government priorities
- We are embarking on our largest ever environmental improvement programme over the next 25 years, which will protect and improve the quality of water in our rivers and at our coasts leading to cleaner safe water environments that support recreation and biodiversity across the region
- We have proposed three cost adjustment claims for combined sewers, phosphorus removal opex and smart metering. We also propose two targeted allowances to support clean water capital maintenance investment into asset health. In agreement with Ofwat we have submitted these within the cost adjustment process

Our plan

Part 2 – What our plan will deliver.

8.4 Overview of our plan

Our plan for AMP8 is for greater levels of investment than we have made in previous price control periods. Between 2025-2030 we plan to invest £7.9bn[1]. This programme is driven largely by the requirements of the WINEP including delivering the Storm Overflow Discharge Reduction Plan (SODRP) as well as improving and protecting river water quality, increasing our resilience and through our WRMP.

We have aligned our wholesale base costs with what we expect Ofwat's econometric modelling will determine as an efficient allowance. We have made the case for three specific cost adjustment claims to base opex where they are clearly justified. These included claims for phosphorous removal, customer metering and for the high proportion of combined sewers in the Yorkshire region. We have also presented the need for two targeted allowances to support greater infrastructure mains renewals and non-infrastructure asset health in the water network plus price control.

Our enhancement proposals are associated with statutory requirements and regional priorities that are supported by customers and stakeholders. The costs for these programmes are built up using cost models from our historical capital investment data, supply chain and consultant costs for areas where we do not have historic data, supplemented with partner pricing of sample schemes.

Our plan will drive productivity improvements through our programmes of modernisation and innovation, to allow us to reinvest to achieve the stretching service targets proposed. Beyond this, we have committed to £160m of ongoing efficiency across wholesale and retail plans.

Table 1 provides an overview of Business Plan investment in PR19 (2020-2025) and those proposed for PR24 (2025-2030). The historic investments have been mapped to the key components of the AMP8 programme.

[1] Numbers in this chapter align to costs in Tables CW1a, CWW1a and RET1a

	Totex summary (price base 2022/23)	PR19 CMA FD	PR24 proposals £m*
Base	Water Resources	224	245
	Water Network Plus	1,643	1,781
	Wastewater Network Plus	1,494	1,607
	Bioresources	322	347
	Cost Adjustment Claims	0	308
	Targeted Allowances – Asset health	0	438
	Total base	**3,683**	**4,727**
Enhancement	WRMP	33	292
	WINEP	921	1,809
	DWI Water quality programme	82	95
	Bathing Water Storm overflows	0	266
	Net zero	0	51
	Living with Water	8	26
	Other enhancement	241	96
	Bioresource – 'Appropriate measures'	0	118
	Cyber & Physical security	0.3	59
	Enhancement Total	**1286**	**2,812**
Retail		345	446
Total		**5,315**	**7,985**

Table 1: Summary of AMP8 proposals and historic comparison (*Numbers in the table are subject to rounding)

Strategic Planning Frameworks

Our plan for 2025-30 is set in the context of a number of longer-term planning frameworks. The purpose of these frameworks is to ensure that the needs of both today and the future are considered in our plans. This long-term planning approach takes account of future uncertainties to ensure that the costs of meeting these needs is spread fairly across existing and future customers. It also ensures that we take timely and appropriate actions today, avoiding investment that is not needed later, and ensuring we make the investments that are required today to mitigate future risks. The strategic planning frameworks are developed in line with their own individual guidance and customer preferences. The following strategic planning frameworks are considered:

- Long-Term Delivery Strategy (LTDS)
- Water Resources Management Plan (WRMP)
- Drainage and Wastewater management Plan (DWMP)

In this section we also consider our plans for the environment that are driven by the Water Industry National Environment Programme (WINEP).

LTDS

Our LTDS sets out our vision and ambition for the next 25 years, the outcomes we aim to achieve, and the actions and investments we intend to undertake to deliver them.

We face a series of long-term challenges including climate change, affordability pressures and rising customer expectations around service delivery and environmental protection. A long-term view is essential to ensure that we make decisions that maximise the value we create for customers, society, and the wider environment, and take account of intergenerational fairness.

Our customer supported LTDS brings together strategic planning framework requirements (WRMP and DWMP), statutory obligations, existing commitments, and feedback from customers and stakeholders to outline the investment activities that are required over the next 25 years to meet our ambition. It forecasts the anticipated long-term requirements for the environment which will be defined through the WINEP, activities to ensure high-quality drinking water as defined through the Drinking Water Inspectorate (DWI) water quality programme and steps to meet the government's statutory net zero target by 2050. We have also identified those activities that will be required to ensure that our services remain resilient into the future.

Our approach to resilience is also covered in more detail in our **business resilience appendix**

Within our LTDS we have identified a core pathway of activity. This core pathway represents what would be required to meet our statutory requirements, our customer priorities and deliver our vision to create 'A thriving Yorkshire: right for customers, right for the environment.' We have also identified a number of alternative pathways and the trigger events for these pathways. The alternative pathways highlight what would be required under alternative plausible future scenarios such as more extreme climate change, legislative or policy changes, changes in public acceptability and expectations, or a challenging economic environment. We also include an alternative pathway which sets out the activities that would be required to deliver statutory requirements only and takes a least cost (largely grey infrastructure), rather than delivering broader benefits through the use of blue green infrastructure to deliver the SODRP targets.

Table 2 summarises the investment requirements identified in the core and statutory alternative pathway.

Pathway (22/23 prices)	Scope	AMP8 '26-'30 £bn	AMP9 '31-'35 £bn	AMP10 '36-'40 £bn	AMP11 '41-'45 £bn	AMP12 '46-'50 £bn	Total £bn
Core Pathway (Enhancement)	**Enhancement Statutory requirements** WINEP; WRMP; Water quality (DWI); SEMD/cyber; Net zero; SODRP (50% blue/green ambition) **+ Enhancement Non statutory** – Resilience; hydraulic flood risk reduction; Living with water	2.81	6.37	5.67	10.26	24.75	49.85
Statutory Pathway (Enhancement)	**Enhancement Statutory requirements only** as core pathway. SODRP – least cost solutions, predominantly grey	2.81	2.67	3.48	3.27	3.43	15.66

Table 2: LTDS core and statutory only alternative pathway investment requirements.
(Enhancement requirements as per LTDS)

The first five years of our LTDS form the basis for our Business Plan for the 2025-2030 regulatory period. You can find out more about our LTDS in **Chapter 5** , LTDS appendix and our engagement on this in **Chapter 6.**

LTDS appendix

How we responded to Ofwat's feedback in the development of our LTDS

Following a presentation on our proposed approach to developing our LTDS to Ofwat in February 2023, Ofwat provided feedback that was both generic to the industry and specific to Yorkshire Water. In Chapter 5, we explain how we have responded to this feedback.

Changes to long-term service forecasts in the LTDS

At PR19, all companies provided a long-term PC service forecast to 2045 as part of the data tables. We have made some changes to those long-term PC forecasts in our LTDS.

For a number of our wastewater performance commitments, we have developed a better understanding of rainfall patterns and climate change and taken into consideration the forecast costs of delivering long-term improvements. We have sought to achieve a balance across our basket of measures and have prioritised internal sewer flooding over external sewer flooding in line with the expectations of our customers and stakeholders. We recognise that in respect of our wastewater service, reducing incidents of internal sewer flooding is the highest priority for customers. We have set our long-term forecast for 2050 at zero internal sewer flooding incidents. Achieving zero would be exceptionally challenging given our specific regional factors which include urban rainfall, length of combined sewers and prevalence of cellared properties. We will strive to achieve a target of zero in 2050 and in the next 25 years we will focus on innovation and technology development to support this. We will collaborate with other companies across and outside the sector to ensure that we are adopting all suitable technologies to achieve this goal.

For sewer collapses, the scale of the investment required to reduce the number of collapses is significant. We remain committed to improving the health of our wastewater assets but have prioritised investment in our clean water network because clean water asset failures have a more immediate and direct impact on service delivery than those on our wastewater network – not all of our sewer collapses lead to a service impact.

Across performance commitments associated with water demand including PCC and leakage which are influenced by our WRMP, our long-term trajectories have been aligned to the WRMP24 and are in line with the 2050 targets.

WINEP

WINEP	AMP8 £m
Wastewater	1,726
Water	83

Table 3: Summary of WINEP

The WINEP is the programme of actions water companies need to take to meet statutory environmental obligations, non-statutory environmental requirements, or to deliver against a water company's statutory functions. Our WINEP incorporates activities across the water and wastewater price controls and includes several of our land-based programmes. Taking a 'source to sea' approach, it covers the management of:

- Our land
- The sources of our clean water
- The environmental impacts of our reservoirs and abstractions
- The impacts of the wastewater we release.

Our WINEP programme is integral to our Business Plan, and relevant aspects are integrated with components of our drinking water quality submissions to the DWI and our dWRMP submitted to Defra.

Our AMP8 WINEP enhancement programme is the largest we have ever proposed but is critical to meeting our statutory obligations. The increase in the scale of the programme is specifically driven by the SODRP.

Consistent with the EA's WINEP methodology, we developed options to meet each of the WINEP drivers and assessed which of the options proved to be the best value for customers. For some WINEP drivers our statutory obligation was prescriptive, and we had little or no flexibility in developing alternative solutions.

Statutory actions make up over 95% of the WINEP programme.

The most significant area of non-statutory investment is associated with actions to improve non-designated inland bathing waters where there is evidence of customer support. The scale of this non-statutory investment is £61m. We propose to improve the quality of three inland waters where we know the community intend to applying for bathing water status in AMP8 or in the case of one existing inland designation, where the stretch was covered in the application but is now located downstream of the designated sample point.

These water quality improvements include reducing storm overflow discharges and upgrading wastewater treatment works. We also propose bathing water investigations at the non-designated sites, to further understand upstream impacts to inform any future investment requirements. Our plan, with this additional investment included, is supported by our customers – 78% of customers found our plan acceptable.

For more details see Chapter 6

Other non-statutory investment of circa £12m covers two main areas:

- Playing our part in national investigations on the impact of chemicals and microplastics on the environment, gaining a better understanding of the technically achievable limits for nitrogen levels in treated wastewater and national investigations into monitoring the impact of wastewater discharges to coastal and other complex environments, including location specific investigations within our region.
- Addressing regional priorities, such as the co-creation and co-delivery of actions to protect critically endangered aquatic animals, and collaborative investigations into in-river wetland schemes in a river catchment to improve the phosphorus status of the river, along with ecological improvements in the receiving environment for one of our largest wastewater treatment works.

Collaborative development and delivery

We have worked closely with the Environment Agency and Natural England in the development of our WINEP programme. Where it has been relevant to do so we have also worked closely with other organisations such as catchment partnerships, rivers trusts, wildlife trusts, lead authorities for Local Nature Recovery Strategies, local environmental non-government organisations and many others. This has helped to ensure that our proposed programmes of work:

- Are aligned with the principles of the Water Industry Strategic Environmental Requirements (WISER) and WINEP guidance and have been approved by the Environment Agency accordingly.
- Generate significant cost benefit due to the wider natural and social capital benefits arising from partnership working, and maximise outcomes for Customers, where small amounts of Company investment lead to large secondary benefits.
- Align strongly with Catchment Partnership priorities detailed in their associated Catchment Plans, and with the strategic priorities of Yorkshire's Wildlife and Rivers Trusts.
- Are focused particularly on mitigating water company pressures on wetland environments, a habitat type shown by EA River Basin Management Plan evidence reviews and the Yorkshire Wildlife Trust's State of Nature Report to be of key importance in Yorkshire for halting species decline.

Areas of variance between final (and published) planning frameworks and Business Plan submissions

Our Business Plan is based on our WINEP programme published 3rd July 2023. Since that time both Defra and the EA have requested that companies consider the phasing of their WINEP activities. This has resulted in changes in the following areas that, due to timing, are not yet reflected in our Business Plan.

- Monitoring of emergency overflows (U_MON6)
- Septic tank replacements (U_IMP7)
- Microbiological treatment of inland and coastal bathing waters – Wetherby/Knaresborough disinfection (BW_IMP4)

The Environment Agency confirmed phasing for monitoring of emergency overflows and septic tank replacements in writing on 19 July 2023, with confirmation of bathing water phasing received in writing following discussion with DEFRA on 18 September 2023. However, for septic tank replacements (U_IMP7), further analysis was carried out to comply with the EA request requiring only sites discharging into, or upstream of protected areas to be improved in AMP8, with all others being phased into future periods. This has resulted in the 18 September 2023 publication of WINEP being out of date. The relevant enhancement cases provide further details of implications of the phasing and the impact on PR24 table lines as a result. The investment to be phased to AMP9 is circa £129m.

WRMP and Regional Water Resource Planning

WRMP	AMP8 £m
Draft WRMP	£284
Business plan – most recent view ahead of revised draft plan finalisation	£292

Table 4: Summary of WRMP

Our WRMP has been developed in line with the planning guidance and has been informed by our customers. It is a key component of our long-term,

strategic planning framework and sets out how we plan to maintain a safe and reliable water supply to customers over the long term. We are forecasting a supply demand deficit in the future, which results from the impact of climate change, population growth, the need to protect the environment and mitigate the loss of imported water from a neighbouring water company. We need to take action to ensure resilient water supplies into the future. To offset these risks, our draft WRMP, published in November 2022, set out a twin track approach to both demand reduction and increasing supply options.

Demand options include leakage reduction, smart metering and water efficiency. Supply options include new borehole sources and associated water treatment works. We have also included plans for two river abstractions and associated treatment. In the medium term our plans include a treated water transfer within our operational area to offset the loss of imported water from outside our region. In the long term, to mitigate the future resource reductions associated with the need to protect sensitive river environments, our plans include a transfer from outside the region and new storage and treatment capacity at existing or new water treatment works.

For periods of dry weather, we will maintain the actions in our drought plan, but over the lifetime of the plan we will reduce our reliance on these measures. This will reduce from the most serious of measures being required once in every 200 years, to the most serious of measures being required once in every 500 years.

Feedback on our dWRMP

Our draft plan (dWRMP) was published for consultation in November 2022. In July 2023, we published our Statement of Response which sets out all the points raised through the consultation and how we intend to incorporate those into our revised draft plan (rdWRMP) where relevant. A summary of our responses is provided in Table 5.

Draft WRMP - key feedback	Response - rdWRMP developments following draft
Demand management – granularity of options and cost benefits for leakage, non-household, and household efficiency	We are updating the demand reduction options, including cost and benefit data. The strategy and options for achieving regulatory demand reduction targets are being developed using a demand optimisation model in tandem with the WRMP decision making process.
Option appraisal - limited supply options in draft plan	We make a commitment to carry out a programme of wider options identification and appraisal ahead of and for inclusion in our subsequent WRMP.
Timing of key projects - supply options	The river Derwent abstraction reduction has been brought forward to 2040 to align with investigation outcomes, regional plans, and Northumbrian Water's WRMP. Since publishing our dWRMP, we have received confirmation that the existing Severn Trent Water transfer will cease in 2035. To offset this loss, the backfill option delivery programme will need to be brought forward.
Environmental assessment – strategic and cumulative assessment	We are further engaging with Company and Regional plans to ensure in-combination impacts are assessed.
Stakeholder engagement	We are taking a more customer accessible approach specifically to the Non-Technical Summary (NTS) document.

Table 5: Summary of responses to feedback on our dWRMP

Working towards our rdWRMP – impacts on our business plan

We continue to work through the WRMP process and are producing our revised draft plan (rdWRMP). We are aiming to complete this in the autumn of 2023, and have incorporated the latest view of the emerging rdWRMP in our Business Plan.

As with the dWRMP, the strategy remains a twin-track approach, delivering demand reduction and supply side solutions to close the supply-demand deficit. The long-term demand management strategy targets will remain the same as dWRMP (50% leakage reduction, 110 l/h/d Per Capita Consumption (PCC) by 2050 and a 15% reduction in business demand by 2050). Following feedback on the approach we took to optimisation of demand solutions in our dWRMP, the trajectory for reaching these targets is being remodelled and we therefore anticipate that the combination of these options will change in the rdWRMP to reflect the various levels of benefits associated with each type of intervention. The Business Plan contains the latest available view on this.

The supply-side strategy will be similar to that presented in the dWRMP. Following consultation and confirmation of the loss of the bulk Severn Trent Water import, some changes will be made to the rdWRMP to reflect this, and these are signposted in our Statement of Response. Near term surface and groundwater solutions remain key for the 2025-2030 period. The larger strategic supply solutions in the dWRMP are highly likely to remain, as they are key to replacing lost deployable output. These include schemes to offset the loss of the Severn Trent Water transfer and to address the uncertainty represented by the Environmental Destination requirements, which impacts the river Derwent abstraction. Following publication of our dWRMP, the river Derwent abstraction reduction has been brought forward from 2050 to 2040 to aligning with both the regional plan and the Northumbrian Water WRMP. Further investigations and options appraisal will determine if the revised date and solution are both deliverable and best value. This will inform our rdWRMP and future planning cycles.

In addition, since the dWRMP submission, it has been confirmed that the 2020-2025 period Strategic Resource Option to raise the reservoir levels in the Derwent Valley is no longer a valid option. To offset this loss, we must start to implement a ‘backfill’ option well in advance of the notice period in 2030, and therefore the proposed delivery programme will need to be brought forward, as part of the rdWRMP.

We continue to evaluate potential alternative pathways to manage long-term future uncertainty, but we are not currently anticipating any material changes to the overall WRMP approach.

All these changes will be updated in our rdWRMP to be published in autumn 2023. Therefore, as per the guidance from Ofwat, our PR24 plan uses the ‘best data’ which is a combination of supply options (as per the dWRMP), and the latest demand interventions. Table 6 provides a summary of the cost requirements identified for AMP8 at dWRMP and the costs included in the PR24 Business Plan for WRMP.

	dWRMP	PR24	Comment
Category	**Totex (£m)**	**Totex (£m)**	
Leakage	£23.49	£23.49	No Change
PCC/Water Efficiency	£16.24	£19.24	Note these costs have been included in table CW3.43 and this will be addressed in the rdWRMP reconciliation process.
NHH Demand	£0.00	£18.08	Non-household (NHH) demand reduction activity is included to meet 15% reduction in business demand by 2050.
Supply Side improvements	£233.17	£155.49	No overall change in activity, components to be delivered through a proposed DPC route
Total without metering	**£272.9**	**£216.3**	
Metering exchange programme	£11.55	£75.2	Additional optioneering and best value evaluation resulting in a change to the speed of the smart meter roll out, from a three AMP programme to a one AMP programme. Region wide, we will replace all end-of-life assets with smart meters in AMP8. Note: CW3 and the total metering enhancement case totals £134m. The costs included in this table are a proportion of this, in line with WRMP guidance.
Total Including WRMP enhancement metering	**£284.45**	**£291.5**	Excludes components to be delivered through proposed DPC route

Table 6: dWRMP and PR24 business plan summary

DWMP

In consultation with our customers, we have developed a 25-year DWMP which sets out our long-term approach to drainage and wastewater management and ensures that the needs of the future are reflected in our plans. If we did not invest in our wastewater assets by 2050, the forecast impact of population growth and climate change would result in an increase in storm overflow activations, the region would be at increased risk of flooding, and levels of performance of our wastewater treatment works would be impacted.

Within the DWMP, we created a preferred plan which complies with all the targets set out in the SODRP, ensures our wastewater treatment works remain compliant, reduces hydraulic flood risk to our customers and delivers flood risk reduction through the Living with Water Partnership. Our preferred plan incorporates our Company ambition for the delivery of the SODRP to include blue/ green infrastructure elements in 20% of solutions in AMP8 and 50% of solutions from AMP9 onwards. Blue/green refers to infrastructure that aims at restoring the natural water cycle, such as vegetated channels for attenuation of flow.

In addition to our preferred plan, we also created two less ambitious alternative plans within the DWMP: a core plan and a least cost plan. Our core plan delivers only our regulatory requirements through a mixture of grey and blue/green infrastructure solutions. Our least cost plan delivers our regulatory requirements but has minimal blue/green interventions.

Figure 1 below illustrates our DWMP preferred plan.

For more detail on all the pathways see our **DWMP.**

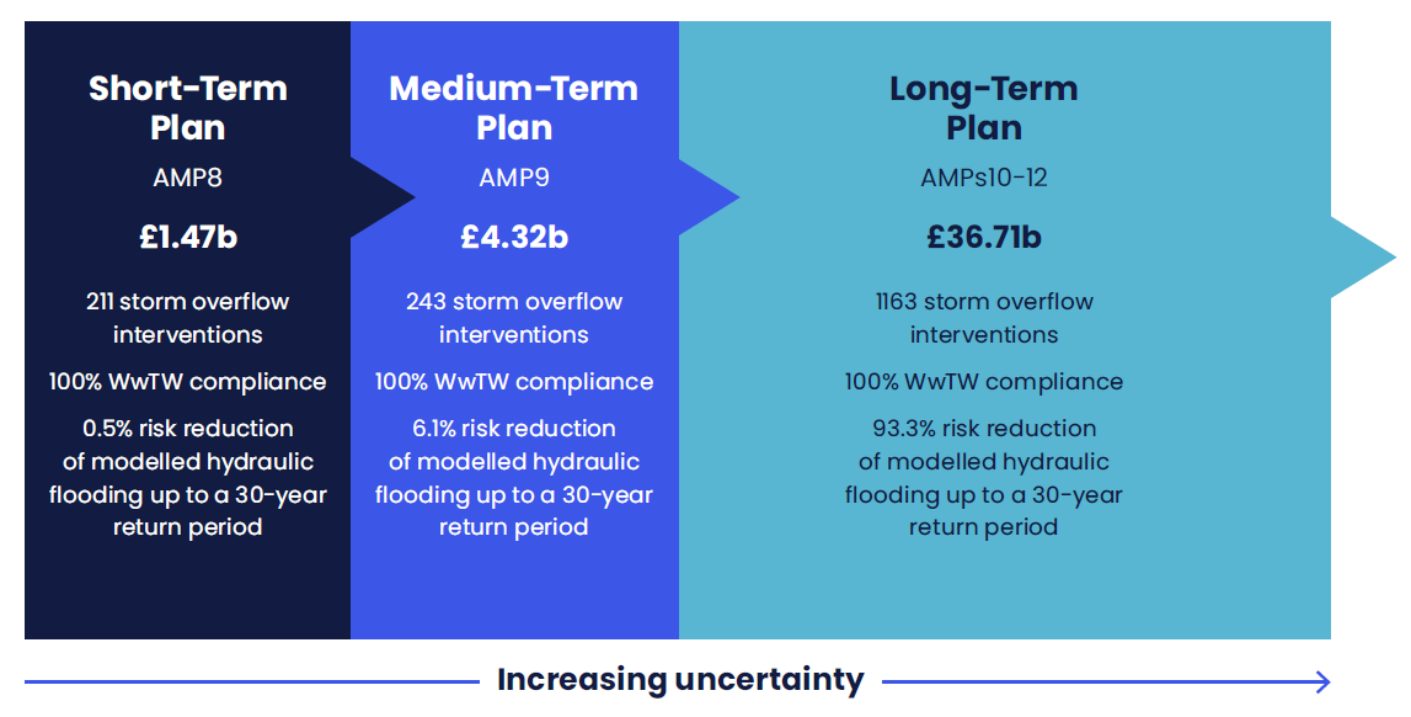


Figure 1: Summary of the DWMP preferred plan costs and outcomes, as published in final DWMP.

In our preferred plan, we will be investing in storm overflows to reduce the number of spills per annum to the regulatory targets, we will achieve 100% Wastewater Treatment Works (WwTW) flow and quality compliance and invest in our network to reduce modelled hydraulic flood risk for our customers by 2050. Since publishing our DWMP, we have continued to refine our plans and there are a number of instances where the PR24 plan and the LTDS data tables differ from the published DWMP data tables. This is explained further Table 8.

In the first five years of our plan, 2025-2030 this means an investment of £1.27 billion on 243 storm overflow interventions and the delivery of our wastewater treatment works improvements, alongside investigations into no local adverse ecological harm from our storm overflows and installation of the first phase of continuous water quality monitoring. Our customers supported our plan outlining this investment - the vast majority found it to be acceptable (78%), as outlined in **Chapter 6**.

For more details see Chapter 6

How we addressed the feedback to our draft DWMP

We published our draft DWMP for consultation in June 2022. Following this consultation, we responded to the feedback we received in our statement of response.

Statement of response

A summary of the Ofwat feedback to our draft plan and improvements we made to our final plan are included in Table 7.

Draft DWMP feedback	Final DWMP improvements from draft
Delivering planning objectives and risk assessment – need to set out clearly how base maintenance can address some of the risks as part of the hierarchy of options before recommending enhancement schemes.	Links to other plans and strategic frameworks were clearly articulated. We conducted sensitivity testing against different climate change rates and population growth predictions. Our reactive and proactive maintenance seeks to keep the system in an optimal condition to allow maximum operating capacity, meaning we intervene to provide additional capacity only where necessary. We have factored the benefits of our base activities into our PC forecast within the Business Plan.
Decision Making and Option Appraisal – concern raised that the draft plan could drive mainly grey solution options.	The DWMP preferred plan sets out our ambition to deliver 20% of SODRP interventions with components of blue/ green solutions in AMP8, rising to 50% from AMP9.
Storm overflow reduction plan – ensure that all elements are considered in the plan.	Our DWMP includes most elements of the SODRP where they are known, and allows for assessment of the unknown components associated with 'no local adverse ecological harm'.
Costs, funding and affordability considerations – set out bill impacts for a range of scenarios	Customer bill impacts are shown in the short, medium, and long term for multiple pathways in the plan.
Assurance and Governance	We provided appropriate assurance and governance, and published our statement of response.

Table 7: DWMP draft and final feedback and improvements

AMP8 DWMP in context

For AMP8, a significant proportion of the activity identified in the DWMP is required to meet the statutory requirements of the WINEP (see section WINEP) for details of non-statutory WINEP activity and the SODRP. Our short-term plan has fed into our PR24 Business Plan and incorporates previously agreed Accelerated Infrastructure schemes, SODRP and WINEP. In respect of the AMP8 plan, we have high confidence in the proposed interventions as these have been developed using appropriate models (hydraulic and water quality) and have a high quality of data driving the solutions. We will continue to seek opportunities to deliver solutions that offer best value, be that through blue/green infrastructure approaches, partnerships or other means.

Through our established partnerships we will continue to work with others to collaboratively develop and deliver solutions and will proactively identify opportunities for new partnerships. For further details see Chapter 8.13. Long-term planning enables future partnership opportunities to be identified and developed in order that our customers and the environment can receive additional benefits often associated with collaborative solutions.

New partnerships, see Section 8.13

Areas of variance between final (and published) planning frameworks and business plan

There are a number of instances where the PR24 plan and the LTDS data tables differ from the published DWMP data tables. These differences are related to:

- Changes to WINEP requirements for our WwTWs as agreed with the EA in WINEP post publication of the DWMP.
- Additional storm overflow interventions, brought forward from AMP9 to deliver the bathing water overflow requirements ahead of the statutory target. We have included activities in our PR24 plan which will deliver against our aspiration to deliver the required improvements to all our coastal bathing water assets by 2030.
- A more granular profiling of 2025-2030 period storm overflows schemes.
- Living with Water activities and costs have been reprioritised, re-phased, and added to individual LTDS lines.
- DWMP and business plan table line definitions differ between the two sets of tables, meaning that direct comparison is not always appropriate.
- Pollution, Internal Sewer Flooding (ISF) and collapses PC forecasts have been updated between publication of the DWMP and business plan. These changes are further described in Table 8.
- Note that the DWMP and business plans are presented in different price bases as per the respective guidance.

	Changes from DWMP in Business Plan (including LTDS)	Rationale
Pollution	2050 end point remains zero, but the trajectory of improvement is greater.	Our understanding of the interventions required to improve pollution has been refined through a new modelling approach which optimises key improvement initiatives. This shows that we can improve at a quicker rate than was reflected in the DWMP.
ISF	2050 end point is reduced to zero incidents. The trajectory of improvement in the Business Plan broadly aligns to the DWMP. In the business plan, we will improve at a slightly slower rate than forecast in DWMP in 2020-2025, then from 2040 to 2050 the rate of improvement is forecast to increase as we adopt new technology.	Achieving zero will be exceptionally challenging given our specific regional factors which include urban rainfall, length of combined sewers and prevalence of cellared properties. We will strive to a target of zero in 2050 and will focus on innovation and technology development in this area to support this aspiration. We will collaborate with other companies across and outside the sector to ensure that we are adopting all suitable technologies to achieve this goal.
Collapses	Business plan 2050 end point is 305 collapses which is significantly better than the forecast of 438 in DWMP.	We have refined our understanding of the interventions required to improve on sewer collapses through a new modelling approach which optimises key improvement initiatives. We are therefore forecasting a faster rate of improvement throughout the 25-year period.

Table 8: PC forecast changes from DWMP to PR24 Business Plan

8.5 Wholesale water

8.5.1 Summary of main messages

The secure supply of safe drinking water remains a top priority for our customers. Maintaining the drinking water supply demand balance is a significant challenge for the future with climate change, environmental requirements and population growth increasing this challenge. We need to ensure that drinking water supplies are resilient and deliver high-quality water to customers, hospitals, schools, and businesses to support a thriving Yorkshire. We must ensure that we are all using water efficiently, including reducing water leakage and supporting customers and businesses in reducing their water use.

We collect 1.3 billion litres of water from the environment every day. We use energy and chemicals to treat the water at one of our 50 WTWs so that it's safe to drink. To get the water to where it's needed, we store it in 462 different tanks, reservoirs and towers with a grid transmission network that allows us to move water around Yorkshire, supplying customers with the most efficient source of water and to mitigate for raw water quality or regional variations. We have a network of over 32,000 km of clean water pipes to ensure a sustainable, resilient and continuous water supply to customers.

We aim to consistently improve the service to customers of Yorkshire by maintaining and enhancing the performance of our water supply systems and the assets they are comprised of. Our plan looks to build on the performance and challenges we've seen in previous years and for AMPs to address the challenges we face now and in the coming years.

Key outcomes of our 2025-30 plan for water are:

- Service improvement across all water PCs.
- Improved water quality at treatment works and in our distribution systems.
- Improving asset health through our increased asset replacement programmes.
- Delivery of new water supply schemes to meet the requirements of the supply demand balance identified through the WRMP.
- Demand reduction including reducing leakage, supporting customers and businesses to reduce their consumption and a large scale rollout of smart meters.
- Increased water supply system resilience.
- Protecting and enhancing the environment.

Table 9 provides a summary view of our plan for the water resources and water network plus price controls for 2025-2030.

	Description	£m
Base Maintenance total		**2574**
Water Resources	Delivering core water service improvements, capital maintenance and operating costs.	245 additional activity delivered via DPC
Water Network plus	Delivering core water service improvements, capital maintenance and operating costs.	1781
Cost adjustment claim – targeted allowance – asset health	To address key areas where asset health concerns are at risk of causing imminent service impact. Starting this investment now will protect current customers from deteriorating service, and spare future customers higher levels of asset replacement and the associated costs. Our focus is on water mains, service reservoirs and treatment processes.	438
Cost adjustment claim - smart metering	Addition allowance to enable the replacement of life-expired metering stock and Automated Meter Reading (AMR) assets. Ofwat's base modelling is likely to be backward looking and does not contain service or maintenance variables. The result will be that it will allow companies funding to deliver the average rate of meter replacement comparable with what has been delivered across the industry in recent years (our implicit allowance). The industry level of meter replacement is much lower than the rate that will be required to address Yorkshire Water's current end-of-life stock. The cost adjustment claim covers the increased rate of replacement required, not the additional cost of smart metering compared to traditional metering costs.	110
Enhancement total		**598**
WRMP	Our WRMP forecasts a supply demand deficit in the future. Increasing available supplies and managing demand will ensure that there is sufficient supply of wholesome water to meet customer demand over the coming decades.	216
Smart metering programme	Rollout of smart metering across our region will support future demand management, including leakage and consumption reduction. The programme will replace existing asset life expired Automatic Meter Reading (AMR) assets with Advanced Metering Infrastructure (AMI), also known as smart meters. New developments and customers opting to be metered for the first time will also have smart meters installed.	134
WINEP	Environmental protection and enhancement including protecting the environment from damage or deterioration as a result of our raw water abstractions, protecting raw water quality in our catchments, improving river health through fish passage and river restoration programmes, managing our Sites of Special Scientific Interest (SSSI) and reducing the risk of the spread of invasive species.	83
DWI Water quality programme	New treatment processes at water treatment works to deliver long-term water quality improvements by addressing forecast raw water deterioration risks, such as water taste and odour, raw water colour, pesticides, nitrates and microbial parameters. We also plan to reduce lead in the distribution network by renewing lead communication and supply pipes, focusing on high-risk communities.	95
Security and Emergency Planning	Increased security measures at sites which have been newly designated as Critical National Infrastructure (CNI) assets through a DEFRA directed criticality review. This will include physical and electronic security mitigation measures to meet statutory obligations. In response to a new assumption for emergency planning in the SEMD, we will increase our Alternative Water Supply (AWS) capability. Requirements to meet the Networks & Information Systems (NIS) regulations and increasing cyber security.	59
Resilience	Increasing water supply systems resilience by prioritising investment in the water supply systems that pose the greatest risk of supply interruptions and where risk of supply interruption would exceed the AWS capacity, particularly where it significantly exceeds the maximum area we could support with alternative bottled and/or tankered water supplies in an emergency.	Activity delivered via DPC
Net zero	Interventions to support the government's 2050 net zero target including roof- and ground-mounted solar installations.	11

Table 9: Summary view of our plan for the water resources and water network plus price controls for 2025-2030.

Chapter 7 sets out the improvements in service that we plan to deliver as measured through the water performance commitments.

For more details see Chapter 7

8.5.2 Customer and stakeholder priorities

As discussed in Chapter 6, in order to ensure that we consider the views of customers and stakeholders in the plan, we have carried out a broad range of customer and stakeholder engagements as part of our business planning process. Our research has covered a vast array of engagement types on several key topics, from bespoke studies on aspects such as the impact of Covid-19, to thematic reviews of our water resources strategy.

Details are available in the **customer research appendix**

We have also engaged more widely to understand stakeholder views across the broader region beyond Yorkshire, working with our regional partners Northumbrian Water and Hartlepool Water to conduct our Water Resources North (WReN) research and stakeholder engagement. This research assesses customers', citizens' and stakeholders' views of what a best-value plan would look like for WReN, including the drivers of investment and how this should be prioritised to ensure a lasting supply of water long into the future. This engagement provided additional insight to feed into our WRMP, which sets out how we aim to maintain a safe and reliable water supply to customers over the long term. This in turn informed our 2025-2030 Business Plan. For further details, see the customer research appendix.

In addition, through the collaborative research carried out on behalf of Ofwat and CCWater, we know that there are three key service areas identified by customers related specifically to water: water interruptions; taste, smell and appearance; and do not drink notices. We have cross-checked this research to ensure it is representative of our Yorkshire community through our 'Valuing Water' research (see the customer research appendix). 'Valuing Water' confirmed that the most important service area for our customers is the provision of a continuous supply of water that is safe to drink. Please refer to Chapter 6 for a full summary of our customer and stakeholder engagement, including their priorities for the future and how these feed into our Business Plan.

For more details see Chapter 6

Our customers' and stakeholders' highest priority for water is to ensure a continuous supply of water that is safe to drink. This specifically includes the reduction of water interruptions, taste, smell and appearance issues and do not drink notices. We have responded to this in our Business Plan through:

- Ensuring resilient water supplies into the future. Our WRMP delivers a twin-track approach of demand reduction and new supplies, whilst our asset health targeted allowance ensures the existing asset base is fit for future generations.
- Protecting and enhancing raw water quality and our water treatment processes for drinking water quality, and reducing the amount of taste, odour and discolouration contacts from customers by 34%
- Enhancing the resilience of our water supply systems by reducing the risk of supply interruptions. This is achieved through targeted interventions to reduce risk in areas served by a single source of supply.
- Investing in a programme of smart metering to improve customers' visibility of their own consumption, and delivering operational benefits, such as enhanced leakage data.
- Continuing the trajectory to reduce leakage by 50% by 2050, for AMP8 this is a reduction of 17%/ 43Ml/d.
- 26% improvement in water supply interruptions performance.
- 36% improvement in unplanned outage performance.
- Reduction in PCC to 121 litres per head per day.

In testing our final plan with customers, we followed Ofwat guidelines for affordability and acceptability testing, the results confirm that the vast majority of customers support our plan – 78% found it acceptable. Our own affordability and acceptability testing determined similar support (79% acceptance).

8.5.3 Our AMP7 performance

Through the 2020-2025 regulatory period, we have made improvements or maintained stable performance in our key performance measures. In line with the priorities of our customers and stakeholders we are currently on track with our AMP7 leakage reduction of 15%, will have improved performance in WTW unplanned outage (UPO) by 30% and will continue to have one of the best Low Pressure (four properties) and PCC (123.9 l/h/d) performances in the industry.

The number of times we are contacted by our customers due to the appearance, taste or odour of their drinking water will be reduced by 10% over AMP7.

By the end of AMP7 we will have maximised our sustainable leakage reduction through pressure management as part of our smart network programme by retrofitting over 1,000 intelligent valve controllers, setting a strong foundation for a calm network in AMP8 and paving the way for a rollout of smart meters and behavioural change to reduce both leakage and PCC further. Our grid system, coupled with a WTW reactive maintenance and spares programme, has enabled us to achieve improvement in UPO and we plan to build on this level of performance in AMP8 by improving asset health at WTW clarifiers, filters and tanks.

Mains Repairs is the asset health proxy for our water network and whilst there are annual variations due to environmental conditions and the amount of repairs we undertake to reduce leakage, the average annual rate has remained stable. The need to improve in this area, while reducing leakage, is a challenge and one that we must address through increased capital maintenance.

Water Quality performance Compliance Risk Index (CRI) and Interruptions to Supply have proved to be volatile over AMP7:

- Issues at specific treatment works have affected our CRI score. Clarity and odour issues at one water treatment works have affected the score significantly, and an improvement scheme is planned for AMP8. Issues with water quality at two other treatment works are being managed through reactive base investment for the remainder of AMP7 ahead of new schemes for AMP8. Despite a higher than anticipated number of sample failures for iron within the distribution network, we have seen good performance on reducing Drinking Water Quality Contacts. We are working with Sheffield University to understand an alternative approach to the interventions we make to address both iron failures and Drinking Water Quality Contacts.
- We have had two challenging years on interruptions to supply, but we are forecasting improvement as we approach the end of the AMP. A number of high impacting events in 2021/22 caused nearly 50% of the reported interruptions impact in the year. Although we didn't achieve the target for 2022/23, we're confident in our ability to maintain a steady trajectory for the interruptions to supply performance commitment through the rest of AMP7 and into AMP8. We will deliver on our smart calm resilient networks plan, and changes to our field ways of working by the end of March 2025. Underlying performance also needs to be improved, which will be achieved by replacing our poorest-performing pipes.

In AMP7, for the first time in more than 25 years, we had to implement drought measures. We understand the effect this has on our customers when we must put restrictions in place to maintain water supply in our region. It's important that we effectively review our supply and demand analysis to identify any risks to our customers to help us to prevent restrictions being applied. Looking ahead, our WRMP supply demand solutions set out how we will address short- and long-term resilience to drought for our customers and the environment.

Against the backdrop of Covid19, a drought and extraordinary inflation, our commitment to improved water outcomes, performance and asset health means we have overspent our water totex base allowance for the first three years of AMP7 to minimise impacts to customers.

8.5.4 How this plan links to our LTDS

Our plan for 2025-2030 is the first five years of our LTDS. For water our core pathway includes the enhancement expenditure which is required to ensure that we protect and enhance the environment. Our activities in 2025-2030 ensure we meet our conservation requirements under the Water Industry Act, the Environment Act, the Natural Environment and Rural Communities Act, and the Wildlife & Countryside Act and these are continued into future periods. In the core pathway, activities cover chalk stream restoration, river restoration, conservation of habitats and species and continued mitigation of the impacts of our operation on sensitive sites.

We will also invest in surface and groundwater flow-related schemes in line with Water Framework Directive requirements and the Environment Agency's environmental destination objectives to ensure long-term sustainable abstraction and compensation flows regimes that protect the environment and build resilience in the face of future pressures on water resources.

Our WRMP sets out our long-term plan to ensure that we can continue to provide a supply of safe clean drinking water into the future. Our plan for 2025-2030 sets out a twin track approach to reducing demand and increasing supply. The demand interventions continue into future periods as we continue to reduce water demand across the region by investing in active leakage reduction and upgrading all household and non-household meters to smart meter technology (with relevant infrastructure) by 2040. We will also promote water efficiency measures to further reduce demand, supported by government policy interventions on water labelling and building regulations.

Our core pathway also includes investment in supply side options in the 2025-2030 period, in particular new or enhanced groundwater supplies. These will help to meet our supply-demand deficit in the short-term and also provide further supply resilience benefits. We have also included investment plans for a treated water

internal transfer / interconnector near York to meet customer supply needs in South Yorkshire caused by loss of the existing Derwent Valley transfer from Severn Trent. Further investment in water treatment works capacity enhancements near York will ultimately support this interconnector, but in the shorter-term will help to address the supply-demand deficit and supply resilience needs.

Our core pathway proposes enhancement expenditure to make ongoing improvements to drinking water taste, odour, and colour through a combination of grey and green solutions. Grey solutions will focus on trunk main conditioning across the region combined with site-level schemes representing a combination of ozone, powdered/granular activated carbon filtration, and improvements to washwater systems. Green solutions comprise improvements to the management and selection of raw water sources, including installation of automated valves and turbidity and colour monitors to automate water flows.

In our plans for 2025-2030, we have proposed investment to continue the removal of lead from our network, focusing on high-risk and vulnerable customers such as those in communal buildings, schools, nurseries, and we will carry out full-service pipe replacement in identified local lead hotspot areas. Our approach will help us target those most at risk from the issues associated with lead. In the longer term, we will also widen the scope of educational establishments to include other communal buildings such as sports and recreation halls and medical businesses.

We have proposed investments to address raw water quality deterioration in our core pathway. These include solutions to mitigate risks associated with trihalomethanes and nitrate in AMPs 8 and 9, followed by additional nitrate removal schemes in the longer-term. We also propose to invest in green solutions to tackle raw water quality deterioration by working with upland landowners, farmers and other stakeholders to raise awareness of their impacts on raw water quality and support them in their land management practices, such as by optimising fertiliser usage.

8.5.5 Base Maintenance

Process and approach

The purpose of our base expenditure programme is to seek to maintain asset health and improve service. An ageing asset base and external challenges mean that maintaining asset health is challenging within the allowed base programme, and in some asset groups we are seeing a deterioration in asset health over time.

We have selected areas of investment within our base programme to enable us to drive specific additional outcomes. These projects are measured by how effectively they ensure all customers are provided with clean, safe drinking water. We recognise that affordability is a key concern for customers in the near term. We must therefore take an efficient and innovative approach to ensuring that our base investment delivers the maximum possible value in the coming price period, while providing a foundation for a sustainable, long-term investment plan which shares the costs fairly with future customers. We have selected areas of investment within our base programme to enable us to drive specific additional outcomes. These projects are measured by how effectively they ensure all customers are provided with clean safe drinking water. We recognise that affordability is a key concern for customers in the near term. We must therefore take an efficient and innovative approach to ensuring that our base investment delivers the maximum possible value in the coming price period, while providing a foundation for a sustainable, long-term investment plan which shares the costs fairly with future customers.

As part of our PR24 planning, we undertook a thorough review of our historic base investment, identifying how it supported performance and asset health. We also initiated a programme of workshops involving our subject matter experts, to identify a wide range of possible interventions, some new or innovative, others tried and tested, which could be included in our base investment programme. This base programme challenge process followed three key phases and was informed by the data extracted from of our DMF, including costs, service, carbon and six capital analysis.

- **Phase 1: Presentation of needs and service levels.** We presented scenarios based on a bottom-up build of investment needs across a 25-year planning context. Business leaders from all areas challenged evidence, strength of case and links with customer acceptability. This also enabled us to identify interdependencies across the clean water, wastewater and technology programmes with a key focus on ability to defer risks to investments in future AMPs.
- **Phase 2: Presentation of solutions.** We focused on the investment scenarios to mitigate needs highlighted in Phase 1. We provided clarity on outcomes, outputs and link to performance commitment levels. We ensured evidence of optioneering had been sufficiently undertaken.
- **Phase 3: Portfolio construction and sign-off.** We constructed a price control programme portfolio that aligned to Yorkshire Water's strategy and ambition, long-term planning frameworks and deliverability of totex, taking into consideration customer bill impacts and intergenerational fairness. The portfolio of investment was constructed with clear links to performance commitment levels, efficient cost, customer affordability and asset health.

The outputs from this assessment process therefore represent a considered and balanced programme of initiatives which will deliver continued service improvements in a cost-beneficial way, providing value for our customers. Innovation and continuous improvement will underpin our delivery of the 2025 - 2030 programme, and we will monitor the benefits delivered through the various initiatives whilst continuing to evaluate potential alternative approaches. This will allow us to adapt our approach as new insights or challenges emerge.

The initiatives identified through this challenge process have been subject to further optimisation through the DMF, to further validate their costs and benefits across the six capitals. The key initiatives that we have included in our 2025-2030 base plan, as a result, are outlined below, grouped into the main elements of the water value chain.

Base Maintenance key initiatives

Raw Water Protection & Collection (£336m)

- Our ongoing maintenance of reservoir assets to ensure compliance with the Reservoir Safety Act. All reservoirs will be within the 'acceptable' risk zone of the Risk Assessment of Reservoir Safety (RARS) methodology, and residual risk is continually monitored and continues to be kept as low as reasonably practicable (ALARP), by reducing flood risk and improving asset integrity at Winscar and Redmires Lower impounding reservoirs.
- Improve the resilience of our raw water assets to dry weather and drought events by reducing losses from catchwaters and completing refurbishments of key raw water pumping stations. These assets have a low likelihood of impacting customers directly, however, the drought conditions of 2022 highlighted that increased investment is required in this asset base to increase the volume of water captured in the catchment and improve recharge rates of impounding reservoirs.
- Maintenance of our raw water collection assets including springs, adits, catchwaters, aqueducts and tunnels.
- Operation and maintenance of water abstractions and raw water transfer assets.

WTWs (£828m)

- Our maintenance of WTW sites will mitigate unacceptable risks to compliance, drinking water quality and improve site performance. This includes base replacement and repair of five disinfection/chemical storage systems, three sludge-handling processes, and three dirty wash-water processes at WTWs in Halifax (Albert WTW), Harrogate (Harlow Hill WTW), York/Grid (WTW, York), Leeds (Eccup 1 WTW) and Grid (Loftsome Bridge).
- We will target investment to improve performance in respect of measures under the Environmental Performance Assessment (EPA), improving or reducing risks to:
  - Treatment Works Compliance
  - Serious Pollution Incidents
  - Abstraction Compliance
  - Compensation Compliance
- The ongoing operation and maintenance of WTWs and associated components to produce clean, safe water.
- An optimised programme of capital and operational maintenance interventions across treatment works prioritised on maintaining, and where possible reducing, CRI impacting failure and UPO.
- Our cost adjustment claim, targeted allowance for asset health investment, will focus on improving asset health and the proactive replacement of filtration and clarifier assets as well as clean water storage tanks with additional benefits in improving underlying CRI and UPO performance. This is discussed in the **Cost adjustment claims section** for further detail.

Clean Water Distribution (£1,268m)

- Maintain Service Reservoirs (SREs), including condition-based rebuilds of SREs in poor condition, and increase capacity in areas with resilience risks. This includes five SREs in the vicinity of Skipton (Elslack SRE), Keighley (Graincliffe), Ripon (Witton Moor SRE), Doncaster (Crowle WTR) and Knaresborough (Whixley SRE) where our condition-based surveys indicate that refurbishment is required. This programme will help maintain water quality by reducing the risk of microbial growth or contamination.
- Rebuild or refurbish poorly performing Water Pumping Stations (WPS) to reduce the risk of loss of supply. Replacement of outdated pumping equipment to improve reliability and provide system flexibility, with the additional benefit of reducing energy consumption.
- Continuation of our ongoing distribution maintenance and District Metered Areas (DMA) flushing programme, completing 700 DMAs per year, will improve water quality performance against CRI by reducing the risk of contamination from corroded or deteriorated pipes.
- A proactive leakage detection and pressure management programme to arrest and hold the

natural rate of rise in leakage over time due to climate change and changes in asset health condition.

- Targeted investment to focus on improvement of asset health and the proactive replacement of treated water storage in our distribution network. This is discussed in the **Cost adjustment claims section** for further detail.
- Mains renewal programme to replace over 3% of mains during the 2025-2030 period. This will improve performance across water supply interruptions, mains repair, leakage and CRI. This is discussed in the **Cost adjustment claims section** for further detail.
- Repair, maintain and renew infrastructure, including communication pipes, stop taps, network fittings, street furniture and DMA meters. Upgrading our water distribution systems allows for better pressure management, reducing the risk of pipe bursts and improving overall system performance.
- Building on our modernisation programme to review our operational and field ways of working to introduce an improved response to interruption to supply events through evenings, nights and weekends.

Metering (£141m)

- Our smart meter rollout programme will exchange 1.4 million customer meters that have reached the end –of life.
- Replacing these meters with smart meters comes at a higher cost than conventional metering solutions but delivers increased benefits to consumption and leakage reduction. In line with Ofwat's guidance, we have included only the additional cost of the smart meter rollout and functionality (including the associated technologies at the meter and enabling systems and network communications) in our smart metering enhancement case apportioning the costs that account for the replacement of existing assets to base.

Smart metering enhancement case

There are also a number of elements of the base plan that are required for stability. These include emergency and reactive interventions, health and safety, and operation of our control centre and emergency planning functions.

Further to this, our capital programme delivery approach has been reviewed and updated to improve deliverability and value for money.

For more details see Section 8.16

Service improvements through base - measured through Performance Commitments

Most investment included in our base plan, including Cost Adjustment Claims and Targeted Allowances, focuses on maintaining performance and compliance with regulatory frameworks. This investment does maintain and deliver improvements in the base level of service. Chapter 7 provides a breakdown of water PC improvements delivered through base maintenance.

For more details see Chapter 7

Cost adjustment claims (£746m)

In June 2023, we submitted an early cost adjustment claim to Ofwat which did not contain any claims in the water resources or water network plus price controls. We indicated that work was ongoing to confirm the overall content of our plan and its affordability in the round, and that we may propose further claims alongside our final plan once these decisions had been made. We noted that any new claims would not be symmetrical (i.e. impacting other companies downwards), aware that it would be unfair for other companies not to be able to comment on an early view, if that was the case.

Following further analysis, we now include two non-symmetrical claims, one for metering, and one for a targeted capital maintenance allowance in the water network plus price control.

Our Cost Adjustment Claim Appendix provides an assessment of pressures on base expenditure and regional circumstances that were also considered in this process but did not meet the requirements for a cost adjustment claim.

See the **Cost Adjustment Claim appendix**

Targeted Allowance – Asset Health

The services that water customers receive across England and Wales have improved significantly over the last 20 years. The industry has delivered these improvements through innovative operational approaches and better targeting of investment to

ensure that asset life is maximised. Customers have benefited from these approaches to keeping costs low, but consistent with our views at previous Price Reviews, we do not believe this is sustainable in the long term.

Ofwat's cost models are based on historic expenditure and therefore reflect the low, efficient investment in the recent past. When these model outputs (minus stretching efficiency assumptions) are combined with ongoing expected improvements in both service and asset health performance commitments, this is not a sustainable model for the industry. This view is supported independently by the National Infrastructure Commission, as outlined in their recent letter to Ofwat on water company asset management.

We therefore include a request for a targeted allowance in the water network plus price control to start to address some of the key areas where asset health concerns are at risk of causing imminent service impact. We believe the low levels of investment in long-term asset health to be an industry-wide issue rather than Yorkshire-specific but have included this request as a cost adjustment claim in lieu of any more-specific mechanisms within the final methodology (as agreed with Ofwat).

Our assumed totex allowance for the water network plus price control, when all our other commitments are considered, will potentially enable us to renew around 335 km of our ageing water network, filters or clarifiers at one or two critical sites and five or six average-sized service SREs or clean water tanks (CWTs) in AMP8.

Our investment modelling and asset management planning process tells us that we need to replace more than three times the allowed amount of our mains network to simply maintain stable asset performance (burst rate). We need to refurbish filters and clarifiers at 18 sites and have 15 high-risk SREs/CWTs in the poorest condition grades (CG4 and CG5) which need to be replaced or substantially refurbished in AMP8.

Without a sustained increase in investment levels, we will see more assets move into in CG4 and CG5. Assets will remain in service well beyond their expected lives with consequential risk to service, experiencing more frequent failures and driving up reactive and operating costs to unsustainable levels.

Beginning the transition now to a more forward-looking approach which will enable proactive, long-term investment to be undertaken will deliver a sustainable, healthy asset base and share the costs and benefits of achieving it equitably with current and future customers.

Maintaining and improving service into the future will not be achievable without an uplift in capital maintenance.

Our Asset Health targeted allowance claims consists of three asset groups where particular investment is required above base funding. We do not believe these areas to be exhaustive, but we have limited our targeted allowance claim from an overall affordability and deliverability perspective. We have split these into three areas across two claims (CW02a – infrastructure, and CW02b – non-infrastructure):

1) **Mains Replacement (CW02a).** We propose an additional £250.9 million of investment above base allowances. This will allow us to increase mains replacement rates to a level that will allow us to sustainably maintain asset health and its impact on performance in the long term. We will deliver an additional 0.46% p.a. of mains renewal on top of the 0.205% implicit in the base allowance. This programme of additional investment allows us to replace an additional 746 km of mains, replacing our high- risk mains, improving our asset health and minimising the risk to customers of service failure.

2) **Treated Water Storage (CW02b) – Service Reservoirs and Clean Water Tanks.** We operate hundreds of treated water storage reservoirs at treatment works and in our distribution networks. We currently deliver a process of monitoring, inspection and remediation on these assets, which has allowed us to broadly deliver service within our cost allowances. As these assets age, however, this approach cannot be sustained, and a programme of structural rebuilds will be required. Some of these are large assets, and the replacement is costly (our oldest CWT at Chellow East is over 100 years old and has a capacity of almost 150 Ml). The modelled cost to rebuild the tank accounts for almost half of the estimated modelled base allowance that we could allocate to water production assets. As a result, this investment will not be affordable without severely impacting asset health and performance elsewhere. An additional £111.2 million of investment in this area will enable us to invest in the long-term asset health of our treated water storage assets, protecting current and future customers from service deterioration.

3) **Water Treatment Works – Filtration and Clarifiers (CW02b)** – Investment in capital maintenance at our WTW process assets has been reduced as our capital maintenance has been focused on achieving in-year performance commitments within a stretching overall totex allowance. Our current risk-based approach identifies the need to increase investment by £60 million above historic levels to continue to maintain and deliver the stretching UPO PCs in our plan in the long term. An uplift of £75.6 million in addition to base allowances will enable us to invest in the long-term asset health of our filtration and clarification assets, protecting current and future customers from service deterioration.

Metering Cost Adjustment Claim

We are requesting an adjustment of £110.1 million in addition to our base allowances to enable us to replace our life-expired metering stock and Automated Meter Reading (AMR) assets in the 2025-2030 period. The base programme of £141.1 million, which replaces nearly 1.4 million meter assets, is crucial to delivering our WRMP and the associated leakage and PCC reductions. The meters will be replaced with smart meters as part of a wider smart metering strategy. Smart meters are more expensive and the additional cost of these is included in our enhancement programme alongside smart-metering technology investment and ongoing data-as-a-service operational costs.

Ofwat's base modelling is likely to be backward looking and does not contain service or maintenance variables. Therefore, we believe it will, at best, allow companies funding to deliver the average rate of meter replacement comparable with what has been delivered across the industry in recent years (our implicit allowance). The industry level of meter replacement is much lower than the rate that will be required to address Yorkshire Water's current end-of-life stock.

We calculate the implicit allowance in the base cost modelling as £14.99 million for PR24, and in addition have challenged ourselves to deliver the difference between our 2020-2025 activity and what could have been deemed implicit in the PR19 models (£15.6 million) within our base allowance.

The £110.1 million adjustment requested is the cost of delivering the base element of our metering programme, minus these two figures. The additional costs associated with the smart elements of our metering strategy are the subject of a separate enhancement case discussed in **Section 8.5.5.**

We set out the detailed evidence for this claim in our **Cost Adjustment Claim appendix**

Comments on other companies' symmetrical claims

We welcome the fact that Ofwat has shared the industry's symmetrical cost adjustment claims ahead of submission and allowed us to comment on these as part of our plan. We have asked Oxera to provide detailed commentary on these as part of its Cost Adjustment Claim analysis and this is summarised in our Cost Adjustment Claims Appendix and shown in detail in the subsequent Oxera Cost Adjustment Claim Analysis Document.

The key elements of our response to symmetrical water claims are as follows:

Average Pumping Head (APH) – Ofwat's proposed modelling sufficiently accounts for APH. Several companies include APH claims, despite Ofwat having now included APH as a variable in its suite of modelling. We agree that APH could be a useful predictor of operating costs related to topography, but also believe that the incumbent Nr. Booster pumping stations variable is an important alternative that captures different elements of costs (namely capital investment requirements). We acknowledge some success in the project to improve APH data but remain concerned over the consistency of reporting due to the scale of values still estimated across the industry.

Leakage Claims – We do not think a symmetrical adjustment for leakage is required. We recognise that maintaining a lower level of leakage may be more expensive, however we highlight several limitations with the analysis, which are not supported statistically. We also highlight that leakage costs are influenced by other factors. Some of these are not reflected in the cost modelling, for example differences in enhancement allowances to drive down leakage or PCC through historic WRMPs (for example, in companies that are in areas of water scarcity).

8.5.6 Unmodelled costs

Our approach to unmodelled costs is detailed in **Section 8.3.** The unmodelled costs included in our plan for Wholesale Water are shown in Table 10.

Unmodelled Cost Type	Cost £m
Business rates	164
Abstraction	50
TMA	20

Table 10: Unmodelled costs - wholesale water

8.5.7 Enhancement expenditure

This section sets out the enhancement requirements in our wholesale water plan. A summary of each enhancement area is provided in Table.

Most areas of the enhancement programme are associated with statutory requirements such as the need to meet environmental standards, address short- and long-term statutory targets or to maintain water quality and quantity as part of our statutory duties. Investment to increase resilience is not directly linked to a statutory requirement but results in the reduction of risks associated with maintaining continuous water supplies in response to low-probability, high-impact events.

Service improvements through enhancement - measured through Performance Commitments

The primary driver for the enhancement investment is to meet statutory or quality standards. Some of the enhancement investments do have a secondary benefit of delivering service improvements as measured through PCs. Chapter 7 sets out the PC improvements that are forecast as a result of the proposed enhancement investment.

Our forecasted PC improvements are shown in Chapter 7

Customer protection through Price Control Deliverables

In order to safeguard our customers from non-delivery of our proposed enhancement outputs where the expenditure is classified as material, we are proposing to implement Price Control Deliverables (PCDs). The enhancement cases in which PCDs apply are, WRMP, Smart metering programme and DWI water quality.

WRMP enhancement case (£216m)

Our WRMP is summarised in Section 8.4

Supply Demand (WRMP) enhancement case appendix

The WRMP is a long-term plan that seeks to ensure that the future water supply-demand balance is maintained, despite increasing external pressures from climate change, population growth and the need to protect the environment. It sets out how interim and long-term targets for PCC, leakage and business demand will be met and how reliance on drought measures will be reduced. Our WRMP was informed by our customers through extensive engagement and delivers on their priorities.

The WRMP identifies investment of £216m in AMP8 to reduce demand and increase supply, including:

- Leakage reduction
- Per capita consumption reduction and water efficiency activities
- Non-household (NHH) demand reduction
- Meter exchange programme – as part of the smart metering programme
- Supply side options including new groundwater and surface water sources.

This twin-track approach has been developed through a best-value planning approach set out in our dWRMP published in November 2022. We are in the process of finalising our rdWRMP and, in line with Ofwat's guidance, have used our 'latest data' in our business plan. The supply options within the business plan are as the dWRMP, but we have made changes to our approach to demand reduction in response to feedback on the dWRMP and further demand solution optimisation.

Smart metering programme enhancement case (£134m)

Our smart metering enhancement case has been developed in response to the need to improve meter data granularity and data frequency. It will enable a step change in service improvement for our customers to drive leakage reduction, PCC reduction, NHH distribution input reduction, and net zero carbon.,

As most of Yorkshire Water's mechanical meter and AMR assets have reached the end of their asset lives, the vast majority require replacement in the upcoming period to avoid failure, inaccurate readings and a return to costly manual metering. Our WRMP has identified that, rather than replace our existing meters like-for-like, it would be more cost beneficial to roll out a programme of smart metering to drive future demand reduction (leakage detection and customer consumption). Given the need to replace most of our existing metering asset base, the case for enhancement to move to AMI is built from the cost delta between an AMR meter replacement programme, and the additional costs for an AMI programme.

We have engaged widely on smart meters and understand that there is a high level of support, both from household customers and NHH customers. When the leakage and improved awareness of usage benefits are explained, our customers support this rollout, in fact 78% of customers find our plan acceptable – which includes this enhancement spend.

More about smart meter and wider engagement Chapter 6

We have sought to ensure that this enhancement case delivers best value for customers in several ways:

- Our strategy does not require early replacement of the existing metering asset base.

- The enhancement case includes costs only for those aspects of smart metering deployment which are not equivalent to AMR or dumb meter deployment (the costs of which are included in base funding).
- The communications technology selected has been through rigorous testing through innovation trials, alongside a number of alternative technology options, giving us confidence in the suitability of the selected technology.
- The efficient cost for smart metering solutions has been identified through a benchmarking exercise across procurements in the UK and Europe, and installation costs have also been benchmarked.
- Other options which didn't involve smart metering were also considered as part of the optioneering process.

Smart metering enhancement case

WINEP enhancement cases (£83m)

Our WINEP programme for water comprises a number of enhancement cases as follows:

- Water resources
- Surface water (catchment management)
- Fish passage and river restoration
- Fish screening
- Biodiversity and invasive species.

Together, these address the need to comply with statutory obligations (under the Water Framework Directive (WFD) and Habitats regulations) and deliver investigatory and preparatory work to identify and prepare for the longer-term changes that we may need to make in the future, beyond the existing statutory requirements in support of our regional Environmental Destination. We also have statutory obligations to continue managing our surface-water catchments to stabilise or reduce colour, pesticides, nutrients and sediments. We need to comply with fish passage and river restoration obligations under the WFD and Natural Environment and Rural Communities (NERC) Statutory and Statutory Plus drivers, and additional duties under the 2021 Environment Act. In the 2025-2030 regulatory period, we need to complete additional works and/or investigate what actions may be required to address increased requirements regarding eel screening and potential risk to salmon at water intakes. Finally, we must undertake activity to conserve and enhance biodiversity, manage our sites of special scientific interest (SSSI), and monitor and take actions in relation to invasive non-native species.

Where implementation schemes are included in these enhancement cases, they have been subject to the relevant optioneering and cost-benefit assessment consistent with WINEP methodologies. All identified implementation solutions have been assessed as cost beneficial. Benefits have been assessed in line with the relevant EA guidance and are consistent with Yorkshire Water's six capitals approach. Costs were derived based on benchmarked outturn costs for similar schemes.

Investigation schemes have not been subject to cost-benefit assessment or optioneering; rather, the scope of these schemes has been agreed with regulators through the WINEP approval process. In determining our final estimates, we have considered historic costs of related activities we have delivered in past investigations.

Wherever possible, we have sought external funding from third parties who also benefit from delivery of the schemes proposed (for example, match-funding from The Rivers Trust for the fish passage partnership programme), which helps ensure that these schemes are best value to customers.

WINEP enhancement case appendix

DWI Water Quality programme enhancement case (£95m)

Under our 2025-2030 programme to deliver long-term drinking water quality, we will undertake actions to address water quality risks. This activity is split across water treatment and water networks.

All the proposed water treatment-based schemes are required against a backdrop of deteriorating raw water quality supplying the identified sites and are therefore required to ensure Yorkshire Water is able to continue to supply clean, safe drinking water to customers in AMP8 and beyond. Our schemes for the water network focus on reducing the taste, odour and aesthetic issues that can occur in water. We also focus on reducing lead supplies where prescribed concentration or value failures are found, or a supplied property is deemed high priority, for example schools and vulnerable customers.

Our proposed approach and solutions have all been submitted to the DWI for review and have received their support.

Water quality improvements (DWI) enhancement case appendix

Security and emergency planning enhancement cases (£59m)

Security

We will invest in securing newly designated Critical National Infrastructure (CNI) assets through a Defra-directed criticality review. This work will include

physical and electronic security mitigation measures to meet statutory obligations.

Our optioneering to address these new requirements looked at a range of options and solutions and identified the best option. However, due to the very prescriptive nature of the requirements, innovative options are limited.

Emergency planning

In response to a new planning assumption for emergency planning in the SEMD, we also need to invest in tanker fleet, third-party support and logistics to ensure we have the capability to provide an alternative water supply (AWS) to 82,000 customers in the event of an emergency. The new planning assumption for AWS is part of the legislation change in SEMD 2022. For Yorkshire Water, it amounts to an increase from being able to provide an AWS to 30,000 customers in urban areas and 50,000 customers in rural areas, to being able to provide an AWS to a total number of customers equivalent to 1.5% of the population we will serve at the end of the 2025-2030 regulatory period, i.e., 82,000 customers.

Optioneering around the right strategy and business model has taken place to ensure compliance with the new AWS planning assumption. This has been through a cross-business working group through a number of collaborative workshops to develop the final business case and preferred option. This option delivers the greatest resilience as well as improved customer experience. Once we had decided on our preferred option, this was put out to tender to ensure we could get the best value for money in delivering this option. Further details are presented in the Security (SEMD) enhancement case.

Cyber security

Additional investment is required due to the rapidly evolving cyber threat environment and changes to the Networks & Information Systems (NIS) regulations, with which we must comply for the first time in the 2025-2030 period. Yorkshire Water has completed a cyber-risk assessment (compliant with IEC 62443, the NIS Directive and annual Cyber Assessment Framework [CAF] submissions) covering all its water production and distribution network assets, and this has identified the need for six areas of work in this enhancement case.

Five of these areas are concerned with implementing new and necessary security measures, and do not replicate or replace anything already in place. The sixth is restricted to meeting the compliance requirements of the minimum subset of hardware necessary to address the security risk.

Several options were explored to address each risk. The selected option in each case represents the best value solution to the extent possible, noting that, due to the specialist nature of some of the requirements, there are limited solution options available in the market. However, in some cases, simpler and cheaper solutions have been selected, for example electronic smart locks and programmable keys for physical access control. Further details are presented in the Security (Cyber) enhancement case.

Cyber security – Enhanced Cyber Assessment Framework (ECAF)

This enhancement case was developed in response to a rapidly evolving regulatory environment. On 23 June 2023, DWI issued the ECAF, which specifies new obligations for water companies to enhance protection for communications assets from onsite or offsite cyber risks. These additional obligations are in the form of tightening the criteria by which the level of cyber security affecting the delivery of wholesome water is measured by the DWI. This involves increasing the minimum acceptable level of security as measured annually by the CAF, and therefore drives additional enhancement expenditure over and above that covered by the core cyber security enhancement case outlined above.

Yorkshire Water has prepared a submission for review and approval by DWI, which sets out how the Company proposes to meet the new ECAF obligations. The ECAF enhancement case sets out our latest thinking and options necessary to achieve compliance by the regulatory deadline of 2028.

Yorkshire Water notes that this enhancement case cannot be considered in isolation from the core cyber-security enhancement case as both are necessary to meet the ECAF.

Security (ECAF) enhancement case appendix

Resilience enhancement case – DPC delivery route

Our Water System Supply (WSS) strategy identified the need for interventions to increase supply resilience, particularly where it significantly exceeds the maximum area we could support with alternative bottled and/or tankered water supplies in an emergency or prolonged asset outage.

Water resilience enhancement case appendix

As outlined above in relation to emergency planning, the requirements of the latest SEMD increase the number of customers that we must now be able to provide with an AWS. We have prioritised our resilience

enhancement investment to water supply systems where the number of properties at risk exceeds this new threshold and we have no alternative source of supply.

We've reviewed eight of the highest priority of our 20 Strategic Planning Areas (SPAs) as part of our WSS Strategy in the development of our PR24 Business Plan. We will continue to review the remaining 12 in AMP8 to continue our long-term resilience improvement. The work has highlighted five strategic resilience risks which we need to address.

The impact of water supply interruptions for each system was quantified for each WTW as the 'property-days lost' of supply, with the requirement to provide alternative water supply forming a basis for prioritising sites and interventions for investment.

As a result of this work, we are proposing one scheme for the 2025-2030 period, which will be delivered via DPC. The scheme scope is to build a new treatment works in West Yorkshire with transmission and storage connected to the Grid spine to provide more network connectivity and flexibility. A related scheme near York forms part of the Supply-Demand WRMP enhancement case outlined above. This will provide mitigation to the two highest resilience risks.

For more on DPC, see Section 8.14

Customers score resilience of potable water supplies as a high priority, emphasising the importance of a company's ability to provide uninterrupted supplies in response to an ageing asset base, environmental changes, external threats, pressure on raw water resources and forecast supply and demand deficits.

Due to the investment required to adequately reduce the risk to supplies from low-likelihood, high-impact events in all areas of Yorkshire, it is not considered affordable to mitigate these risks in a single AMP period. In order to manage the impact on customer bills, a staged approach is suggested, beginning with the most urgent risks in AMP8, followed by subsequent risks in AMP9 and beyond.

The cost of this enhancement expenditure has been derived using our Unit Cost Database (UCD). Our water resilience enhancement case includes a range of activities which are similar to projects carried out in previous AMPs. As a result, we have a reliable historic dataset in our UCD that we can leverage to provide accurate and efficient forecast costs. Given we propose a DPC route for this enhancement expenditure we anticipate bidders to propose optimised solutions and bring a competitive approach which will drive further efficiency.

As this is a DPC scheme we are not proposing a PCD.

Transition expenditure

Transition expenditure applies to work of such complexity and/or scale that it must be started prior to the beginning of the period. We propose one area of transition expenditure in water as summarised in Table 11.

Transition Expenditure	Description	£m
Smart metering programme	Enabling activity to allow the benefits from the rollout of smart meters to be realised in financial year 2026.	10
Winep investigations	River Derwent habitats investigation reg date Dec 2026	0.200

Table 11: Water transition expenditure

Yorkshire Water has an ambitious target for the 2025-2030 period, to install over 1.55 million smart meters into the network. 1.4 million of these will replace ageing existing meters as outlined in the related enhancement case, with a further 150,000 being made up of new developments and customer optants.

In order to achieve these targets and be ready to realise the benefits of smart metering from the start of the 2025-2030 period, we need to accelerate the business readiness programme. The smart metering programme is complex and will require early start investment in the 2020-2025 period, allowing for up to 18 months of business transformation activity, including implementation of systems, processes and capabilities ready for an at-scale smart-meter deployment in April 2025. The transitional expenditure is profiled to allow for the benefits built into the WRMP and PC glidepaths to be delivered from 2025 onwards.

8.6 Wholesale wastewater

8.6.1 Summary of main messages

The service we deliver to customers and the environment through our wastewater operations is critical to our region. Our customers and stakeholders have told us that their highest priorities are to prevent sewage from entering homes and businesses and flooding on to areas of land. They want us to improve the resilience of our wastewater services such that they can withstand extreme weather events.

Improving the health of our rivers and coasts is also high on the priority list. We have had to think carefully about how we meet our customer expectations and deliver the largest-ever programme of environmental improvements. The Environment Act and the SODRP set stretching targets for storm overflow spill reductions which must be achieved in the face of increasing external pressures from climate change, population growth and increased urbanisation. Our business plan for 2025-30 is the first part of a longer-term plan to ensure that all overflows in Yorkshire do not spill more than 10 times per year during rainfall events, designated coastal bathing water overflows spill fewer than two times per bathing water season, and designated inland bathing water overflows spill no more than once per bathing water season.

We collect over a billion litres of surface water and wastewater from homes and businesses every day. Our 52,500 km of wastewater networks and c2,600 pumping stations transfer this to over 600 WwTWs. These treat the wastewater to stringent standards designed to protect the environment.

Our wastewater systems experience several challenges that can impact the high levels of service that customers expect. These challenges include lack of available hydraulic capacity, including a transient loss of available capacity during storms and the reliance on storm overflows to reduce the risk of flooding. Unlike the water supply system, the wastewater system is accessible to all members of the public and issues with misuse by the public and industrial consumers result in operational and maintenance challenges. Due to the legacy way in which water management systems have been constructed over the centuries, wastewater networks have provided a means of managing surface water underground and this ingress to the system can cause system overloading. Other things such as collapsed sewers, tree root ingress or failure of pumps or other equipment can lead to service which is poorer than customers expect. We accept that this does not meet the expectations of our customers and our plan accelerates interventions to address these issues. We will continue to deploy the latest technology developments to ensure that we continue to improve our services, delivering them proactively and efficiently.

Key outcomes for our 2025-30 plan for wastewater are:

- Service improvement across the majority of the wastewater PCs including:
  - A 51% improvement in pollution and zero serious pollution incidents
  - A 22% improvement in internal sewer flooding performance
  - A stretching target to deliver 100% discharge permit compliance at our wastewater treatment works.
- Improved asset health with a 33% improvement in sewer collapses.
- Reducing storm overflow spills at 243 overflows to meet and exceed the targets set within the SODRP, including spill reduction at all coastal overflows by 2030.
- Reducing the impact of our east coast WwTWs on bathing water through improvements funded through our base maintenance programme and improvements at inland bathing waters where Yorkshire has seen the first inland designation in England, on the River Wharfe.
- Improvements to and increased monitoring of river health.
- Building on our successful development and deployment of nature-based solutions, we will deploy these as the preferred approach wherever this delivers best value for customers and the environment.

Table 12 provides a summary view of our plan for the wastewater network plus price control for 2025-2030

	Description	£m
Base Maintenance total		**1,805**
Wastewater Network Plus	Delivering core wastewater service improvements, capital maintenance and operating costs	1,607
Cost adjustment claim – combined sewers	We have proposed cost adjustments based on combined sewer length to address cost risks associated with combined sewers, and to help manage some of the challenges we have in achieving upper quartile performance. Our focus will be on deploying cost-effective technology solutions and new ways of working that enable us to pre-empt and respond quickly to customer impacts.	88
Cost adjustment claim - phosphorus removal operating costs	The increased cost allowance for ongoing phosphorus removal will provide efficient funding for operation through the 2025-2030 period for sites that have gained a new or more stringent phosphorus permit requirement during the 2020-2025 period. The funding will allow for the procurement of chemicals for dosing, the maintenance of the new sites, rates payments, the cost of energy and manpower to operate the sites. The claim is for 80 new phosphorus limits, serving a population equivalent of c.4,460,000.	110
Enhancement total		**2,035**
WINEP	Deliver against our significant environmental obligations in a way that provides the greatest benefit to the region and the people of Yorkshire. Reduction in storm overflow spills, river water quality improvements, improvements at designated and non-designated bathing waters.	1682 (with additional activity delivered via DPC)
Non-infrastructure growth and new towns	Respond to growth in population by increasing capacity at existing WwTWs, with two wastewater schemes proposed for new towns utilising nature-based techniques where appropriate.	38
Living with Water	Reduce flood risk through the Living with Water Partnership in Hull and Haltemprice by focusing on creating capacity within existing watercourses to begin a long-term process of surface water separation, alongside a programme of source control (street level SuDS measures) and a community-focused innovation project to test the nation's first blue/ green corridor approach.	26
Coastal bathing waters storm overflows – SODRP compliance	Investment in storm overflow spill reductions for all assets that impact coastal bathing water, achieving the SODRP target by 2030.	266 (with additional activity delivered via DPC)
Net zero	Interventions to support the government's 2050 net zero target including reduction of wastewater process emission, roof- and ground-mounted solar installations. Process optimisation and solution design to reduce energy and chemical consumption. Continued transition to electric fleet vehicles.	23

Table 12: A summary view of our plan for the wastewater network plus price control for 2025-2030

Chapter 7 sets out the improvements in service that we plan to deliver as measured through the wastewater PCs.

For more details see Chapter 7

8.6.2 Customer and stakeholder priorities – how we have addressed these in the plan

Through wider engagement we understand that customers expectations have changed with regards to wastewater management. This continues to be a topical issue, prevalent in all forms of media. Th importance that customers place on the natural and water environment has grown since Covid, with more people taking an active interest in their local environment.

Our DWMP sets out our long-term strategic plan for managing the needs and requirements of our wastewater assets over the next 25 years – and beyond. In developing our DWMP, we carried out research to test customer views and priorities across a range of topics. The research showed that customers acknowledged that further improvement would be required by Yorkshire Water in the long term. Customers noted that maintenance would not go far enough, as the current system would not be fit for purpose in the future due to forecast increase in flooding incidents as a result of future challenges such as population growth and climate change. Customers were willing to pay a small increase to fund these improvements, with an expectation that we would go beyond statutory obligations (for details, see the Valuing Water research in the customer research appendix). Our research also provided a view of the key priority measures associated with our wastewater services. Customers and stakeholders identified their priorities for wastewater services as:

- Minimising the risk of flooding of properties due to incapacity of sewers in heavy rainfall.
- Minimising the risk of external flooding of areas of land (external flooding) due to incapacity of sewers during heavy rainfall.
- Improving resilience of the wastewater and drainage system to extreme weather events.
- Improving the health of rivers and coasts by monitoring and improving wastewater compliance.
- Improving the health of rivers and coasts by reducing operation of storm overflows.

These priorities are consistent with the findings from the Ofwat and CCW collaborative customer preferences research which shows internal and external flooding as 'high' priority service areas for customers. We've also provided further triangulation on this through our 'Valuing Water' research (for details see the customer research appendix). Our customers are supportive of our plan including where we propose going further than statutory obligations – 78% of customers confirmed our plan is acceptable through Ofwat affordability and acceptability testing research, with 79% acceptance in our own acceptability and affordability study where we outlined more detail of the deliverables in our plan.

Customer research appendix

Our customers' and stakeholders' highest priority for wastewater is to prevent sewage from entering homes and businesses. We have responded to this in our business plan through:

- A forecast 22% reduction in internal sewer flooding incidents funded through base maintenance.
- A stable level of external sewer flooding incidents in the 2025-2030 period, following an expected improvement of 32% from the 2020-2025 period funded through base.
- Investing £26 million through enhancement in the Living with Water partnership, attracting a potential further £15 million of partnership contributions to ensure a holistic approach is taken to managing sewer flooding alongside wider surface water flooding.

In our own independent affordability and acceptability testing study (outside of Ofwat guidelines) we outlined our plan for all of our wastewater measures alongside a number of ambitious targets, and 79% found our plan to be acceptable.

More about our wider engagement and acceptability testing can be found in Chapter 7

8.6.3 Our AMP7 performance

Through the 2020-2025 regulatory period, we have made significant improvements in all our key performance measures for the wastewater network. In line with the priorities of our customers and stakeholders, we are due to deliver an improvement in the 2020-2025 period of 54% for internal sewer flooding and a 32% improvement for external sewer flooding. Also, in the 2020-2025 period, we are significantly reducing our pollution incidents, with an estimated improvement of 49%. For asset health, measured through the sewer collapses performance commitment, there has been a 7% improvement in the 2020-2025 period.

These improvements have been achieved through a combination of initiatives which have delivered benefits in the 2020-2025 period including insourcing of operations and maintenance activities for our wastewater network and the implementation of one of the largest sewer network monitoring programmes in the sector, comprising 40,000 close-to-property monitors.

To develop our base maintenance plans for AMP8 to deliver continued improvements to service, we are taking learning from our AMP7 modernisation activity to improve business processes. For example, further expansion in the deployment of our effective close-to-property monitors with associated operational response to proactively resolve issues before customers are impacted, and taking this further to expand to main sewer monitoring so we can understand the dynamics of the wider sewer network. Also, better targeting of our Sewer Maintenance Plan (SMP) activity has also allowed us to identify potential issues before service impact and refining this further in AMP8 will enable more efficient use of resource to deliver improvements. For pollution, we have improved some of our key enabling activities including root cause identification and the learning from these, and so, during AMP8, we will benefit from this improved understanding through identifying and delivering more targeted investment. In addition, expansion of our close-to-watercourse monitoring of the sewer network has started in 2023/24 and we will learn from this new intelligence as well as expanding rollout of these sensors in AMP8.

We have made improvements in key measures for wastewater treatment, achieving upper quartile performance for wastewater discharge permit compliance, with a forecast of 99.1% by 2025. During the 2020-2025 period, we will make significant progress towards achieving the Environment Act target for phosphorus removal, which for Yorkshire means we need to achieve a 72% by 2038 as part of our contribution to the national target. We plan to achieve c55% of this overall target in the 2020-2025 period.

These outcomes have been achieved through a combination of initiatives, including:

- Integrating operations and maintenance activities across networks, treatment and bioresources.
- Phosphorus removal schemes delivery by our AMP7 WINEP programme.
- Improvements to our business processes on totex decision making, treatment works compliance assessment, and better preparedness for mitigation if issues do occur.

Over the 2020-2025 period, we have sought to deploy more blue green solutions rather than traditional grey infrastructure solutions. These have included:

- Hollym Myers WwTW, where we have used Aero-Fac® technology for a new wastewater treatment facility. This is a low-carbon treatment system that uses renewable energy and nature-based biological treatment.
- Clifton WwTW, where we have introduced the UK's first fully integrated constructed wetland for the treatment of all flows and removal of phosphorus. This project is now a case study in the World Wildlife Fund (WWF) Playbook for Sustainable Infrastructure, and is one of our globally significant nature-based solutions. It is also part of our Nature First commitment.
- Our Living with Water programme in Hull and Haltemprice, where we have worked in partnership with the Environment Agency and local government organisations to use innovative blue/ green solutions to mitigate flood risk.

For more details see Section 8.13

We have actively engaged with the Environment Agency to ensure that these nature-based solutions are acceptable and are supported by an appropriate permitting regime. Clifton was the first full-treatment wetland for phosphorus removal to receive an Operating Techniques Agreement (OTA). Since Clifton, we have secured agreement on nature-based solution options for a number of different applications including;

- Phosphorus removal
- Biological Oxygen Demand (BOD) removal
- Peak flow side-stream treatment
- Storm water co-processing with final effluent as an alternative to storm storage
- Storm water processing with recycle as an alternative to storm overflow storage.

The experience gained in the 2020-2025 period gives us confidence to continue deploying these solutions, where appropriate, in the 2025-2030 period.

8.6.4 How this plan links to our LTDS

Our LTDS core pathway includes some early enhancement expenditure in AMP8 to complete programmes of work that began in AMP7. This includes, for example, completing the installation of event duration monitoring (EDM) equipment on storm tanks, flow monitoring equipment at sewage treatment works, and other monitoring equipment at emergency sewage pumping station overflows in line with the Environment Agency's Monitoring Certification Scheme (MCERTS).

We also plan to invest in continuous river water quality monitoring during AMP8 and AMP9 to meet the requirements of the government's SODRP and improve the health of our region's rivers.

To achieve our contribution to the national statutory target of an 80% reduction in net phosphorus loading from treated wastewater by 2038 (from a 2020 baseline) and mitigate our direct pressures on biodiversity, we propose to invest in a combination of chemical and biological treatment for phosphorus removal in AMP8, AMP9 and AMP10. We will also invest in nature-based solutions for nutrient removal, such as lagoons or wetlands, at our smaller wastewater sites and scale up our deployment of these solutions in future as we gain experience in their use.

In order to comply with ongoing tightening of treatment requirements relating to sanitary parameters, and thereby achieve our discharge consent targets, we have included plans from AMP8 to AMP12 to invest further in our traditional filter works and activated sludge processes across a range of wastewater treatment works.

Our core pathway includes investment from AMP9 onwards in catchment management activities to control chemicals, such as cypermethrin, at source and prevent them entering our wastewater network from domestic, commercial, and agricultural sources. We will also carry out catchment nutrient balancing and catchment permitting activities to improve river health. This will involve improvements at wastewater treatment works as well as 'in catchment' interventions where appropriate. This approach allows for greater environmental benefit to be realised whilst maintaining efficiency for our customers. In parallel to this, we will ensure that we have the appropriate skills to engage with stakeholders across water catchments. We intend to begin investigations in AMP8 and move into delivery activities from AMP9 onwards.

We know our customers and other regional stakeholders place a strong importance on the health of our region's rivers and coastlines as places to relax and exercise. At our coastal and inland bathing water sites, we have proposed ongoing investment in our core pathway for microbiological disinfection treatment to meet customer expectations for improved water quality standards. Following our AMP8 WINEP plan, we have included investment for microbiological treatment to support three existing or proposed inland bathing waters in AMP8 (Ilkley, Wetherby and Knaresborough) and have included costs for three further bathing water designations per AMP thereafter.

Over the next 25-years, our strategy will be to continue to move away from grey storage solutions in the network towards blue/green infrastructure solutions. such as sustainable urban drainage solutions. Future programmes are forecast to include over £1billion of blue/green solutions for storm attenuation at sewage treatment works, over £6 billion for surface water separation and attenuation in the network, and up to £28 billion to reduce modelled hydraulic flood risks identified through our DWMP processes.

A key part of our long-term plan is management of flooding in Hull, and other key urban areas, under our Partnership initiatives.

8.6.5 Base maintenance

The purpose of our base expenditure programme is to seek to maintain asset health and improve service. An ageing asset base and external challenges mean that maintaining asset health is challenging within the allowed base programme and in some asset groups we are seeing a deterioration in asset health over time.

In this context, as part of our PR24 planning process we undertook a thorough review of our historic base investment, identifying how it supported performance and asset health. We also held a number of workshops involving our subject matter experts and wider industry experts, to identify a range of possible interventions for inclusion in our base investment plans. Some of these interventions are new or innovative and some are tried, tested and efficient.

We created an initiatives assessment tool to evaluate different interventions based on their costs and service benefits, including resilience. This helped us develop balanced programmes of activity, delivering a defined service performance for a given level of investment. The tool was designed to capture the best available insight into costs of deployment, impact on multiple service measures, and any practical constraints on the pace or extent of deployment which would be possible. We could then evaluate a range of different scenarios to reflect our assumptions and understanding in relation to base funding, performance commitment targets and incentives, and any non-discretionary elements of spending which have to be met through base.

The outputs from this assessment process therefore represented a considered and balanced programme of initiatives which will deliver continued service improvements in a cost-beneficial way that provides value for our customers. We recognise that affordability is a key concern for customers in the near term, and that our plans must be efficient and innovative to ensure that our base investment delivers the maximum possible value.

We will monitor the benefits delivered through the various initiatives while continuing to evaluate potential alternative approaches. This lets us adapt our approach, as new insights, technology, or challenges emerge.

Finally, the initiatives identified through this process were subject to further optimisation through our DMF,

to further validate their costs and benefits across the six capitals. The key initiatives that we have included in our 2025-2030 base plan as a result are outlined below, grouped into the main elements of the wastewater value chain.

Base maintenance key initiatives

Wastewater networks (£759m)

Our capital maintenance programme will focus on being more proactive. Improved situational awareness in operations will enable us to be more prepared for operational incidents when they occur.

The programme is ambitious and will deliver an extensive range of network sensors in conjunction with cleansing, rehabilitation, and other operational activities.

In more detail, the network initiatives within our base programme are as follows:

- The proactive cleaning and or other remediation of sewers which have a high risk of blockages, to reduce the risk of them causing pollution or flooding incidents, using intelligence from the installation of sensors (22,000 for pollution and 68,000 for flooding) to provide us with greater visibility so we can work more proactively.
- The inspection of rising mains with a high risk of failure (at circa 165 sites/locations), to identify those which require interventions in order to prevent pollution incidents (for example, cleaning, relining, replacement, installation of pressure sensors or air valves etc.)
- A further circa 165,000 customer sewer alarms (close-to-property), to give visibility of most of our cellared properties (where we experience around 70% of our internal sewer flooding incidents). This will help us to provide a more proactive, preventative, and prompt response to potential issues which could become customer impacting.
- We will conduct a significant number of proactive CCTV surveys of sewers (circa 300k properties) to identify those which are in poorest structural condition. We will carry out rehabilitation if required (either relining or root cutting) to reduce the risk of blockages and consequently flooding events.
- Refurbishment of our highest risk sewage pumping stations to improve power resilience and start-up, in order to reduce the risk of pollution incidents due to failures.
- Targeted proactive campaigns on customer education/behaviours (using industry best practice as a guide) and continuous improvement of our network protection processes.

We will continue to focus on important enabling activities, delivering improved ways of working in operations to ensure that we maximise the benefits of our increased situational awareness and intelligence to achieve our target performance levels whilst working in the most efficient way. For example, during AMP7 we have had a major increase in pumping station visibility (using electrical signature analysis) which we will take full advantage of as we transition to the next period.

In addition to our improvement initiatives, we continue to ensure that activities such as our emergency and reactive investment, specific named cost-beneficial schemes to mitigate flooding or pollution and any works required for health and safety or permit compliance are delivered in the most efficient way.

We have reviewed some of our key supplier relationships and contractual arrangements and have identified efficiencies which we will implement in the lead up to the 2025-2030 period. Some of these are part of our re-tendering for our 2025-2030 repair and maintenance contracts. We will continue to refine how our supplier relationships can be maximised in AMP8.

Wastewater Treatment (£1046m)

Improvements to our already industry-leading performance for discharge permit compliance, improving pollution and our bathing waters performance are key service drivers for our wastewater treatment base maintenance programme. Our focus for our WwTWs in AMP8 will be on fully embedding our above- ground maintenance planning and work management system (and ways of working), increasing visibility of our final effluent quality, specific targeted activity for higher-risk elements of the treatment process (which can cause pollution if they fail) and having assets available to respond and deploy quickly following deteriorating compliance, if necessary.

In more detail, the treatment initiatives within our base programme are as follows:

- Final effluent monitoring for ammonia and turbidity at 294 numeric permitted wastewater treatment works to enable a pre-emptive, quicker, and more efficient operational response, better targeted and lower cost interventions.
- The proactive and temporary installation of up to an additional 10 treatment packages at those wastewater treatment works where a high risk of compliance failure emerges. This additional treatment may become semi-permanent depending on the issues and will enhance longer-term resilience.
- At circa 18 of our highest process risk, activated sludge wastewater treatment works, we will reduce pollution risk through standardising our controls and instrumentation. This will reduce the risk of operational error and facilitate greater automation, also lowering the risk of compliance issues. It will also facilitate remote root cause determination, and potentially remote resolution, to reduce the number

of required callouts, therefore improving operational efficiency.

- At circa ten wastewater treatment works we will undertake specific inlet work improvements, to enable clear transmission of flow to site, removing rag and grit. This will reduce blockages both at the inlet and within downstream assets and lower the risk of inlet flooding, providing increased resilience in wet weather. The improved downstream asset condition will also, in turn, reduce reactive maintenance.
- The installation of smart generators at 110 wastewater treatment works will provide improved power resilience at critical sites, ensuring they remain operational during power brownouts and blackouts.
- Ongoing maintenance of Mechanical, Electrical, Instrumentation, Control and Automation (MEICA) equipment at 165 wastewater treatment works as we implement a more planned, proactive maintenance approach.
- Specific asset improvements at treatment works which can impact upon bathing waters, including new UV treatment, improvements at small coastal treatment works and increased treatment process resilience at a large coastal works.

There are also a number of elements of the base plan that are required for stability. These include emergency and reactive interventions, health and safety-driven actions, and ensuring a continued compliance with our environmental permits.

Further to this, our capital programme delivery approach has been reviewed and updated to improve deliverability and value for money.

For more details see Section 8.16

Finally, we will further improve key enabling processes to ensure maximum compliance including reviewing our wastewater sampling data capture and compliance review processes (to align with our increased visibility and allow us to optimise phosphorus load reduction at a catchment level where agreed) and review our base totex investment plans alongside our WINEP to improve efficiency in delivery.

8.6.6 Service improvements through base measured through performance commitments

Most investment included in our base plan, including Cost Adjustment Claims, focuses on maintaining performance and compliance with regulatory frameworks. This investment does maintain and deliver improvements in the base level of service. **Chapter 7** sets out a breakdown of wastewater PC improvements delivered through base maintenance.

Cost adjustment claims

In June 2023, we submitted an early cost adjustment claim in which we identified two areas in wholesale wastewater where Ofwat's proposed base cost modelling does not fully allow for Yorkshire Water's efficient costs in the 2025-2030 period. We provide an overview of these below.

The Cost Adjustment Claim Appendix provides an assessment of pressures on base expenditure and regional circumstances that were also considered in this process but did not meet the requirements for a cost adjustment claim.

See **Cost Adjustment Claim Appendix**

Phosphorous removal cost adjustment claim - operating cost impact of our 2020-2025 period phosphorus removal programme

We are delivering schemes to meet tightened phosphorus consents at 80 sites in the 2020-2025 period, with all schemes expected to be completed before 31 March 2025.Enhancement cost models developed by Ofwat (and built on by the Competition and Markets Authority (CMA) at PR19) allowed Yorkshire Water a totex value of £549.8 million (in 2017/18 prices) in Wastewater Network Plus. This covered phosphorus removal at 80 sites, serving a population equivalent of c. 4,460,000. No allowance was made for the ongoing operation and maintenance of these assets.

The current modelling process assumes that ongoing costs of maintaining compliance fall within base maintenance, unless the solutions delivered by the investment programme impact on a cost driver used in the cost models (for example, if the solutions drive an increase to treatment complexity).

In Yorkshire Water's case, we have a large increase in treatment costs associated with our 2020-2025 phosphorus removal investment programme, and this is not reflected in the cost variable in the current

models. Ofwat recognised this in its recent Base Cost Modelling consultation and was open to views regarding efficient ongoing phosphorus removal costs via cost adjustment claims.

Our total claim for efficient ongoing phosphorus removal costs, after deduction of a calculated implicit allowance, is **£22.0 million** p.a. or **£110.1 million** for the 2025-2030 period.

This is a non-symmetrical claim, as it is for forward-looking costs not included in the historic dataset.

We set out the detailed evidence for this claim in our Cost Adjustment Claim Appendix.

See **Cost Adjustment Claim Appendix**

Combined sewers cost adjustment claim

Our early submission sets out the case for an upward adjustment of **£17.6 million p.a**. (**£88.1 million over the 2025-2030 period)** of costs for operating and maintaining a wastewater network, with a materially higher proportion of combined sewers than the industry average as shown in Figure 2.

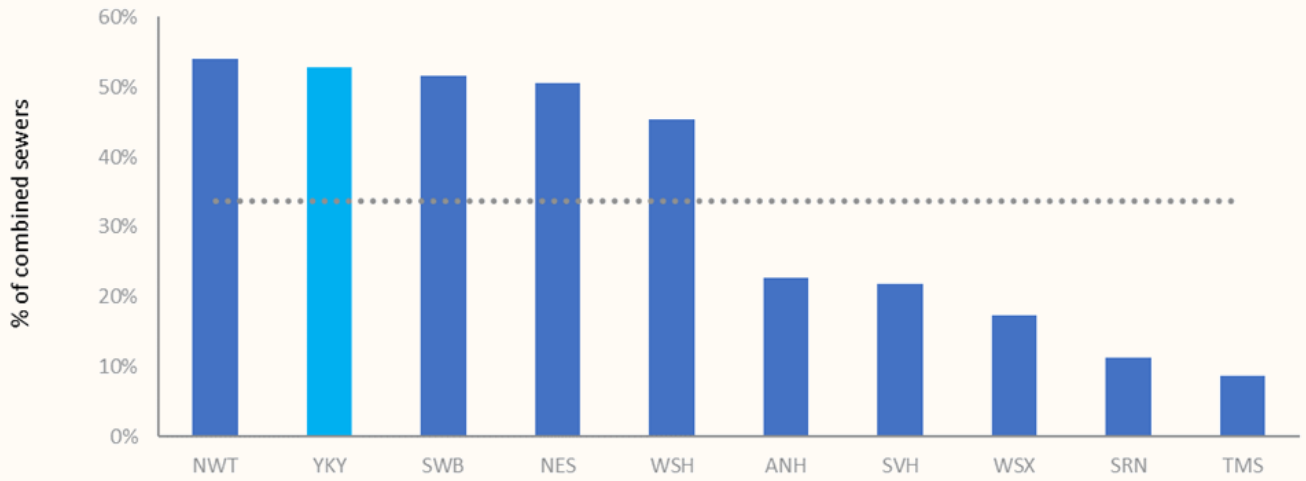


Figure 2: Industry proportion of combined sewers (legacy assets)

Combined sewers carry both foul and surface water, so are more susceptible to causing sewer flooding and overflow spills than separated systems. We believe that this drives significant differences in the levels of performance that different companies are achieving. Ofwat has set common ISF PC levels, and this materially impacts the costs that affected companies are incurring as they implement operational strategies to minimise penalties.

There are a variety of factors that affect the investment required to achieve our current ISF performance. These include the prevalence of combined sewers, the propensity to experience sewer blockages, the prevalence of cellared properties, the age and material of the network, and rainfall levels in urban areas. Depending on the factor(s) selected, a range of sizes of cost adjustment claim could be contemplated. However, the proportion of combined sewers is a factor that is both supported by economic and engineering rationale and by robust, high-quality data available in Ofwat's PR24 dataset. It drives a material cost adjustment claim.

The value of this claim is driven by the difference between the inclusion and exclusion of this driver, in Ofwat's base econometric models. This calculated value does not provide Yorkshire Water with sufficient allowance to overcome the differences in operating circumstances that impact on performance levels (current relative performance is not included in the models). However, it does describe the cost impact of this factor *given* the current performance differences (excluding penalty payments).

This claim is therefore in addition to the evidence provided in **Chapter 7** and the Detailed performance commitments appendix, for the adjustment of performance commitment targets (particularly internal sewer flooding).

This claim is a symmetrical claim, and this is set out in our evidence. We set out the detailed evidence for this claim in the Cost Adjustment Claim Appendix.

See **Cost Adjustment Claim Appendix**

Comments on other companies' symmetrical claims

We welcome the fact that Ofwat has shared the industry's symmetrical cost adjustment claims ahead of submission and allowed us to comment on these as part of our plan. We have asked Oxera to provide detailed commentary on these as part of its Cost Adjustment Claim analysis and this is summarised in our Cost Adjustment Claims Appendix and shown in detail in the subsequent Oxera Cost Adjustment Claim Analysis Document.

The main symmetrical claim related to wastewater is related to drainage and reflects very similar drivers to those identified by our analysis.

8.6.7 Unmodelled costs

Our approach to unmodelled costs is detailed in Section 8.3. The unmodelled costs included in our plan for Wholesale Wastewater are shown in Table 13.

Unmodelled Cost Type	Cost £m
Business rates	155
TMA	1

Table 13: Unmodelled costs - wholesale wastewater

8.6.8 Enhancement expenditure

This section sets out the enhancement requirements in our wholesale wastewater plan.

Most areas of the enhancement programme are associated with statutory requirements such as the need to meet environmental standards, to address short- and long-term statutory targets, or to maintain wastewater services to a growing population as part of our statutory duties. We propose investment to accelerate delivery of the SODRP targets at coastal bathing waters. Our DWMP does not drive any specific investment in AMP8 beyond WINEP and growth requirements, so the DWMP does not have an associated enhancement case, but sets the longer-term context for the AMP8 plan.

Service improvements through enhancement measured through Performance Commitments

The primary driver for the enhancement investment is to meet statutory or quality standards. Some of the enhancement investments do have a secondary benefit of delivering service improvements as measured through performance commitments. Chapter 7 sets out the performance commitment improvements that are forecast as a result of the proposed enhancement investment.

Customer protection through Price Control Deliverables

In order to safeguard our customers from non-delivery of our proposed enhancement outputs where the expenditure is material we are proposing to implement PCDs. The enhancement cases which will have PCDs are: Storm Overflow Reduction Plan, Bathing Water, Coastal Bathing Water Overflows, River Water Quality Monitoring, River Water Quality Improvements, Non-infrastructure Growth and New Town Requirements and Living with Water.

WINEP programme enhancement cases

Our significant WINEP programme for the 2025-2030 period comprises a number of enhancement cases, which are summarised in Table 14. Together, they represent our commitment to deliver against our environmental obligations in a way that returns the greatest benefit to the region and the people of Yorkshire. Further details can be found in the WINEP Enhancement case appendix.

WINEP Enhancement case appendix

WINEP enhancement case	£m
Storm overflow reduction plan	821
Bathing water	179
River water quality monitoring	157
River water quality improvements – sanitaries and nutrients	410
River water quality investigation	2
Investigation into nitrogen technical achievable limits	0.05
Schemes to meet the 25-year Environment Plan	5
Septic tank removal and replacement with secondary treatment	18
Schemes driven by population numbers under Urban Wastewater Treatment Directive	0.003
Water quality improvements and investigations for chemicals and microplastics	6
Monitoring of intermittent wastewater discharges and flow monitoring of water treatment works discharges	85

Table 14: Summary of WINEP enhancement cases

WINEP Storm overflow reduction plan

This enhancement case delivers storm overflow reductions in line with the requirements set out in the Environment Act, 2021 and subsequent SODRP. Our WINEP plan delivers 221 individual scheme improvements focused on priority overflows that cause environmental harm.

Our plan is based on a strategy of installing more blue green infrastructure, such as Sustainable urban Drainage Systems (SuDS), with a target to ensure that at least 20% of schemes contain components of blue green infrastructure in the 2025-2030 period, rising to at least 50% from 2030 onwards. As part of the programme, we will conduct infiltration studies to identify where we can reduce flows into the network. Building grey infrastructure such as storage tanks will also be part of the programme, but our aim is to minimise this as far as possible, in line with our strategic targets.

In line with the requirements of the statutory SODRP this programme of work will deliver no more than 10 annual spills at each of the 221 overflows. These overflows are prioritised on the basis of the sensitivity of the environment to which they discharge. It should be noted that this does not necessarily mean that overflows with the highest number of spills are addressed first as prioritisation is based primarily on environmental sensitivity and not maximisation of spill reduction. Consequently, if prioritisation was made based on the reduction in the regional average number of spills as measured by Ofwat's performance commitment a different group of overflows may be selected.

WINEP Bathing water

We will improve our infrastructure to support bathing water quality at both designated and non-designated bathing waters in Yorkshire. Our infrastructure improvements, which align to the SODRP targets for bathing waters, will be delivered at the River Wharfe at Cromwheel, Ilkley (the UK's first designated riverine bathing water), the River Wharfe at Wetherby and the River Nidd at Knaresborough (both of which are locations where communities have applied or intend to apply for bathing water status). We will also investigate the influences on bathing water quality at each of these locations and explore further if our continuous discharges are impacting this.

On 18 September 2023, we received confirmation from the Environment Agency that following discussions with Defra on phasing this non-statutory investment, the WINEP has been updated to move the delivery of some components of the improvements at Wetherby and Knaresborough to future regulatory periods. This applies to continuous discharge disinfection in the Wetherby and Knaresborough catchments, with improvements to associated intermittent discharges to remain in the AMP8 plan. These changes have not been reflected in our business plan data tables. The data table changes that would be required to reflect these late changes are detailed in the enhancement case.

WINEP River water quality monitoring

We are required to install continuous river water quality monitors. These facilitate the reporting of near real-time data to the public, both up and downstream of all our qualifying intermittent and continuous discharges.

We have calculated a unit rate for the installation of the monitors through discussions with both the Environment Agency and the suppliers who currently deploy these monitors. The suppliers shared their current costs, which were used as a basis for costing. Costs for the purchase of land or permanent access agreements, flood risk assessment and planning requirements have also been included.

There is also an investigatory element to this requirement. We will contribute to national investigations to determine how the monitoring can be implemented in coastal, estuarine and other non-riverine environments. In these complex cases we will also need to undertake local surveys to ensure the sites are suitable for monitoring.

We would be happy for these monitors to be installed as part of a national programme if that is deemed a more efficient and timely way to deliver, and will work with other companies if that is the route the EA finally selects.

WINEP River water quality improvements – sanitaries and nutrients

We commit to act to deliver water quality improvement schemes in response to scenarios where environmental and modelled evidence predicts that our continuous WwTW discharges will cause an impact. Sanitary improvement schemes will aim to achieve 'WFD Good' status, while nutrient improvement schemes will aim to achieve FairShare 'WFD Good' status, in line with the Environment Agency's Polluter Pays Principle, where technically feasible.

We commit to preventing future water quality harm through the take-up of WwTW Dry Weather Flow (DWF) permit headroom by population growth to 2035. This should prevent deterioration of receiving surface waters. Where 2035 population growth is predicted to cause deterioration, we will tighten WwTW continuous permitted quality limits to counteract any predicted deterioration.

The solutions put forward in our plan have been built and costed using the totex hierarchy decision making process seeking to ensure best value. Our approach is to identify 'no-build' options first, and we are working with the EA to identify catchment management optimisation opportunities, including working with landowners and other stakeholders in the catchment to improve river water quality through managing pollution at source and permit trading.

Where we need to directly intervene through a constructed solution, we look to 'build smart'. This incorporates nature-based solutions such as the low energy, nature-based biological processes like the installation at Clifton, previously discussed. We will transfer discharges to the next treatment works where economic to do so, therefore reducing our operating costs. Only when other options are exhausted will we defer to more conventional treatment processes. Over the last 10 years we have become much more mature in our understating of optimisation and efficiency in treatment processes, including where we have thresholds in the permit for chemical dosing, solids management performance and ensuring that our procurement strategies drive value. All of these efficiencies are built into our unit costs for the 2025-2030 period and will provide best value to our customers.

This enhancement case and associated PCD includes the schemes driven by population numbers under Urban Wastewater Treatment Directive driver.

WINEP River water quality investigation

The WFD requires companies to investigate the potential impact of their assets on the environment, to prevent a failure of the WFD standards. We will investigate two catchments to assess whether storm discharges are causing a failure of the WFD intermittent standards, where the Environment Agency has data which suggests there may be an issue relating to our permitted discharges.

WINEP investigation into nitrogen technical achievable limits

All water companies are required to participate in trials to help ascertain the best methods and highest standards that can be achieved for nitrogen removal. Some companies will build physical assets and monitor performance, as we did in the 2015-2020 period for the phosphorus removal technology trials, resulting in a tightening of the phosphorus removal technical limit. We are now proposing to monitor three technologies installed during the 2020-2025 period, which currently have limited data on performance for total nitrogen removal. Not only will this minimise cost, but the sites chosen will offer the water industry greater understanding of the efficacy of lower-carbon processes (two of which are nature-based solutions) for greater sustainable and treatment-resilient total nitrogen removal in future. The Environment Agency was highly supportive of the three sites that Yorkshire Water selected.

WINEP schemes to meet the 25-year Environment Plan

Under the broad outcomes defined by the government's 25-Year Environment Plan, two are of particular relevance to a water company: 'Clean and plentiful water' and 'Thriving plants and wildlife.' Where water companies have customer support for non-statutory actions that go above and beyond their statutory obligations, these can be included in the WINEP under the 25-Year Environment Plan drivers

(where they are not covered by other PR24 driver guidance). We have proposed two investigations and one improvement scheme under these drivers, all of which are supported by the EA and have customer and expert stakeholder support. Optioneering has led to a number of scenarios being developed across the programme, with cost benefit assessments undertaken against a broad range of environmental outcomes. These options will be further refined under scrutiny from the Environment Agency, and through collaboration with relevant stakeholder groups, such as Catchment Partnerships.

WINEP septic tank removal and replacement with secondary treatment

Septic tanks are used to treat wastewater from very small settlements where there is low environmental impact from treated wastewater discharges. Improving discharge quality involves replacing or upgrading septic tanks that discharge into surface water with secondary treatment.

Post completion of our business plan tables for WINEP, the Environment Agency and Defra asked companies to consider where it may be appropriate to phase certain investments. The septic tank driver was an area where it has been agreed that schemes should be phased. The WINEP enhancement case appendix provides more information on the proposed phasing and the impact this has on business plan tables. Following the instruction rom the Environment Agency on 5 July 2023 to phase the activity across AMP8 and AMP9, h details provided by the Environment Agency by email on 17 August 2023, required an assessment to ensure any discharges into or upstream of a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), or Special Area for Conservation (SAC) were delivered in AMP8, whilst those that did not were phased into AMP9. Yorkshire Water has undertaken this assessment and proposes to phase c£14m of investment under this driver into later periods.

WINEP schemes driven by population numbers under Urban Wastewater Treatment Directive

In collaboration with the Environment Agency, we have identified 10 WwTWs whose population meets the Urban Wastewater Treatment Regulation's (UWWTR) threshold for phosphorus removal, and which discharge into or upstream of newly designated Sensitive Area (Eutrophic) waterbodies. Nine of these WwTWs have a population of greater than 10,000, and will receive a phosphorus removal permit limit of 2 mg/l. The remaining site has a population of greater than 100,000 and will receive a phosphorus removal permit limit of 1 mg/l. The statutory nature of the driver dictates that an end of pipe, on-site solution is required.

Three sites (Wetherby, Thorpe Arch and Leeming Bar WwTWs) already have a permit limit below this UWWTR limit and will not require further treatment. Therefore, these three locations only require an update to the environmental permit to include the relevant UWWTR clauses. The remaining seven sites at Colburn WwTW, Harrogate North WwTW, Knaresborough WwTW, Rawcliffe York WwTW, York Naburn WwTW, Ilkley WwTW and Burley in Wharfedale WwTW will require additional treatment. As these new permit requirements are driven by the UWWTR we are limited in the innovation we can deploy, such as catchment-based solutions. Typically, the solutions will be based on chemical dosing and solids capture. Our approach to phosphorus removal over the last 10 years has identified many efficiencies in the optimisation of chemical dosing and solids performance. All of these efficiencies are built into our unit costs for the 2025-2030 period.

The costs and customer protection associated with these phosphorus removal schemes has been included within the River water quality improvements – sanitaries and nutrients enhancement case.

WINEP monitoring of wastewater treatment works intermittent discharges and water treatment works discharge flows

We are required to install new monitoring, or certify existing monitoring, related to storm and emergency overflows. To achieve this, we will be installing 24 new flow meters (U_MON4) to assess flow passed forward from storm overflows to sewage treatment works for treatment. In conjunction with monitors installed in the 2020-2025 regulatory period, this will provide 100% pass forward flow monitoring at qualifying last-in-line overflows. The 230 related EDM monitors (U_MON3) that were installed in the 2020-2025 period will also be inspected and certified to the new MCERTs standard.

New to PR24 is an obligation to provide certified EDM and flow monitoring related to emergency overflows. Yorkshire Water has 860 qualifying permitted emergency overflows, and in line with Defra direction we will install certified monitoring at 25% of these sites in the 2020-2025 period. The remaining 75% of sites are planned in the 2025-2030 period. This position was agreed post completion of our business plan tables for WINEP, so this phasing is not in our business plan. The WINEP enhancement case appendix provide some information on the proposed phasing and the impact this has on business plan tables.

Working with the Environment Agency, we have identified four trade effluent discharges to sewer from WTWs that require new discharge flow monitoring in the 2025-2030 period. These discharges have been identified on the basis that they may present a higher risk to the environment due to the volume, composition and frequency of discharge.

WINEP water quality improvements and investigations for chemicals and microplastics

The Environment Agency works with companies to identify and set WINEP obligations for specific improvements for WwTW and associated water bodies

through river needs or standstill limits. Where the need, scale or means for improvement remains uncertain, companies must undertake investigations. As a result, in the 2025-2030 period, we will deliver a series of investigations. More detail on these can be found in the WINEP enhancement case appendix.

Non-infrastructure growth and new town requirements

We plan to deliver seven new schemes and complete a feasibility study for a further scheme. Four schemes are driven by our analysis of future population growth exceeding the 90th percentile of the Dry Weather Flow (DWF) consent, therefore triggering investment into greater capacity at the treatment works. Since infiltration at these sites is noted to be low, attempts to address the issue by reducing infiltration within the catchment would be unlikely to achieve a level below the permitted DWF. To ensure best value, the options repurpose existing assets as far as reasonably possible, minimising the need for additional assets.

In addition, there are two schemes at Howden (East Yorkshire) and a proposed new town at Maltkiln (in Harrogate) which require new treatment capacity to service the forecasted housing needs. The use of Facultative Ponds has been identified as a potential alternative nature-based solution at Howden, however this would mean a write-off of the existing process units,and may therefore not be the best-value solution. Until such times as a feasibility study is completed, conventional solutions have been scoped and costed into the plan.

At Maltkiln we propose a nature-based wetland solution, which would bring significant biodiversity benefits, similar to the site in operation at Clifton WwTW.

Finally, there is a further new town planned at Burn in Selby. We propose a feasibility study for this, as it is anticipated that the development will not start fully until the 2025-2030 regulatory period. This will allow us to include the best-value solution in our PR29 Business Plan.

Growth at sewage treatment works enhancement case appendix

Living with Water - Flood Risk Reduction in Hull and East Riding

We plan to continue our delivery of Living with Water in Hull, focused on the development of strategic partnerships in the city to provide enhanced flood resilience. We will deliver key enabling activity in the 2025-2030 period, as part of our long-term strategy, 'The Blue/Green plan', which is a co-funded Yorkshire Water and Flood Defence Grant in Aid (FDGiA) study. The plan aims to transform our urban areas to better utilise green spaces, store surface water locally, and move and reuse surface water. We recognise that water does not sit in isolation, but is an integral part of other services, sectors, growth and change within Hull and Haltemprice. Our plan seeks to work with others to co-design, co-create, co-fund and co-deliver schemes that create multiple benefits, whilst reducing the cost to deliver. The long-term strategy sets out an investment plan of over £1.5 billion, delivering in excess of £2.6 billion in benefits.

Our 2025-2030 investment will focus on creating capacity within existing watercourses to begin a long-term process of surface water separation, alongside a programme of source control (street level SuDS measures) and a community-focused innovation project to test the nation's first blue/green corridor approach. This will replace traditional surface water sewers, traditional highway and land drainage systems with above-ground measures that work with the complex geography of this location and manage water sustainably on the surface.

By working in partnership to manage a complex drainage system holistically, we are able to leverage third-party contributions to cover costs that do not fall under the direct remit of Yorkshire Water. Without this approach, the schemes would be non-viable for either Yorkshire Water or local government. Only in tackling these problems together can we provide a solution which is affordable.

Living with Water enhancement case appendix

Coastal Bathing Water storm overflows – SODRP compliance

We are planning an ambitious programme which complements our WINEP investment to allow us to address all of the designated coastal storm overflows within AMP8 and meet the government's SODRP targets ahead of the 2035 requirement. We will address an additional 22 assets, reducing their spill frequency to two spills per bathing season for Excellent bathing waters and 10 spills per year on average. We will look to incorporate blue green infrastructure into 20% of this programme to support our AMP8 ambitions. This investment programme will support the Yorkshire Bathing Water Partnerships vision of unlocking the benefits of excellent bathing quality on the coast.

Coastal bathing water storm overflows enhancement case appendix

8.6.9 Transition expenditure

Transition expenditure applies to work of such complexity and/or scale that it must be started prior to the beginning of the period. The requirements of this work are chiefly driven by regulatory deadlines for drivers in the WINEP programme in the 2025-2030 period. Our transition expenditures, and the needs driving them, are detailed in Table 15.

Transition expenditure (including WINEP driver where relevant)	2024/25 expenditure need (£m)	Reason for transition expenditure requirement
WINEP EnvAct_INV4 Investigations to reduce storm overflow spills to protect the environment so that they have no local adverse ecological impact.	7.557	Investment in investigations for the "no harm" element is required early, to meet the April 2027 delivery date, for some of the outputs required in this driver. This is due to the complex modelling and monitoring required under this driver. Experience of undertaking equivalent Urban Pollution Management studies has shown that they generally take three years to complete.
WINEP WFD_INV_CHEM Investigations into chemical substances as specified	1.175	Chemicals investigations need preparatory work such as drilling new monitoring boreholes for groundwater investigations, scoping investigations in detail for procurement of delivery contractors, and data collection and review of existing models, for the transitional and coastal waters investigation. If this work is not commenced prior to AMP8 we will not be able to meet regulatory delivery deadlines in 2027.
WINEP WFD_INV Investigation into impact of intermittent discharges	0.524	Investigation into impact of YW intermittent discharges on the catchments of Oak Beck and Batley Beck. Experience of completing similar complex investigations has shown they generally take three years to complete. The outcome of the investigations needs to be completed and agreed with the Environment Agency to inform PR29 business plans.
WINEP WFD_INV_MP Investigations into microplastics	0.456	Microplastics investigations need scoping in detail for procurement of delivery contractors, identification by delivery contractors of advanced thermal conversion (ATC) plants where the destruction of microplastics will be assessed, and agreements established with ATC plant operators for investigations. If this work is not commenced prior to AMP8 we will not be able to meet regulatory delivery deadlines in 2027.
WINEP BW_INV 1 (Ilkley) Investigations for bathing waters with a current planning class of Poor. WINEP BW_INV 5 (Wetherby, Nidd) Investigations at non-designated bathing waters where there is evidence of customer support	1.962	Investment in investigations for bathing water quality, both designated and non-designated, are required early to meet the April 2027 delivery date for these drivers (BW_INV1 and BW_INV5). This is due to the complex modelling and monitoring required under this driver. Experience of undertaking similar complexity models has shown that they generally take three years to complete.
WINEP WFD_ND Actions to meet requirements to prevent deterioration WINEP WFD_IMP Implementation of actions to improve water quality in terms of relevant Water Framework Directive Regulations status objectives	14.721	Expenditure to deliver 22 'No Deterioration' schemes with a 31/03/2026 date and investigation expenditure to support the delivery of the treatment programme in WINEP. Investigation expenditure is required as transition expenditure to deliver by the 2027 compliance date.
WINEP EnvAct_IMP3 Improvements to reduce storm overflows that spill to designated bathing waters to protect public health WINEP EnvAct_IMP4 Improvements to reduce storm overflows spills so that they do not discharge above an average of 10 rainfall events per year by 2050.	19.420	Expenditure required to support the proposed expenditure profile of the Storm Overflow Reduction Programme. Given the large amount of expenditure required, it is necessary to deliver site investigations, modelling and feasibility in the final year of AMP7.

Table 15: Transition expenditure requirements for wholesale wastewater

8.6.10 Accelerated Infrastructure Delivery Projects

	2023/24	2024/25	2025/26	Opex £m/year
Accelerated Investment £m	3.973	21.668	39.880	0.777

Two schemes have been agreed with Ofwat under the Accelerated Infrastructure Delivery Project. These activities support bathing waters which are currently classified as 'Poor' under the Bathing Water Legislation and have been accelerated to support water company contributions towards improving bathing water quality.

Inland bathing water improvement scheme – River Wharfe, Ilkley

At the time of submitting our initial Accelerated Infrastructure Delivery Project proposals, our submission was informed by the government's Storm Overflow Discharge Reduction Plan and our interim digital modelling which we undertook following the bathing water designation on the River Wharfe in Ilkley.

After this point and as confirmed in the 3rd July 2023 issue of WINEP, there were three areas of activity in our accelerated infrastructure submission that were removed from the WINEP. These are:

- Tertiary treatment at Grassington WwTW
- Tertiary treatment at Draughton WwTW
- Tertiary treatment at Beamsley WwTW

These schemes were removed, as evidence demonstrated that bathing water classification in Ilkley is being driven by elevated samples during wet weather events rather than continuous impacts within the catchment. We have therefore removed these elements from our accelerated infrastructure delivery cost profiles, and in line with the WINEP, we do not propose to deliver these schemes.

Since our submission to the Acceleration Infrastructure Delivery process, we have reviewed 2026-2027 costs and brought these forwards into 2025-2026 to ensure that required activity is delivered in line with the delivery date.

Coastal bathing water improvement

Delivery of enhancements to the Wheatcroft combined sewer overflow to meet the storm overflow spill target for coastal bathing water of an average of two spills per bathing water season, on or before 31 March 2025.

Since our submission to the Accelerated Infrastructure Delivery process, we have reviewed 2025-26 costs and brought these forward into 2024-25 to ensure activity is completed in line with the delivery date. We have also reprofiled the cost of providing screening at Wheatcroft and have profiled this into the final year of scheme delivery.

8.7 A focus on expenditure across price controls

There are many areas of activity and investment that cut across multiple price controls in our plan. In this section we highlight a small number of these where they are of strategic or operational importance. This section provides a spotlight on:

- Net zero
- Technology
- Health and safety

8.7.1 Net zero

Summary of main messages
Our longer-term goal to 2050 seeks to align with the UK Government's glide path to full net zero emissions. Our progress towards the UK government's target for net zero by 2050 is a key strand to our LTDS and we have set out a plan to deliver emissions reductions of 90% by 2050. Over the 2025-2050 period we have developed a £590 million plan to achieve the net zero target.

The plan will:

- Reduce process emissions.
- Increase self-generation of energy.
- Reduce chemical use.
- Address emissions arising from purchased goods and services and capital goods.
- Maximise opportunities for use of nature-based solutions and other alternatives, to balance the requirements of future statutory investment programmes such as WINEP with the net zero objectives.

The scale of GHG emission reduction required by 2050 is significant, and the proposed investment in the 2025-2030 regulatory period is needed to ensure we make emission reductions despite new emissions arising from the wider compliance programmes, such as WINEP, which has a forecast additional 70-80ktCO2e/year from extra energy, chemical, transport and process emissions created by new and expanded assets across AMP7 and AMP8.

Our net zero programme for the regulatory period 2025-2030 consists of activities delivered through both our base maintenance programme and proposed enhancement investment. In combination, these focus our short-term activities on the reduction of Scope 1 (direct emissions) and Scope 2 (emissions from purchased electricity). Our longer-term focus for 2030 and beyond will be to continue to address these emissions and consider our wider Scope 3 emissions.

Customer and stakeholder engagement
Our customers do not want us to defer actions to address climate change to the future. They support the inclusion of achieving net zero in our plans and the associated funding for this. 78% of customers found our plan to be acceptable overall including this additional programme of work.

Our AMP7 performance
We have been working in the 2020-2025 period to reduce operational GHG emissions and wider embedded GHG emissions. However, these remain significantly above the target level for 2030 for operational emissions, and for 2050 for all emission sources. We need to move forward from this position with increased focus and investment to reduce our emissions in line with the 2050 net zero glide path.

During the 2020-2025 period, we have invested in additional monitoring that enables us to better track the efficiency of large, high-energy-consuming equipment. This will help us to target our investment in 2025-2030 and ensure that our base maintenance activity can support the optimisation of energy use. This optimisation will be further supported through the continued rollout of our Above Ground Maintenance and Integrated Planning, Scheduling and Logistics (IPSL) programmes, as part of our broader modernisation programme.

For more details on the modernisation programme, see Chapter 4

How this plan links to our LTDS
Net zero is a core component of our LTDS. Our core pathway for net zero includes:

- **Process emissions: methane** – CH4 investment, including investment for monitoring to validate reductions.
- **Process emissions: nitrous oxide** – N2O reduction investment, including investment for monitoring of emissions.
- **Renewables** – Rooftop and ground-mounted solar installation now, moving into wider renewables from 2030, including wind, further ground-mounted solar,

final effluent heat recovery and hydrogen/carbon capture and storage.

- **Chemicals: optimisation and emission reduction** – Reduction in current chemical use and additional consumption driven by quality programmes.
- **Purchased and capital goods: emission reduction** - Investment to decarbonise embedded emissions (Scope 3) including capital goods and purchased goods and services.

Further detail on the core pathways and the associated assumptions can be found in our LTDS 'Net Zero' section.

Planned base expenditure in our 2025-2030 plan

Across water and wastewater, our base programme builds on activities and investment delivered in the 2020-2025 period. We will continue to reduce the use of high-carbon fuels, invest in green energy and embrace energy efficiency. We will also continue the transition of our fleet to lower carbon vehicles, including electric vehicles.

- **Energy use, including fuels –** We are targeting a 5-10% energy efficiency goal. This anticipates that our programme of asset maintenance and upgrades of older, less-efficient equipment such as pumps, motors, and blowers, will contribute to efficiency gains. Our mandatory energy efficiency (ESOS) audits will identify opportunities to improve energy efficiency.
- **Fleet –** Continue our progress to transition our fleet to net zero, through the ongoing renewal and upgrade of our fleet. Other initiatives include fleet rationalisation, vehicle right-sizing, and logistics/route optimisation.
- **Chemicals –** Reducing our use of chemicals will be key to our net zero target, offering both cost and carbon reduction. Through our optioneering processes in our capital programme, we will seek to identify low or no chemical alternative solutions, where these offer a cost-effective alternative. Chemical dosing requirements are strongly linked to our WINEP programme, which requires the use of additional chemical dosing to achieve more stringent environmental water quality standards. Alternative solutions will extend the use of nature-based approaches to reduce the use of chemicals.

Enhancement Investment

The scale of GHG emission reduction required is significant to meet the government's 2050 target. The proposed enhancement investment in the 2025-2030 regulatory period is needed to ensure we make emission reductions despite the challenge of new emissions arising from statutory compliance programmes, such as WINEP.

Process emissions have been identified as a priority area. It is forecast that process emissions will increase in the future as a result of both improved measurement and increased process capacity.

In developing our net zero enhancement case we have focused on two key principles:

- Working to address Scope 1 and 2 emissions as a priority, between now and 2030, as part of a science-aligned approach to emission reduction.
- Addressing emissions at larger scale, and with the most efficient cost per tCO2e of carbon removal.

Our net zero enhancement case provides more details on our approach to identify the most effective and efficient interventions. This involved reviewing of our existing emissions profile, and coordinating a process emission sprint with key internal stakeholders and external experts from consultancy and academia, to review reduction pathways. The evaluation of options is set out in more detail in our net zero enhancement case appendix.

In order to safeguard our customers from non-delivery we are proposing to implement a PCD for this case.

Net zero enhancement case appendix

The enhancement investments are:

Water:

- Solar renewables: Deployment of roof-mounted and ground-mounted solar arrays on our water sites. This will deliver a net carbon benefit of c.3,000 tCO2e/year on full deployment, which is close to 2.5% of our water baseline emissions.

Wastewater:

- Solar renewables: Deployment of roof-mounted and ground-mounted solar arrays on our wastewater Network Plus sites. This will deliver a net carbon benefit/reduction of c.3,000 tCO2e/year on full deployment, which is close to 2% of our wastewater baseline emissions.
- Process emission reduction (methane): Upgrade our anaerobic digesters, install vacuum degassing for post digestion and undertake additional monitoring and leak detection to reduce our methane emissions. This will deliver a net benefit/reduction of 18,183 tCO2e/year, which is c.12% of our wastewater baseline emissions.
- Process emission reduction (nitrous oxide): Upgrade the control systems associated with aeration control

of a number of our Activated Sludge Process (ASP) lanes and provide additional liquor buffering at two sites. This will deliver a net benefit/reduction of 5,371 tCO2e/year, which is c. 3.5% of our wastewater baseline emissions.

Our bioresources enhancement plans include upgrades to our digesters at three sites to increase sludge processing capacity. An additional benefit of these upgrades will be increased recovery of methane from the sludge and reduced emissions. Further details are provided in **Section 8.8.**

It is important that we act in the 2025-2030 regulatory period to move closer to net zero. We need to manage our activities carefully and without this investment we may experience the following:

- Increasing process emissions and lost cost-saving opportunities.
- Increasing energy demand that increases emissions and energy costs.
- Inability to credibly deliver our public interest commitment to address our Scope 1 and Scope 2 emissions and our directly outsourced activities leading to Scope 3 emissions.
- Reputational impact from customers, investors and other stakeholders that may question our stated short- and long-term net zero ambition.
- Challenges regarding greenwashing.
- Reduction in our overall sustainability performance, as indicated by international benchmarks such as GRESB that may adversely impact our investment proposition as a business.
- Potential for increased costs in later pricing periods for delivering equivalent solutions, because of high inflation and deterioration of the marginal abatement costs we've calculated.

8.7.2 Technology

The 2020-2025 regulatory period has seen a fundamental shift in the role technology has played in providing additional and increasing value to Yorkshire Water and its customers. Our Technology Strategy, developed in the 2020-2025 period, demonstrates how technology can successfully support our vision of "a thriving Yorkshire, right for customers, right for the environment". The strategy has moved us from unconnected systems and processes into a series of joined-up processes and data, underpinned by leading technologies which offer scalability, adaptability, and efficiency. It is from this newly created technology foundation that we can drive additional activities, such as automation, and the further introduction of artificial intelligence (AI), which will be at the core of our efficiency activities.

Through the 2025-2030 regulatory period, our technology programme will develop these capabilities as it builds out its services. The key elements of the programme include:

- Further investment in our cyber security programme, enhancing our control framework in the cyber physical world and increasing the protection around critical operational systems such as SCADA.
- Continued investment in our telemetry estate as we look to uplift our capabilities in this area to take advantage of IoT and 5G/satellite capabilities.
- Realising benefits of our cloud infrastructure by sharing workloads and optimising processing consumption, bringing greater value to the organisation.
- Leveraging our data platform to deliver ongoing insights across our organisation, as well as developing a series of generative AI models which can help support complex decision making processes and increase productivity.
- Making further enhancements to our enterprise applications (SAP, Esri ArcGIS, Microsoft) to increase operational productivity, boost our situational awareness and improve our customer responsiveness.
- Implementing the technology required to enable full benefits realisation for Yorkshire Water and its customers from the smart metering rollout.

8.7.3 Health and safety

We have set out a Health and Safety Charter for the period 2025-2030. This identifies the totex requirement for AMP8 and aims to achieve an acceptable level of risk, which as far as is reasonably practical, maintains the risk and compliance position. The charter is split into 13 individual streams, with each stream tied to Statutory Legislation or Regulation enforced under the Health and Safety at Work act. The streams are grouped into Process Risk and Occupational Risk. The scope of risks covered by the charter includes:

Process Health and Safety Risks

- Ensuring enclosed process systems are suitable to manage the working pressures of the system.
- Installation/upgrading of ventilation systems to prevent giving rise to hazardous or flammable atmosphere.
- Ensuring equipment within potentially flammable atmospheres is incapable of giving rise to ignition.
- Ensuring electrical equipment is safe to operate by concentrating on managing the risk of arc flash, electric shock and fire.
- Ensuring Safety Instrumented Systems work when called upon.

Occupational Health and Safety Risks

- Ensuring lifting equipment is appropriate for the lifting operation it was intended for.
- Ensuring asbestos and legionella are being appropriately controlled.
- Ensuring emergency and general lighting are appropriate for work activities taking place on site.
- Ensuring civil structures are appropriately constructed.

8.8 Bioresources

8.8.1 Summary of main messages

Our bioresources plan aims to grow resilience and drive efficiency in the collection, treatment and recycling of sludge by taking a commercial approach which considers alternative delivery routes and revenue streams. It does this whilst starting to respond to a number of challenges including net zero, a growing volume of sludge and a changing regulatory landscape.

Key outcomes of our 2025-2030 plan for bioresources are:

- A smaller, more-efficient asset base, better prepared for future change.
- A continually improving totex position as innovative technologies and market opportunities are delivered.
- 21,3000 tonnes of dry solids (TDS) of additional sludge absorbed into base.
- 5000 TDS of sludge treatment capacity provided through a five-year market trade.
- A 21% reduction in methane emissions through base expenditure, compared with retaining the current asset configuration.

Our Bioresources Sludge Strategy sets out the detail of our future plans, our track record on work done so far and how we've been collaborating with the sector; working to identify solutions in partnership and to provide a route for new companies into the industry. This section provides a summary of the strategy.

Table 16 provides a summary view of our plan for the bioresources price control for 2025-2030.

Category	Description	£m
Base Maintenance	Sludge Transport	55.274
	Sludge Treatment	223.505
	Sludge Disposal	68.626
Enhancement	IED Appropriate Measures	118.201
	Land Bank Uncertainty Mechanism	n/a
	WINEP SUiAR Enhancement Case	43.736
	Bioresources component of Net Zero Enhancement Case	17.092

Table 16: An overview of our planned investment for the bioresources price control for 2025-2030.

Please note there are no performance commitments or cost adjustment claims for bioresources.

8.8.2 How this links to our LTDS

While the core pathway in our LTDS includes the necessary level of enhancement expenditure to ensure we meet quality standards required to recycle treated sludge cake to land, a significant change facing bioresources is uncertainty regarding the sustainability of sludge recycling to agriculture. Given this risk, our long-term expectation is that some, or all, of our sludge will be subject to additional drying of sludge to pellets, or solids destruction, with the rest of our asset base adapted to the most economical way of delivering this. This will most likely involve a small number of drying or destruction centres with the remaining sites adapted for sludge export. These centres might be spread across the Yorkshire Water region, situated at regional boundaries and delivered with other WaSCs or located around the country and operated by an external third party under a gate fee. Exactly what this looks like is difficult to establish due to the lack of clarity over the long-term plans for recycling biosolids to agriculture, in particular to what extent and where the land bank is impacted. Whilst further work is clearly needed to map out our longer-term asset plans, our Bioresources PR24 plans are designed to support this anticipated need for alternative treatment in two ways:

- **Rationalising sites**: the high costs associated with both drying and destruction mean the likely solution is a smaller number of very large centres. In starting to rationalise our smaller sites now we are taking steps towards this operating model, as well as reducing expenditure on maintaining and

refurbishing ageing assets that may not have a longer-term economic future.

- **Minimal additional biosolids storage**: we have tried to balance short-term cost and longer-term risk on biosolids storage, providing enough storage for deployment delays no greater than 10 days (see WINEP SUiAR Enhancement Case, with the WINEP enhancement case appendix). This will not be sufficient to address the growing risks outlined above, however providing yet more storage could lead to redundant assets if we move to a destruction approach for some of our sludges in the future. Our business plan seeks to provide best value to customers in the short and medium to long term.

8.8.3 Customer and stakeholder priorities

Our customers tell us that continuing to treat wastewater to a high standard is important to them. Whilst bioresources is generally not something that customers have a detailed understanding of, we know that being an effective bioresources business is critical to a cost-effective, resilient, sustainable and operationally efficient wastewater service. Our customers value these services and rely on us to maintain them. Keeping bills affordable for all is also a key priority for our broader customer base and is something we have strived to meet through our commercial approach, utilising alternative delivery routes and revenue streams to deliver more for less.

8.8.4 Bioresources AMP8 plan overview

Our bioresources business is responsible for the transport, treatment and recycling of sewage sludge. We take partially treated sewage and generate renewable energy and quality products for use in agriculture, thereby creating value from waste.

8.8.4.1 AMP7 performance

Yorkshire Water bioresources has achieved a step change in efficiency since the early years of AMP6 through significant changes to the way we operate including:

- Significant investment in the asset base, moving away from incineration to anaerobic digestion, and operating as an “energy factory”.
- Setting up the bioresources function to make decisions aligned with the bioresources price control, and to deliver schemes through a proportionate asset management approach.
- Increasing the use of markets to deliver projects on our behalf, including outsourcing of tankering and the Design, Build, Finance, Operate and Maintain (DBFOM) of gas to grid, as well as solar arrays.

This shift in approach has resulted in a step change in base totex, improving our annual performance from £74m (at 22/23 price base) at the beginning of AMP7 (20/21) to a forecast of £62m at the end of AMP8 (29/30 at 22/23 price base).

Upcoming challenges

While we continue to improve our position relative to the rest of the industry, our plan acknowledges that we’re also faced with multiple challenges:

- **Increased sludge production** – a growing volume of sludge driven by population growth and environmental schemes means we’ll need to find a net additional 21,000 TDS treatment capacity by 2030 whilst minimising totex and carbon.
- **Ageing assets** - several of our sludge treatment facilities are ageing and require significant investment to maintain performance. Instead of adopting a like-for-like approach to asset replacement, we need to consider future requirements.
- **Appropriate measures** – the EA published the ‘Biological waste treatment: appropriate measures for permitted facilities’ in September 2022, commonly known as Appropriate Measures. This introduces more prescriptive and tighter controls which we must comply with.
- **Recycling to land** – a number of challenges to the way we currently recycle to land could materialise rapidly and necessitate investment in alternative treatment options.
- **Rising cost of living** - like the rest of the UK, we continue to see substantial increases in our costs to operate and deliver schemes, regardless of the delivery method.
- **Carbon neutrality** - The water industry has made a commitment to be carbon neutral in relation to its operational Scope 1 and Scope 2 emissions by 2030. With the generation of methane through digestion, bioresources has a critical role in maximising the best use of biogas and reducing our process emissions.

Our 25-year ambition

Our long-term ambition is to be a frontier provider of bioresources services. We will be a resilient business, adaptive to the new and emerging challenges facing the industry, providing excellent environmental performance, and continuing our outstanding safety record. To meet our ambition, we will:

1) **Embrace new technologies and markets** – we will strengthen our commercial approach and comparative efficiency through considering different delivery routes, working with the market and partnering with specialist companies to reduce our operating costs.
2) **Prepare our sites for future change –** we will continue rationalising sites to ensure they are fit for

the future and adaptable to new requirements and innovations.

3) **Improve environmental performance –** we will continue to improve our environmental performance through a focus on maintenance and improving asset health. New investment will allow our sites to operate to higher standards in line with future environmental permits and we will focus on operational and embedded carbon emissions as part of Yorkshire Water's transition to net zero by 2050.
4) **Shape the future of bioresources –** we will continue to collaborate with others, including the wider industry, to set the direction of travel for bioresources.

Our five-year ambition

Our ambition for AMP8 is to target an upper quartile efficient and resilient service for our customers; keeping bills affordable and protecting our region's natural environment for our community to enjoy. We will continue to operate safe and compliant sites and work to minimise our carbon emissions, playing a leading role in Yorkshire Water's ambition to be carbon neutral for our operational emissions by 2030.

To start on the pathway to achieving our 25-year ambition, we plan to move to a smaller number of larger, more efficient Sludge Treatment Centres (STCs) where it is cost effective to do so. These larger sites will have a strong focus on process improvement and energy generation, utilising new technologies, market delivery and financing to help keep down capital costs, while ensuring customers benefit from the opex savings. In addition to energy generation, we'll also be looking to the market for the most beneficial energy offtake solution. We will start to rationalise at our smaller sites and use existing market capacity through trades to address any capacity shortfall. Consolidating sites in this way will also place us in a better position to respond to changing land bank requirements and to improve our assets to reduce process emissions.

Whilst there are no longer any performance commitments in bioresources, we are still prioritising those same elements of service which we see as crucial; protecting the quality of product that we recycle to agriculture and maximising our biogas utilisation. The former will, in future, be regulated through the new EA Sludge Strategy (see 'Sludge Recycling to Land' below). For the latter, our strategy increases the amount of energy that is produced and used by other areas of our business by 108% (208GWH/year).

We will continue to collaborate to pursue new opportunities and identify further synergies with the wider industry. We will engage with third parties to identify new products within bioresources that can be used elsewhere, either to reduce costs or benefit our carbon position. We will also continue to explore trade opportunities in addition to the 5,000 TDS/year trade we are currently procuring.

For more information on our bioresources ambition and how we intend to meet this please refer to our **Bioresources Sludge Strategy appendix**

8.8.5 Base maintenance

Process and approach

We consulted widely in the development of our plan. We've been transparent about the challenges we face, such as growing sludge volumes and ageing assets, and collaborated with other WaSCs and a whole range of non-regulated entities to understand what solutions can be developed by working in partnership.

Building on our PR19 market engagement we've explored myriad alternative delivery methods, from more efficient capital delivery through our in-house Bioresources Asset Management function to use of third-party markets, or new innovative methods of extending capacity in conjunction with York University. Key to assessing the efficiency of all these options has been our investment in a new Strategic Model, which is industry leading and allows us to compare opex and capex of hundreds of thousands of combinations of potential asset solutions in a way we've never been able to before.

Key initiatives

In line with our ambition, our plan for the 2025-2030 period is to move towards a smaller number of larger, more efficient digestion sites, supplemented by market capacity trading. Our plan is to use technology to further optimise our existing large sites, allowing them to achieve additional sludge throughput. Taking this commercial approach of utilising new technology and markets will continue to drive efficiency into our operations and position us for an even more efficient price control in the 2030-2035 pricing period.

Figure 3 below illustrates our planned changes to our asset base over the next 12 years. We have already started to deliver our plans this period, with two northern sites planned to close by 2025, taking our digestion sites from 14 to 12. In the 2025-2030 period, we expect to close a further three sites, taking our digestion sites to nine, with potentially a further one or two closing in the 2030 to 2035 period. Our extensive modelling shows that the optimum number of sites for our region is between seven and nine, depending on which alternative treatment solutions emerge over the next 10 years. Beyond that, the large transport distances between regions and available land bank become prohibitive. Should the industry decide to use an alternative sludge outlet to the land bank, this may change.

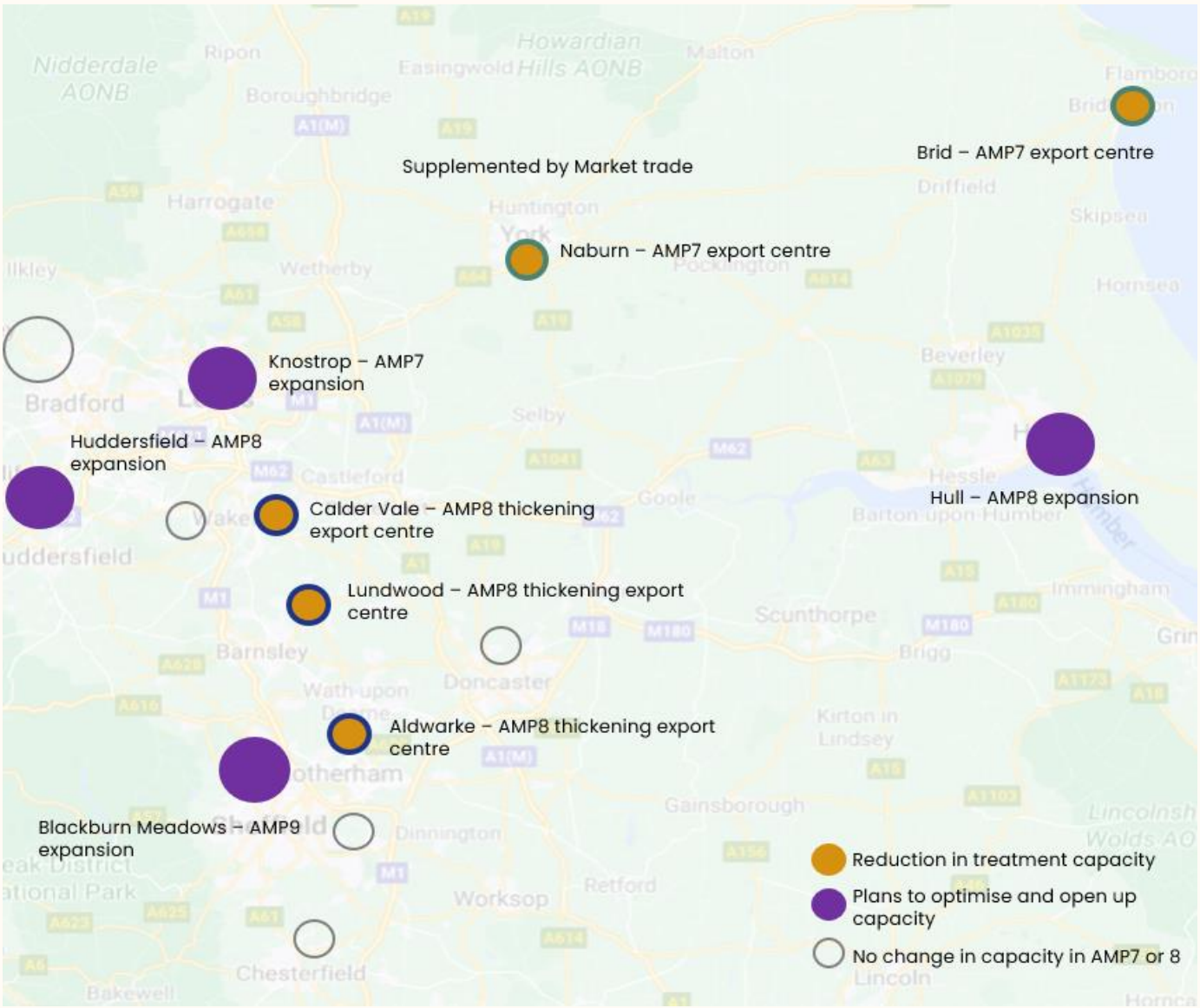


Figure 3: Bioresources asset plan

Additional capacity

Additional sludge treatment capacity is required to facilitate this rationalisation and will be created through three key initiatives.

- We are currently in procurement for a c.5,000 TDS/year contract for at least the next five years. Uncertainty over land bank presents higher risk, and therefore cost, to entering any longer-term contract.
- Some of the remaining shortfall will be met by running our assets slightly differently to expand their existing capacity. At our largest site in Leeds, we are in the process of converting our digesters to run in series. This is a relatively new approach to advanced digestion, identified through our market engagement. It achieves greater volatile solids destruction, which allows us to put more sludge through the system, capture a greater proportion of biogas and as a result, reduce methane emissions and treated sludge to land.
- This will be supplemented by the results of studies carried out by the University of York, where we have been working to test how digesters can be run more effectively to increase throughput and biogas generation. The AD Transformation project builds on previous work with the University of York to develop System-60, a unique laboratory facility comprising 60 individual reactors used to screen, test and verify anaerobic digester optimisation concepts. Initial lab research at York has shown retention times of fewer than eight days with no impact on biogas production under 'optimum' conditions. Following further experimentation on a larger scale, we expect this to play a prominent part in our plans.

New Maintenance Approach

As we optimise our larger sites, our smaller sites (which would otherwise require significant investment in digestion assets) will gradually convert into sludge export centres. This means that any investment can be focused on the larger sites in future pricing periods. It does also mean these fewer sites will need to be more resilient, and our plans include improving ancillary equipment such as cake import facilities, thickening and dewatering, and delivering a more-evolved, proactive maintenance approach.

Critical to a reliable asset base is effective maintenance. Throughout AMP7 Yorkshire Water has been delivering a number of modernisation programmes designed to enable an evolution in the maturity of our approach to reliable, data-led maintenance. This has included investing in 45,000 new smart assets and monitoring devices across the wastewater asset base, including bioresources and upstream assets, and upgrading our maintenance management system to be able to create new dynamic maintenance plans and improvements in asset data.

Thanks to this enhanced data provision we can now start to trigger operational and maintenance interventions before performance is impacted by asset failure. In addition to making our bioresources assets more resilient this approach will also benefit totex efficiency by prolonging asset life.

Outsourcing biogas management

In the 2020-2025 period, we developed and delivered a procurement exercise for the first market delivered, owned and operated 'gas-to-grid' facilities, at two of our largest sites, in Leeds and Sheffield. These are expected to deliver significant opex benefit, allowing us to do more within our plans.

Contracts for these two sites were signed in June 2023, and the facilities are expected to go live in 2025. We are currently refining our procurement approach ready to include further sites within this scope in the 2025-2030 period.

Driving further efficiency into our plans

We see huge opportunity in collaborating with the industry, the supply chain or other neighbouring organisations to bring in new technologies or market-delivered schemes to improve the performance and efficiency of our sites. Below are some of the many markets initiatives we have been progressing.

- **Outsourcing tanker fleet** – In June 2020 we successfully outsourced our business-as-usual liquid sludge tankering requirements, as well as other opportunities to reduce the cost and emissions impact of reactive tankering due to asset failure.
- **Market delivered energy** – During the 2020-2025 period we have also been working to implement a first phase of market-delivered solar arrays at 28 of our sites. This will deliver c.3% of our total energy requirements. Contracts have been signed for the first phase of 28 sites, with the delivery phase well underway, and a subsequent 50 sites now in procurement.

We have also been collaborating with a neighbouring energy-from-waste facility to develop a solution for the provision of green power and heat to our site and will seek out similar opportunities in other regions where applicable. This approach complements our sale of biogas by maintaining our sites' carbon position whilst benefiting the carbon position of the wider Yorkshire region through the production of renewable vehicle fuel.

- **Market delivered (**Fats, Oils and Greases**) FOGs removal**: We are undertaking a trial of a new technology for the water industry, aimed at purifying FOGs for use as renewable vehicle fuel. This presents a great opportunity for us to start removing FOGs from our sewers, which can otherwise cause blockages, and use the recovered material to power some of our fleet.
- **Waste heat for local housing:** We have been working with several local councils to understand whether waste heat from our sites can contribute to their net zero goals.
- **Final effluent reuse:** We are speaking to several large business customers about the potential for final effluent reuse from our sites for their process water.
- **Converting sludge to aviation fuel:** We are collaborating with a third party to test the conversion of treated sludge into aviation fuel. With the increasing risk around availability of the land bank, we see this as a huge opportunity.
- **Converting sludge to energy:** We are engaging with several energy-from-waste plants to explore whether waste removed in the screening process or treated sludge can be used as a fuel.
- **Exploring future trade opportunities:** We will continue to work with our neighbouring companies to explore mutually beneficial opportunities.

8.8.6 Service improvement through base

Our plans provide a route to deliver our five-year ambition of providing an efficient and resilient service for our customers, while setting us on the right path to longer-term frontier performance.

Comparative efficiency

Delivery of our plans will require £347.4 million totex over the next five years, as shown in Table 17. This level of efficiency is achieved by delivering:

- A market trade to deliver 5,000 TDS additional sludge treatment capacity.

- Innovative technology to supplement on-site capacity, delivered through market financing.
- Gas-to-vehicle fuel opex benefit at our biggest sites, and
- Opex benefit of increased sludge destruction, resulting in increased generation and less sludge to recycle.

AMP8 capex	AMP8 opex	AMP8 totex
£120.0m	£227.4m	£347.4m

Table 17: AMP8 Bioresources base totex breakdown

Through this strategy, we expect to make better use of biogas through additional generation and higher utilisation, with a doubling of the energy generated and used across our business or by third parties). We also expect to reduce the amount of bioresources-generated energy that is left unused by about 76%.

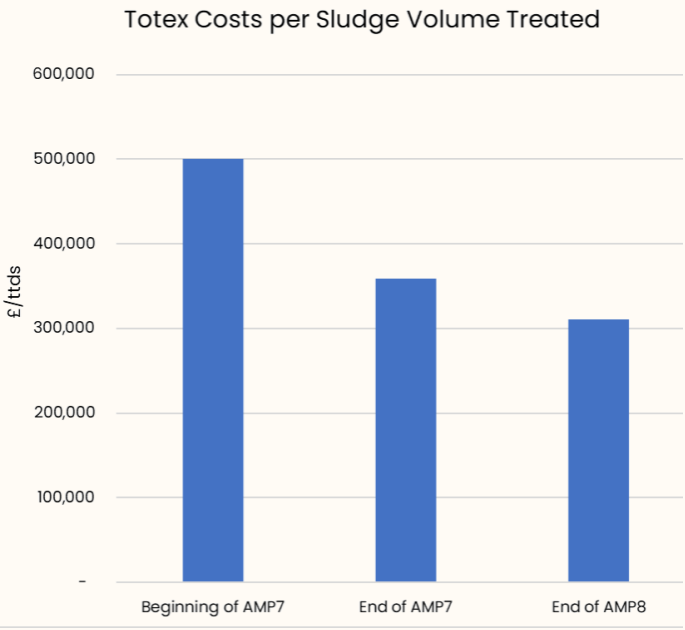


Figure 4: Totex costs per sludge volume treated

Our forecasts show an additional 16,400 TDS treatment capacity will be required by the end of 2025 and a further 4,900 TDS by 2030. The majority of this will be generated through improved treatment of sewage to remove phosphorus, with a small proportion due to population growth. Our base plans will absorb this growth through a combination of the 5,000 TDS market trade, and moving to advanced digestion. We believe this delivers exceptional value to customers.

Beyond the 2025-2030 period, we expect to see a continued decrease in opex as more rationalisation and markets schemes, including biogas optimisation, come online. As such, our plans establish a route for maintaining an efficient price control over the next 15 years.

Asset Health and Environmental Performance

Our plan features the gradual closure of smaller, ageing digestion assets over several pricing periods, and corresponding investment in larger, more-resilient assets. As such, we expect to see a trend of improving asset health over the next 12 years, and a corresponding continued improvement in environmental performance.

Our shift to advanced digestion will also result in greater biogas capture, and subsequently a reduction in methane emissions from the digestion process due to greater volatile solids destruction. A model of process emissions on our digesters for the 2025-2030 period estimates a 21% reduction, compared to keeping our assets in their current configuration. This delivers a significant carbon benefit. Further information is provided in our Bioresources Sludge Strategy.

In addition to the environmental benefits of a more resilient asset base, our colleagues will benefit from a better working environment and a further reduced risk of safety incidents. Health and safety is a priority, and this is reflected in our industry-leading performance on process safety.

Risk mitigation

This plan provides some mitigation to known risks which are described below.

- **Fewer assets to adapt in future**: Once the requirement around sludge recycling or emissions mitigation is better understood, we will have fewer assets to adapt to meet the new requirements, reducing the investment and time required to implement. As described in our LTDS, we are moving towards a smaller number of very large drying or destruction centres as a likely future model.
- **Reduction in biosolids:** Specifically for the Sludge Recycling to Land risk, our strategy results in fewer biosolids generated per unit of sludge produced, because of the greater solids destruction in advanced digestion. Were we to operate digesters in series at our main three sites, the quantity of sludge disposed of would only increase by about 6% over this period. This is despite increases in sludge production of 16% from 2022/23 to 2029/30.

8.8.7 Enhancement investment

Our rationalisation approach provides some mitigation to known risks.

However, for the purpose of our base plan we have assumed minimal further deterioration of the land bank (as we do not believe investing without greater

certainty is value for money for customers) and no Industrial Emissions Directive (IED) Appropriate Measures requirements. Instead, these topics are covered in our enhancement programme, which is outlined below.

Mitigation of emissions (Appropriate Measures) – (£118.2m)

Appropriate measures enhancement case appendix

We have been taking measures to comply with the IED in the 2020-2025 period including new permit applications and capital improvements, such as secondary containment and new covers for uncovered tanks. Due to the uncertainty of final permit conditions, there is a likelihood that we will not achieve full compliance by the EA target deadline of 31 December 2024. It is therefore probable that some IED-related expenditure will continue into the next price review period.

We are now submitting an enhancement case to cover the additional expenditure required to comply with new EA guidance (Biological waste treatment: appropriate measures for permitted facilities'). The extensive requirements necessitate a material change to the operation of our existing digestion facilities, beyond what could have been foreseen for compliance with IED. The most significant requirement that this guidance introduces the need for all of our biosolids to be stored in contained or enclosed buildings. The majority of our biosolids storage is currently on uncovered concrete storage pads, the area of which is over 136,000m^2 (equivalent to 19 football pitches in size).

To develop the most efficient solution to adhere to this guidance, we considered all feasible options, before determining the most efficient option from a cost and environmental impact. Covering all our existing pads is estimated to cost more than £430 million, whilst drying technology at one site alone was forecast at greater than £57 million. Therefore, it was concluded that the best option would be to convert all our sites to lime dosing, which reduces the storage time and therefore required storage size. The approach (at a cost of £100 million), brinsg new operational challenges, but seeks to balance cost and risk, and comply with the requirements for covered storage areas.

In order to safeguard our customers from non-delivery we are proposing to implement a PCD for this case

Further details are presented in our Appropriate Measures enhancement case appendix.

8.8.8 Sludge Recycling to Land – Uncertainty Mechanism

There is a likelihood over the coming AMPs that the availability of the land bank for treated sludge will have reduced, if not ceased, meaning the industry will need to invest in alternative recycling or destruction options. This could be a result of new processes such as the Environment Agency (EA) Deployment Process, or as a result of public perception and therefore the approach taken by the food industry. Further information on this challenge can be found in **Section 7** of our Bioresources Sludge Strategy.

We have already started to see the impact of these changes. Since 2020, the average distance we have had to travel to reach suitable land bank has increased by 29%. Should application rates and return application frequencies increase, national land bank modelling (The Grieve Report, National Land Bank Assessment, 2023) shows insufficient land available for all UK biosolids.

Whilst our strategy reduces the proportion of biosolids generated per unit of sludge produced, this is not sufficient to mitigate a shrinking land bank. Uncertainty over both the scale, location and timing of land bank loss means that the costs, timings and best-value solutions also remain uncertain. We have identified a worst-case scenario AMP8 cost of £164.3m but this value is highly uncertain. We believe the introduction of a common reopener limited to the bioresource price control is the most appropriate way to address this. We discuss our proposed uncertainty mechanism for this in **Chapter 9** and the Uncertainty mechanisms and RoRE risk analysis appendix.

For more details see Chapter 9

Uncertainty mechanisms and RoRE risk analysis appendix

WINEP SUiAR Enhancement Case (£43.7m)

Our WINEP SUiAR submission provides additional storage to manage delays associated specifically with the EA deployment process, and assumes these will be no greater than 10 days. We have not gone beyond this, because any additional storage provision is likely to require covering and odour control under IED Appropriate Measures, significantly increasing costs. In these cases, storage of biosolids cake becomes increasingly unviable, and it may be more cost effective to dry sludge to pellets.

WINEP enhancement case appendix

8.8.9 Bioresources Net Zero - £17.1m

The UK government has set a legally binding target to deliver net zero carbon emissions by 2050. Yorkshire Water is committed to playing its part in the transition to net zero, including achieving carbon neutrality on operational Scope 1 and Scope 2 emissions by 2030, and our bioresources business is no different.

Bioresources contributes around 50% of wastewater's Scope 1 process and fugitive emissions through the release of methane following generation. Our AMP8 investment will focus on reducing operational emissions by moving digestion from standard to advanced anaerobic digestion, which will result in greater methane capture during the digestion process and recovering methane post digestion by vacuum degassing.

A model suggests our base plans already deliver a 21% reduction in methane emissions. Rolling this out at further sites, combined with vacuum degassing (funded through the net zero enhancement case) gives an overall 67% reduction.

Our plans will result in further changes to our carbon position. Due to a combination of sludge growth, rationalisation and loss of land bank we expect to see a 65% increase in Scope 3 emissions from logistics. In contrast, we expect to make better use of biogas through additional generation and higher utilisation, with the doubling of energy generated and used.

8.9 Retail

8.9.1 Introduction

Our customers' needs are diverse, and providing a strong residential retail service that identifies, understands, and meets those needs is central to our ambition of supporting a thriving Yorkshire with a service that is right for customers.

Customers tell us they want a service that is easy and reliable, helping them to resolve any queries as quickly as possible. They expect us to be proactive in letting them know about issues affecting them, providing extra assistance if required. They need us to provide a range of different channels to access our services, that fit their needs and expectations.

We must ensure that all our services are accessible and support any extra needs our customers have, including permanent and temporary vulnerabilities. We must also provide help for those that struggle to afford their bill, whilst ensuring the efficient collection of revenue to minimise debt charges.

We will deliver on these priorities through having the right systems, processes, and people in place to ensure a great customer service whenever our customers need us. We expect to see this reflected in strong C-MeX (customer measure of experience) scores, and we have the ambition to be one of the strongest companies on this measure by the end of the regulatory period.

Table 18 provides a summary view of our retail plan for 2025-2030.

	Description	£m*
Base Maintenance total		**446**
Customer service	Delivering our billing and operational customer service centres	152
Debt management	Running our debt management processes	20
Doubtful debts	Provision for doubtful debts	185
Meter reading	Managing our meter-reading service for customers	8
Other	Support and overheads for retail services	82

Table 18: Summary view of our retail plan for 2025-2030

*Numbers in the table are subject to rounding

8.9.2 Customer and stakeholder priorities

We have a rich base of insight into our customers' needs and priorities. A wide variety of feedback informs our business planning processes, as does our daily service delivery. Service feedback is gathered through over 6,000 'customer voice' surveys a month, as well as through performance commitments such as C-MeX and Priority Service Register (PSR) Satisfaction. We also run a household customer reputation and brand tracker of key themes such as trust, satisfaction and value for money, and carry out root cause analysis into customer complaints. This regular insight is complemented with ad hoc, bespoke research into focused topics such as channel preferences and call-handling times.

To read more on our engagement, see Chapter 6

At its simplest, the insight we collect tells us that our customers need us to resolve issues effectively when problems occur, and be great at communicating with them.

Effective resolution of issues

When our customers do encounter issues, their highest priority is for this to be resolved as quickly as possible, minimising impact on them, with little effort required and without the need for multiple visits. In our customer voice surveys, around 50% of customers impacted by issues such as leaks and sewer flooding cite resolution as the primary driver of dissatisfaction, with a similar proportion in the C-MeX survey. Our residential retail service is the front line for resolving network issues, and therefore we must ensure that the initial contact and subsequent steps taken will enable an effective resolution to these issues.

Great communication

Alongside effective resolution, customers need us to be great at communicating with them. This includes proactively notifying customers about issues that may affect them, as well as being easy to get in touch with and keeping them informed throughout an issue or incident. Communication is the second largest driver of C-MeX satisfaction, accounting for around 30% of all dissatisfied responses in the C-MeX Customer Service Survey.

In our channel preferences research, customers told us that Yorkshire Water performs well in comparison to other service organisations in relation to contact channels offered, and general perceptions of service and satisfaction are high. In the main, customers are

happy with the contact channels already available to them and expressed a preference for less choice overall, if this helps simplify their experience. Customers expect to use effective digital channels for non-urgent or transactional tasks, such as general bill queries, whilst retaining the option of being able to receive a fast response by phone for personal, complex or urgent queries, such as sewer flooding.

For more information on our customer and stakeholder engagement, in relation to their priorities for the future see Chapter 6

See **Service Priorities for AMP8 Appendix** for further information.

8.9.3 Delivering customer service

Building on the foundations of service improvement delivered in the 2020-2025 regulatory period, we will use base expenditure to provide a retail service that delivers on our customers' diverse range of needs. Customers will receive a more proactive service, being kept informed about issues that may affect them. They will experience super-simple service journeys when they do need to get in touch. This will be delivered through a highly effective, optimised, multichannel experience that matches customers' preferences.

Building on the foundations of the 2020-2025 pricing period

In the 2020-2025 pricing period we've made progress in building the foundations of new systems, processes and ways of working that will enable much-improved service journeys in the next period.

We have invested in improving our billing self-service capabilities with all transactional tasks now being available to complete online. This has resulted in more than half of billing transactions now being completed directly by customers, enabling us to reduce operating costs and provide more support over the phone to those customers that need our help the most.

We have also begun introducing self-serve capabilities for operational customer journeys, with new services such as the option to report a fault and track the progress of an issue resolution online. This work is being underpinned by the replacement of our core customer management systems, bringing in modern, dynamic, and adaptable solutions that will enable us to continuously build and release new capabilities to benefit customers and respond to changes in expectations and technological developments at pace.

Another significant foundational activity has been the transformation of our operational contact centre, with a new operating model for managing network issues, and new platforms for planning and scheduling work. Our 'Operations 2.0' pilot began in 2023, bringing together all the roles and capabilities required to deliver a great end-to-end customer experience, from first speaking to the customer and diagnosing the issue, through to managing the field response to resolution.

To further enhance this operating model, we're introducing new platforms for planning and scheduling of customer work. This will enhance customer service through more specific, prioritised appointment scheduling, better feedback on work completed, more self-serve capability and better diagnosis and triage of issues.

For more information on Operations 2.0 and how we're enhancing our operating model see Chapter 4

In establishing these foundations with targeted investment in the 2020-2025 period, we will be in a position to deliver even better journeys and experiences for customers in the next period, utilising our base retail expenditure.

Service delivered in the 2025-2030 period through base expenditure

A more proactive service

Through pre-emptive and preventative service interventions we will reduce the volume of issues our customers experience and communicate effectively with them when things do go wrong. We will reduce incidences of customers being impacted by network issues through better asset maintenance, for example through our work on sewer flooding hotspots and our plans around leakage and water quality improvement. When issues do occur, we will proactively notify customers using early warning detection and alerts, better identify customer needs through data, and use positive engagement activity to prevent issues occurring such as blockages.

See **Section 8.5** and **Section 8.6** for wholesale water and wholesale wastewater respectively, plus our detailed performance commitment appendix, for further detail on our plans for network service improvement.

Super-simple service journeys

Service journeys can sometimes require a high degree of effort by customers, and we don't always get it right first time. We will make it easy for customers to contact us and tell us about their issue so that we can get it right first time more often. We will deliver consistent, connected experiences through the channels and services that meet our customers' preferences. We will keep customers informed and updated with clear and timely communication and through the development of our account management tools.

Effective, optimised multichannel experience

Matching customer expectations, we will optimise our channels to meet the needs of customers, provide good value and minimise our impact on the environment. While we are still heavily reliant on telephone and paper-based communications, we know that our customers prefer simple, effective digital channels for non-urgent queries. We will increasingly move to digital as our primary channel, in line with our customers' expectations, but we'll always offer a telephone service for urgent, complex queries, and paper communication if necessary or preferred. We'll simplify and consolidate our channel provision to reduce complexity, making it easier for customers to get the help they need. We'll also improve the quality of data and insight collected from customers to further improve their journeys.

Supporting customers in circumstances of potential vulnerability

Providing excellent service to all our customers is incredibly important. We want to ensure that regardless of individual needs, all customers feel supported and know that additional help is available. We are working with experts who evaluate the inclusivity and accessibility of the channels and communications we deliver. We will continue to ensure that all our services are accessible and require minimal customer effort, especially to those with additional needs. We will provide this through:

- **Identifying and reaching customers who need extra help** – our services will seek to ensure that we are visible and accessible to all customers, enhancing our communication and promotion of available help, so that customers are aware of exactly where they can access the right support for them when they need it.
- **Delivering bill support to those in financially vulnerable circumstances** – we will help eligible customers access bill reduction options as quickly and easily as possible through our social tariff application process, simplifying the online application process to make eligibility more transparent.
- **Priority services for customers who need additional support –** through greater insight into our communities and customers, we will design and deliver services to meet the diverse range of our customers' needs, including but not limited to our PSR.

For more information on these services, please see **Supporting customers in vulnerable circumstances appendix**

8.9.4 Bad debt pressures and forecast

During the 2020-2025 period, we've continued to be among the leading companies for our performance on bad debt, when calculated as a percentage of turnover. We also have one of the lowest bad debt management costs in the industry.

As a consequence of the Covid-19 pandemic, there has been a sustained shift from non-household to household consumption, resulting in a transfer of debt risk to household customers. The level of debt has increased in the first three years of the 2020-2025 period and is predicted to continue into the 2025-2030 period. Bad debt has also been impacted by government welfare reforms, increased billing on void properties and the ongoing cost of living crisis.

In the 2020-2025 period, we are forecasting to have £65 million more debt than plan and consequently £20 million more bad debt. This has resulted in increased bad debt charges and creates pressure on the remaining two years of the 2020-2025 period. There remains a challenge on high-risk debt built up in the 2020-2025 period that is reflected in the bad debt charge in the 2025-2030 period.

To support our debt position in the 2025-2030 period, we'll continue to ensure that customers are on the most appropriate payment arrangements for their circumstances, as well as introducing further support such as monthly billing for smart-metered customers. We'll continue with our tailored debt collection strategies, whilst ensuring successful collection rates.

For more information on how we will support customers with bills and affordability see Chapter 2

For more information on our bad debt analysis, forecasts and debt management approach, see our **Bad Debt appendix**

8.10 Developer services

8.10.1 Overview

Yorkshire Water is confident the service experience for developer customers seeking to make new connections to our water and wastewater networks is improving and will become excellent in the 2025-2030 period. In the first two years of the 2020-2025 period, we were not providing services for our customers that compared favourably with much of the new connections market. We worked closely with Ofwat to successfully deliver a turnaround plan which is beginning to meet our customers' needs. The 2022 to 2023 financial year has been a turning point where we have built greater competency, introduced digital customer journey improvements, and better aligned resources to meet fluctuating demand.

Our improvement can be evidenced through our quarterly D-MeX results as we start to close the gap on other water companies and move closer to median performance, which is our target for the 2023 to 2025 period. As of July 2023, we have had six successive quarters of improvement in our D-MeX quality scores with 99.5% of work completed within service levels. As our customers need to maintain momentum on their development sites throughout construction, this level of improvement has been recognised and we have seen a 60% improvement in our D-MeX quantitative performance.

Our plans for 2025-2030 are based on analysis of the processes and data in our function, customer feedback and insights on what matters most, and team interviews, and builds on the turnaround improvements already made.

The plan, at a high level, can be summarised as:

- Creating a customer-first organisation.
- Optimising processes, greater customer insight and better performance management.
- Delivering digital enablement and self-serve first approach.

To deliver this plan we will:

- Continually improve our ways of working through our Performance Excellence approach and digital innovations.
- Drive out inefficiencies and activities that do not add value for our customers.
- Implement efficiency and service level stretch with our mains laying and new connections service partner.
- Continually engage with customers and adapt our pathway to excellence to meet their evolving needs.

8.10.2 Customer personas and personalisation

We serve a wide range of customers who can have quite differing needs – from large national developers to small regional builders and single homeowners making changes to properties. With self-lay providers (SLPs) and new appointees (NAVs) also as our customers who serve many of these developers, we need to provide a range of services to a high standard consistently. With this variety of need, our service offering will provide personalisation based on persona and real time use of customer data, supported by a multi-channel approach for customers to interact with us in the way that works best for them. This will mean we are able to develop helpful, friendly customer journeys that meet customers' needs time after time.

Many of our common processes will become automated, giving customers the opportunity to self-serve and focus their valuable time on their development projects. Our teams will spend more time supporting complex enquires or issues with customers who find themselves in need of help or have challenging developments from a water or wastewater perspective. A typical customer journey in future will be faster and easier, giving the customer both choice and importantly, more control, which we characterise as delivering the tailored services they require.

8.10.3 How Developer Services is regulated

Ofwat has assessed the new connections marketplace in England and determined that competition is growing, and developers have a range of alternative providers and more comprehensive service offerings available to them. As such, Ofwat is changing how it regulates incumbent water companies' Developer Services activities as part of the PR24 Price Review.

This should not affect how we serve our customers and our ambitious plans will not be impacted.

What is changing and what this means to customers is outlined below:

- Revenues and costs relating to contestable activities will now sit outside the Revenue Controls. This means water companies will retain the revenues they need to deliver competitive services to developer customers. And where competition rightly delivers developers more of what they need, water companies will not derive revenues based only on models and forecasts.
- Rules on how water companies set their charges will still apply and will include new protections for developer customers who can't access the choice available in the market.

- The charges that water companies levy on developers for the services they deliver will still be fair and reflect the costs they incur to deliver those services. This includes the removal of income offsetting from 2025 onwards.
- Water companies will continue to be incentivised to deliver improving levels of service to customers via the D-MeX performance commitment.

Our underpinning principle of fairness, affordability and cost reflectivity will be supported by these changes.

8.10.4 New Connections Growth

Our plan needs to work when we look at the expected growth of new connections in the Yorkshire region out to 2030. In forecasting growth in new properties needing to connect to our networks and be served by us, we have applied historical trends, analysis of our data, and review of evidence from published national and local studies. This has been compared with feedback from stakeholder engagement including developers, NAVs and industry bodies, including the Home Builders Federation (HBF) on the expectations for growth in housing development in Yorkshire.

We have chosen not to use a single external source for projecting house-building activity out to 2030 or beyond, as Ofwat did for its PR19 Price Review, as we found these to be unreliable for our need. We have described the approach we have used for growth projections in the commentary that accompanies data table (Table DS4).

When estimating the future levels of competition in the market – i.e. how extensively will mains laying and new connections activity be delivered by SLPs, and how many new, last-mile networks will be adopted and served by NAVs – we have again used our own forecasting based on trend data and stakeholder insight and feedback. We have estimated increasing competition in our region. As our competitors, SLPs and NAVs can provide developers with some capabilities that we cannot, such as multi-utility services, more flexible commercial arrangements, and super-regional coverage.

Our forecasts reflect the expected shift in connections work away from Yorkshire Water to other market participants during the period. New property activity for water and waste by the end of the 2025-2030 period is forecast to be split between incumbents and competitors at around 30:70 and 80:20 for water and wastewater respectively.

We are delighted that developers can take advantage of these services that meet more of their needs, and we will work with SLPs and NAVs to facilitate their water new connections needs on behalf of their developer clients. The increased competition in the market is expected to reduce the level of contestable activity delivered by Yorkshire Water.

Detailed reasoning for growth forecast is included in the **Developer Services Strategy Appendix**

8.10.5 Network reinforcement expenditures and infrastructure charge revenues

Irrespective of the increasing levels of competition in mains laying and new connections work on sites, the forecast for increasing properties being constructed and information about where in our region major new conurbations are being planned, will drive an increase in requirements and expenditures to reinforce our existing networks. Our plan across the 2025-2030 period for network reinforcement expenditure for water schemes is £24.3 million (Table DS2e.1), and £38.9 million (Table DS3.1) for wastewater schemes.

Linked to this expenditure, and based on our new property growth forecasts, we estimate the recovery of revenues from Infrastructure Charges levied on developer services customers over the same period at £31.7 million. This value does not include the potential recovery of monies to fund future developer incentives for the building of environmentally sustainable new homes. We will revisit our revenue forecasts once Ofwat has concluded its work to develop and launch a common environmental incentives framework for England. We set infrastructure charges at a regional level. We will continue to consult with our customers on that approach, as an alternative to mor- localised charges setting.

Growth predictions will drive increases in non-contestable activities within our Developer Services function. Along with investments we are making in improving our end-to-end experiences for customers, we expect to recover a proportion of increased costs through our application and administration charges to developers. As we deliver efficiencies over time through the deployment of digital solutions and automation for self-serve, we will share these with customers through our charges that will continue to be cost reflective.

8.10.6 Risks to the delivery of our plan

The future of D-MeX

Ofwat is currently consulting on proposals to both strengthen the incentive power of D-MeX to incumbent water companies and changing the weighting of quantitative performance measures and qualitative customer surveys. We will review our plans against the outcome of Ofwat's review of the D-MeX performance commitment and its decisions expected in December 2024.

New appointees (NAV) growth

As referenced in **Section 8.14** in the section on Markets, we anticipate the continued growth of the NAV market in our region in the 2025-2030 period. It is hard to estimate NAV growth rates with any certainty. If our estimates are significantly inaccurate due to NAV strategic decisions, impacts in the wider economy or changes to the competitiveness in the new connections market, we may experience material shifts in the incomes and expenditures for our Developer Services business compared to plan forecasts.

For more on markets, see Section 8.14

Environmental incentives and sustainability

We are committed to improving the environment to benefit our region and we encourage our customers to think about the benefits of water efficiency and sustainable drainage for their new developments. In our new connection-charging arrangements we incentivise developers to build low water use homes and avoid connecting homes for surface water drainage. These incentives come through as discounts to our infrastructure charges.

We want to go further to encourage developers to build better homes and are working with Ofwat and other stakeholders to develop a common financial incentives framework that can better target excellent sustainable credentials with developers with material rewards. The outcome of this work could be self-funded model where all developers contribute to fund the incentives to those that excel. This may impact on revenue forecasts associated with infrastructure charges to deliver the reallocation of developer funds across the customer group.

Yorkshire Water will look to develop other opportunities with developers of all sizes, SLPs and NAVs to test and deploy innovative water-efficient and water-neutrality solutions. We will work with Ofwat's new £100 million Water Efficiency Fund over the 2025-2030 period to target the delivery of practical water efficiency and demand-management solutions, including in new homes and commercial premises.

We are pleased that the government announced its intention to implement Schedule 3 of its Flood and Water Management Act, requiring new developments to include sustainable drainage systems (SUDS) in their builds. We will work with government, developers and local authorities and drainage boards on the effective implementation of this key environmental policy.

8.11 Wholesale Non-household (NHH) and NAV Market Services

8.11.1 Our purpose and principles

Yorkshire Water provides services to around 140,000 non-household customers, be they businesses, charities, or the public sector. Our services are often essential to these organisations, contribute to the wider economy, and support a thriving Yorkshire. Since market liberalisation in 2017, the delivery of our water and wastewater services has operated under a competitive market framework, where non-household customers can choose who provides them the retail components of the end-to-end services.

The non-household retail market operates at its best for our business customers when Yorkshire Water, providing the water supply and network services, works seamlessly with the competitive retailers, who provide the customers with meter reading, billing, and account management services. The same is the case for our wastewater services that businesses rely upon.

We work with the retailers 365 days of the year to ensure the operations and services for business customers in our region are effective and provide them with good value for money. Our Wholesale Non-household Market Services team provides the key interfaces both with retailers in the provision of our wholesale water and wastewater services and the central market operator and its systems that manage the transfers of data and settlement processes required to successfully run the market.

Our Wholesale Non-household Market Services team works with retailers, customers and new appointees (NAVs) in Yorkshire, in accordance with the following principles:

- Fairness, affordability, and cost reflectivity.
- Simple, effective, and efficient customer journeys, minimising the cost to serve.
- Working collaboratively with all our customers.
- Meeting our regulatory and environmental responsibilities.
- Playing our part in reducing market frictions and making the market a success.

We provide more details of our comprehensive plans for our provision of Wholesale services to the **Non-household Wholesale Market Services appendix**

8.11.2 Customer priorities and our plans for service

Our business plan has been built with consideration of our regulatory and statutory requirements at its core, but with our wide range of customer types and stakeholders also at the heart of it, helping us to validate priorities. Part of our PR24 planning involved us undertaking a BR-MeX replica survey with non-household customers (both direct and bilateral customers). We have had in-depth discussions with NAVs in our region, understanding their needs and how we can better meet them. We also undertook research with retailers alongside Thames Water, United Utilities and Market Operator Services Limited (MOSL). The aim of this was to explain the PR24 methodology, frame the upcoming challenges, and provide useful input into the Ofwat framework.

This has shown us, in particular, that our NHH customers want to experience a consistently excellent wholesale service, a rollout of smart metering across Yorkshire, and more water efficiency services and solutions to contribute to a resilient water supply into the future.

Excellent wholesale services – Although Yorkshire Water has often delivered upper quartile performance across a number of key measures, as reported within the non-household retail market ,(see more detail on Market Performance Standard (MPS) and Operational Performance Standard (OPS) performance in Non-household Wholesale Market Services appendices on the NHH Retail market) we know from customer feedback there is more we can do. All types of customers (retailers, businesses, NAVs) have told us they want us to provide excellent services and, when things go wrong, resolve issues promptly. This year we conducted our own BR-MeX replica survey which shows our operational service scores for non-household customers are lower than the scores from household customers. Although there are differences in the market participants in non-household compared from the household market, we recognise there are improvements we can make in the services we provide to business customers. The results of our replica survey were shared with Ofwat and other companies to support the work designing the new BR-MeX measure of experience.

See more detail on MPS and OPS performance in the **Non-household Wholesale Market Services appendix**

We will work collaboratively with market participants in the 2025-2030 period and internally with our operational colleagues and service partners to explore and deliver an improved experience for retailers and business customers and NAVs. An example of collaborative work we recently completed was an

independent study on vacant properties in the NHH retail market[2] with retailer Business Stream and economics consultancy Economic Insight. We had the support of the innovation Market Improvement Fund, and we are scoping further projects to use this funding vehicle should MOSL continue it beyond 2025.

Planned improvements – The new pricing period will bring an increase in our non-household retail market-related expenditures in order to deliver the required activities and performance levels set out in the two new Performance Commitments (the BR-MeX relative measure of experience and the business demand reduction commitment). We will be investing further in our systems to automate more market interactions and streamline processes for retailers. We will look to leverage the process improvements the market operator, MOSL, makes to the central systems and continue to work to improve the asset data we are responsible for in these systems.

For NAVs we will provide additional resources to better manage their increasing market scale and improve and simplify our charges and billing for bulk supplies. We will continue to work with market participants and Ofwat via the Bulk Charges Working Group on how charges for bulk services to NAVs are fair and reflect both the costs we avoid as incumbents displaced by the NAVs' competitive offering, and the costs we incur facilitating the market to benefit all customers.

Water efficiency services – Since the market opened in 2017, we have worked with retailers to help them promote water efficiency and support their customers to better understand their water use. However, in light of the introduction of challenging water demand targets through the Environment Act 2021 and clarity provided by Ofwat in its PR24 Final Methodology we know we need to go further with help for business customers to become more careful with their water use and reduce their bills. We include business water demand enhancement options within our WRMP and we will be exploring opportunities to use the new Water Efficiency Fund to be launched by Ofwat to deliver tangible water demand and recycling interventions and innovations targeted at business customers.

For the 2025-2030 period, we will offer new services to retailers, including water demand reduction services linked to our planned transition to smart metering. The details of these new services are covered in the Supply-demand enhancement case appendix. The new services will be consulted on, and we will work in collaboration with other wholesalers and retailers to establish these in a way that drives improved customer outcomes whilst minimising market frictions, aiming to strike the right balance between being innovative and delivering consistency.

Implementation of smart meters – As many consumers are now used to being able to monitor their energy usage in real time, there's an increasing demand for a similar level of information to be available for water consumption, enabled through smart water meters. With the rollout of smart meters in the water sector we (wholesalers, retailers, and non-household customers) will collectively gather a rich dataset of granular consumption information. This will help customers make informed choices about their water usage, enable better targeting of water efficiency support, and identify cases of leakage and waste.

For more details see Section 8.5

Value added services – At present, we provide a market-leading commercial meter-reading service offered to all retailers that operate in our region at a competitive cost. Working on behalf of retailers, this service provides a high read success rate which helps them accurately bill their customers. We also offer granular consumption data sharing to retailers, and directly to non-household customers, where we can provide enhanced views of their consumption. The deployment of smart meters will have an impact on these services and depending on the decisions by Ofwat where the future duties for cyclic and non-cyclic meter reading will rest, and the associated allowed expenditures, we will adapt our solutions accordingly.

We developed a Water Emergency Incident Response Service for a major NAV client in our region to help them meet their obligations to maintain supplies to their customers. This will soon be extended to any new NAVs entering Yorkshire as a cost-effective alternative provider in their supply chains.

More details of our comprehensive plans for our provision of Wholesale services to the non-household retail market and to NAVs can be found in the **Non-household Wholesale Market Services appendix**

[2] https://www.economic-insight.com/2023/05/04/vacant-nhh-properties-analysis-for-yorkshire-water-and-business-stream/

Chapter 8
Part 3: How we will deliver our plan

Supporting appendices

Business resilience appendix

DPC approach and assessment

Part 3: Key points

- We are proposing an ambitious yet deliverable plan. We recognise that large infrastructure programmes of this nature carry risks, some of which may be outside our control
- We are confident in our ability to deliver based on the following factors:
  - We've developed an approach for managing risks and ensuring our business is resilient
  - We have a mature and continuously improving programme management capability
  - We're already ramping-up delivery run-rates to near AMP8 levels
  - We're putting delivery vehicles in place with the capability and capacity to deliver the proposed plan
  - We're preparing for a smoother expenditure profile across the five-year period 2025-2030

8.12 Our plan

Part 3 – How we will deliver our plan

In this part of Chapter 8, we discuss partnerships, markets and third parties and how we are using these to deliver service improvements, how this has been done across 2020-2025 (AMP7) and our proposals for the 2025-2030 plan period (AMP8). We also look at how we have applied Direct Procurement for Customers (DPC) to our proposed expenditure programme, and what schemes we are proposing for delivery via DPC. We also discuss our ability to deliver the proposed plan and how we have mitigated any risks. For further information on how we manage our risks and how we ensure we remain resilient in the future, see our Resilience appendix.

Our aim is to deliver our plan in the most efficient, cost-effective way while optimising benefits for our customers and the environment. We will do this through improving our approaches to delivery across all areas, with specific focus on delivery of infrastructure projects (capital delivery programme) and delivery of our operational activities. Key considerations for our capital programme are:

- Working in partnerships to provide wider social, economic and environmental benefits within the region.
- Working with markets and our supply chain to ensure we are efficiently integrating best practice and innovation.
- Incorporating DPC to deliver large programmes of work, thereby delivering best value for money.

For our operational delivery programmes, we will focus on:

- Delivering redefined and improved operating processes, roles, technology and ways of working to upgrade operational performance at a reduced cost to serve – our Operations 2.0 approach.

A model office will also be established to deliver continuous improvement and business change for our operational customer-facing teams.

For more information on how Operations 2.0 will further enhance innovation, and therefore efficiency and cost reduction, please refer to Chapter 4

Throughout the process of building our plan, we have considered how we can remain resilient. It is crucial that we remain resilient now, and in the future, to ensure our customers always receive great customer service. This has been a priority throughout AMP7, where we have been focusing on being an operationally resilient business. Throughout AMP8, we will continue to use our base maintenance investment to improve our resilience.

For more information on our resilience and how we plan to improve our resilience further over AMP8, please see our **Resilience appendix**

The following sections describe in more detail how we will deliver our plan through each of these areas, over the 2025-2030 period and beyond.

8.13 Partnerships

8.13.1 Key messages:

- We are confident in our business-wide approach to partnership working, building on the success of our industry-leading partnership programme Living with Water.
- We trust that partnership working will deliver broader and improved outcomes for our customers and the environment.
- While working with others to leverage partnership funding will deliver wider benefits, it will not offset our programme costs.

Within this chapter we will define what partnership working means at Yorkshire Water. We will discuss our past and current experience, as well as our key learnings, and detail our approach for the 2025- 2030 period.

8.13.2 Defining partnerships

We define partnership working as:

'Any activity that is delivered through working with multiple agencies or organisations.'

The aim of our partnership activities is that they will always have a clear benefit to our customers. We will only consider working in this way where the outcome is equally or more efficient than would have been possible otherwise, and where the benefits delivered will be of greater value than would have been the case, if we had acted on our own.

Partnership working can be done at a strategic/regional level or at a project/local level. We currently work across a spectrum of partnerships of different sizes and scales, and will continue to do so. The common thread is the knowledge and learning, which is shared across those partnerships and more broadly across the industry.

8.13.3 Experience and learning of partnerships to date

Over the last two periods (AMP6: 2015- 2020 and AMP7: 2020- 2025), Yorkshire Water has had a bespoke performance commitment, 'Working with others', designed to encourage cultural change within the Company by creating a more externally focused approach to resolving issues. As a result, over this time, our approach to working with others has matured. We have worked with local authorities, the Environment Agency, universities, charities, organisations, landowners and many more, to undertake a wide range of partnership activities delivering a vast array of benefits for our customers. In this time, we have improved our data sharing, created co-funded roles with third parties and developed our approach to partnership governance.

In the current 2020-2025 period we have co-funded our largest partnership programme, Living with Water (LWW) and will invest over £23 million by the end of the period. The partnership comprises Yorkshire Water, the Environment Agency, local authorities and the University of Hull. The partnership has focused on the delivery of sustainable drainage systems (SuDS) within Hull and the surrounding area, alongside wider objectives to build community resilience, deliver flood risk education, share knowledge and support economic regeneration. The LWW model has been nationally and internationally recognised, with the team winning awards and even invited to present at COP26. The learning from LWW has supported development of new key partnerships such as Connected by Water, and has informed our approach to identifying key opportunities for collaboration.

For more about Living with Water, see section 8.13.5

For more information see the **LWW enhancement case appendix**

Our partnership experiences have highlighted that there are two key drivers of collaborative working: outcome and location. We most often seek to work with those who have something in common with us, but we can also generate greater value by co-ordinating activities in the same location (see the Rosemead Street example, later in this section). In the 2025- 2030 period, our portfolio of partnerships across the business will reflect this broad opportunity for partnership working, with a selection of example partnerships set out in **section 8.13.5.**

We have learned that the success of our partnerships relies upon significant time and resource to build trusting relationships, as well as navigate the complexity of drivers, governance, regulations and processes. Our experience has also highlighted the significant challenge of aligning investment cycles to provide co-investment opportunities. The key learning here is that there is an absolute need to be flexible to allow the benefits of collaborative working to be maximised. Local authorities and non-governmental organisations rely upon government and philanthropic funding sources, which are most often made available at relatively short notice, meaning that, while longer-term strategies are in place, investment plans are often fluid and/or very short-term. The majority of our partnership opportunities have been identified within regulatory periods, and therefore in the 2025- 2030 period we will utilise a Collaborative Opportunistic Adaptive Planning Framework (COAPF) to proactively horizon scan for partnership opportunities.

For more details see section 8.13.6

We have successfully supported our partners to leverage significant amounts of match funding. This match funding is used to either deliver wider benefits beyond the remit of Yorkshire Water or to go further than Yorkshire Water's funding would have allowed, if working independently. There have also been opportunities to bring different strands of investment together on larger-scale regeneration projects which deliver flood resilience. Some examples include:

Increasing flood resilience – working in partnership with Lead Local Flood Authorities and the Environment Agency to manage flood resilience has delivered more holistic projects, managing multiple sources of flooding within one larger scheme. For example, through LWW, we have focused on reducing the risk of surface water and sewer flooding holistically. This has supported bids for Flood Defence Grant in Aid (FDGiA)funding, which has enabled us to manage the proportion of the risk that falls under the responsibility of the local authority.

Environmental projects – working with rivers trusts, for example, on environmental projects, has allowed additional funding to go beyond the original scope to include creating public access to watercourses and increased water quality monitoring.

Coordination of activity

The Rosemead Street scheme, delivered by LWW, is a demonstration of taking an adaptive approach to bring wider benefits and minimise disruption. LWW had identified a significant flood risk in the local area from both sewer incapacity and influx of road and land drainage. This risk was overlaid with the local authority's housing improvement plan, and it was identified that Rosemead Street also had an allocation of funding to improve the property frontages. Together, the partnership developed a solution with the local community to manage the surface water and sewer flood risk which complemented the housing scheme's needs. The preferred solution was a permeable paving option, which provided a SuDS storage solution without the loss of parking for residents. Delivering in conjunction with the housing improvements made by the local authority has enabled detailed engagement to take place with the local community. The housing work complements the flood resilience scheme by ensuring all new downpipes are aligned to the permeable paving. The flood resilience asset has been safeguarded from the impacts of the housing works through collaboration around design and scheduling. This approach has also minimised and consolidated the period of disruption for customers.

Our key learning from our past and current work is that partnership working can deliver broader benefits for our customers and the environment. Strong partnerships require time and resource to build trust and common goals. Most often, partnership opportunities for delivery and co-funding present themselves in the near and short term. Match funding is available to fund the priorities of our partners and not to offset water industry costs.

8.13.4 Partnerships across the plan 2025-2030

In the 2025-2030 period, we will deliver more for our customers and the environment by working in partnership across our plan, wherever the opportunity arises. We know that an opportunistic approach allows us the flexibility needed to work with partners who are adhering to different timescales and demands. With our strategic planning partner, Stantec, we have created a governance framework which allows us to keep partnership opportunities under regular review so that these can be identified throughout the planning period.

Through enhancing existing relationships and building new ones, we will look to create value across our programmes by aligning investment and seeking opportunities to work with those who can enhance our offering. This could involve coordinating activity within a set location to minimise disruption and optimise infrastructure improvements, managing land for multiple outcomes. Examples might include installing a Sustainable Drainage System (SuDS) alongside highway regeneration schemes, or holistically addressing flooding from multiple sources.

We have a number of well-established partnerships that will support delivery across the plan and we will continue to grow and diversify these. The examples outlined below showcase just a selection of strategic and project partnerships that demonstrate the wide range of relationships already in place and highlight some of the benefits that this way of working can

achieve. In addition to regional partnerships, we also support national partnerships that focus on areas such as innovation and sharing knowledge and experience.

8.13.5 Partnerships that will continue in our plan for 2025-2030

Living with Water

The Living with Water Partnership (LWW) is a collaboration between Yorkshire Water, Hull City Council, East Riding of Yorkshire Council and the Environment Agency, each of which have responsibilities for managing different aspects of flood risk in the area. The University of Hull is LWW's academic partner and has a position on the LWW Board.

The aspiration of the LWW partnership is to create a city that thrives with water. Key to achieving this is the introduction of sustainable solutions that manage water visibly on the surface. The long-term ambition of LWW is to deliver holistic, integrated solutions that balance sustainable drainage systems with more traditional engineering approaches to handling surface water. Wider local priorities are also taken into account. The most optimal solution for local communities is one which is co-developed and co-delivered to ensure best value and maximises wider benefits for customers and communities. In the 2020-2025 period, alongside a portfolio of flood resilience infrastructure, the partnership has delivered 3,300 hours of education, engaged with 5,000 people on personal flood resilience, and created a new education and community hub in a disused wing of a local college. To support our future investment, we will continue to build and enhance our community offering.

Details of our enhancement case are presented in Section 8.6

Our process for considering and applying the guidance is set out in detail in the **Introduction to Enhancement Cases appendix**

Connected by Water

This partnership is made up of partners from South Yorkshire Mayoral Authority, Rotherham Council, Doncaster Council, Sheffield City Council, Barnsley Council, Yorkshire Water, and the Environment Agency. The partnership has been established to work collaboratively to meet the challenges of climate change in the South Yorkshire region. The aim is to reduce both the risk and impact of flooding on communities and business in the future. The partnership provides the opportunity to take a fully holistic approach to water management and allows us the opportunity to integrate surface water management with flood risk from all sources, creating a truly resilient place.

Invasive Non-Native Species (INNS)

Yorkshire Water is actively involved in multiple partnerships that work with a range of stakeholders to increase the county's biosecurity, manage any INNS already prevalent, and research innovative ways to tackle the issue. Working in partnership has previously delivered: biosecurity officers; programmes to remove INNS along river courses; university research projects, and the development of mapping tools. This collaboration will continue during the 2025-2030 period given the scale of our obligations with respect to the Environment Agency's statement on INNS transfer and water resources.

Community Interest Company

Yorkshire Water has a long-standing partnership with the Community Interest Company (CIC) to facilitate and support disabled access across our recreational sites. Through working in partnership and using funding secured from Natural England, the CIC has been able to develop a route grading system, allowing potential users to assess the difficulty of a route based on their abilities, and make an informed decision using this information. We will continue to work with the CIC in the 2025-2030 period to ensure our current and future sites are fit for purpose, safe and suitable for a wide range of customers.

Dales and Bowland

Yorkshire Water has worked with the CIC to provide a bus route serving its sites in both the Nidderdale Area of Outstanding Natural Beauty (AONB) and the Washburn Valley. Providing additional funding (£15,000) to the CIC through the Beyond Nature® initiative has allowed the bus service to expand. There have been several benefits: customers without cars are now able to visit; it reduces the volume of traffic in the area; and carbon emissions will be lower.

Groundwork Trust partnership

Yorkshire Water has worked in partnership with the Groundwork Trust for over five years. Past projects have focused on facilitating children and their families to get out in nature and learn about water safety, the water cycle, and the general environment. More recently, we have supported a Green Social Prescribing trial at Ardsley Reservoir, which over 100 people attended. Green Social Prescribing is a type of prescription issued by medical practitioners for people with mental illness or physical ailments using nature-based interventions. The aim of these events is to build people's confidence in accessing the countryside, increase their physical fitness and improve their mental wellness through immersion in nature and socialising with other event attendees. The events have been a success so far, with the partnership receiving positive feedback from those that have attended.

Beyond Nature® – partnership with Nidderdale AONB

Beyond Nature®, a Yorkshire Water initiative, brings together a variety of the benefits provided by land resources and the natural environment. These benefits and values are optimised by implementing a holistic approach, integrating the management of land, water and biodiversity, along with other economic and social needs. The catchment sensitive/nature-based solution approach is regarded as a more efficient and resilient way of addressing risks and needs. To assist in the development and expansion of Beyond Nature®, we are working in partnership with the Nidderdale AONB. The scope of Beyond Nature® is illustrated in Figure 1.

Figure 1: The scope of Beyond Nature®

The Beyond Nature® initiative is concerned with the safeguarding of water quality and resources through tailored land management plans. The aim is to send the optimal quality of water to the water treatment works to minimise the amounts of chemicals and energy required to process it. With ecosystem values optimised through these plans, the conservation and enhancement of the environment are prioritised; for example, biodiversity and wildlife across the land holdings. The holistic and ecological approach to work and management has further benefits, including improved agricultural soils; habitat condition and diversity; flow attenuation and natural flood management; and the sequestering and storage of carbon in land – all of which make the estate more resilient to climate change.

In addition to direct land management, there is also work and engagement on the cultural and historical elements of the estate, with enhanced visitor experiences at some sites.

This kind of land management generates value to our communities, customers and stakeholders through maintaining our vital Yorkshire landscape.

In the 2025-2030 period, we propose to increase the amount of resource deployed to support Yorkshire Water's further ambitions under Beyond Nature®.

8.13.6 Collaborative Opportunistic Adaptive Planning Framework (COAPF)

To support partnership working in the 2025-2030 period, we will launch our Collaborative Opportunistic Adaptive Planning Framework (COAPF). Originally developed for our Living with Water investments in the current period , our ambition is to formalise and roll out this approach regionwide, to underpin our 2025-2030 plan. Most stakeholders or partners do not work to the same planning timescales, and therefore we need a series of tools and a governance structure that allows us to keep partnership opportunities under constant review.

Collaborative opportunities come in a variety of shapes and sizes. The drivers (Figure 2) may align with managing water, surface water or water quality. They may also be geographically relevant; for example, where working in the same place at the same time brings efficiencies, or other mutual benefits.

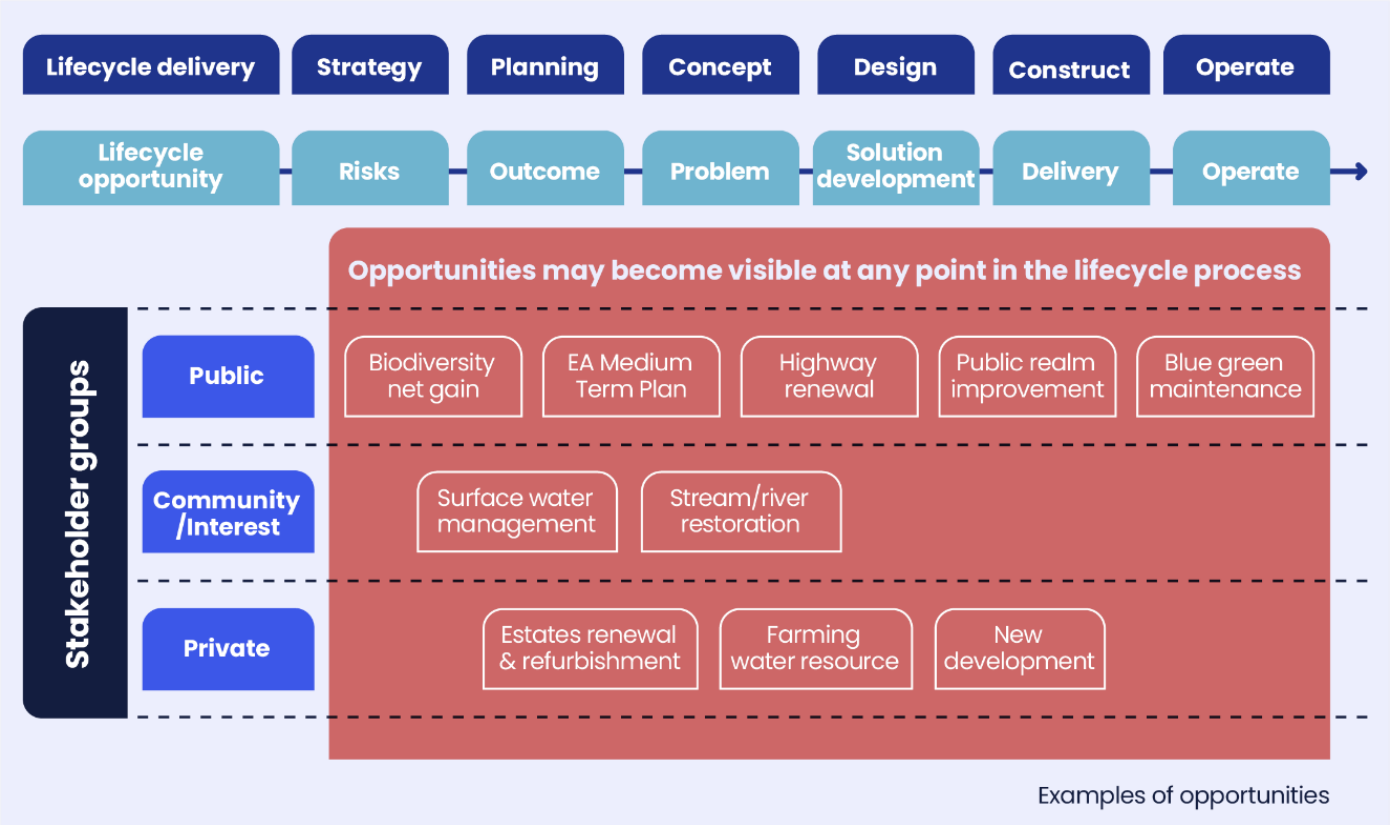


Figure 2: Example of opportunities that will arise from different stakeholder groups (whether in partnership of not) that would be considered within the COAPF.

The framework will have a number of core components that enable opportunities be identified, assessed and form collaborative opportunities (Figure 3).

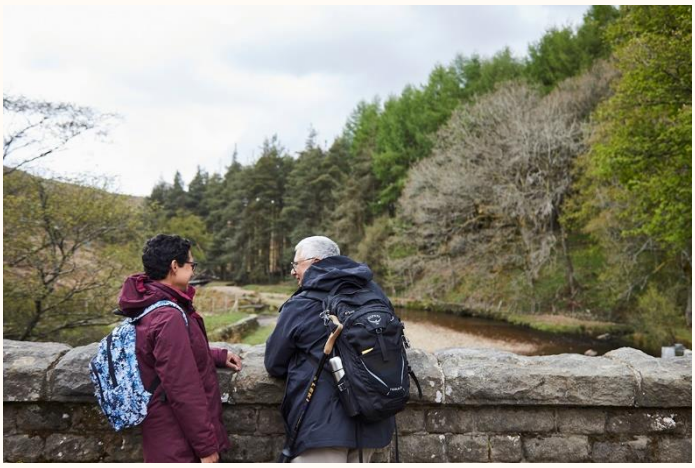
Fundamental to the success of the framework is how we engage with partners and stakeholders (some we may not even know of yet), enable opportunities to be assessed, shared and become visible, and how we broker between parties.

Figure 3: Overview of core components of the COAPF

The core components that enable the framework are:

- Evaluation of the opportunity addressing: Driver – where projects may align, identifying the systems-based connections.
  - Proximity – spatially connected or aligned to bring value, and if not, whether joining up creates value.
  - Alignment to Yorkshire Water (and partner) outcomes.
  - Delivery – how could the opportunities be delivered including planning, design, implementation such as in collaboration, a lead organisation, separately but sequentially.
  - Timing of when the opportunity (and funding) is, when it ideally should be delivered and the level of flexibility of the timing.
  - Co-funding and conditions that may restrict what can be used and when.
- Benefits – quantifying and ideally monetising the benefits, using a capitals framework.
  - Desire to work together – a judgement on the willingness to collaborate and work together, overcoming challenges.
  - Constraints – understanding early blockers and barriers and subsequent mitigations.
  - Governance – evaluation decisions are open and transparent, with appropriate challenge and agreed decision making.

We have key strategic and project partnerships that will continue to support delivery of our plan for 2025-2030. We will proactively seek new opportunities to collaborate to deliver broader benefits for our customers and the environment. Based on our experience and learning, our COAPF model will become best practice across the 2025-2030 period and support our agile approach to collaborative working.



8.14 Markets-based activities in our plan

8.14.1 Approach to markets

Our customers expect our plans to deliver excellent services and offer good value for money. Embracing the effective use of markets lets us find ways to deliver better services and lower costs, ultimately to the benefit of our customers. Markets can also help us to improve our sustainability and resilience and reduce our impact on the environment.

We make the most of our resources through the use of markets, using competitive delivery routes to deliver both value and greater innovation. Markets already help us to introduce sustainable savings and innovation. Our catchment management approach, for example, has consistently involved collaborating with landowners, land managers and the agricultural sector to enhance the resilience of our raw water resources. Using markets has let us find alternative ways to meet the challenges that we face, including population growth and a changing climate, not least by providing access to advances in technology and specialist expertise. Working with markets means that we will be able to share resources and support innovation, recycle products previously seen as waste, and ensure our data is easily available to increase innovations and identify improvements.

To continue to remain resilient and affordable in the long term, we need to explore new ways of delivering sustainable, resilient services, investigate new options for managing our existing capacity, and consider water trading and alternative resources and solutions. For example, we can leverage learnings from the sector on reusing redundant water abstractions to support resilient supplies and provide non-potable water to industrial users through local reuse of final effluent.

Alongside this continual exploration into the supply chain and wider use of markets, we are also taking steps to improve how we operate within the more formal markets within England's regulatory framework. We are investigating potential benefits to customers and the environment – particularly in the following:

- The market for water and wastewater; new connections serving developers large and small.
- The provision of bulk services (both core and non-core) supporting the new appointee (NAV) market to deliver competitive network and retail services to customers.
- The provision of wholesale services to retailers and business customers within the non-household retail market.
- The competitive market for water and wastewater asset financing, provision, and operation through the Direct Procurement for Customers (DPC) pathway.
- Fair mechanisms that we operate to assess new trading opportunities for the water resources and bioresources markets.

The government has also recognised the role effective competition for services can play in delivering value for customers. In its strategic priorities statement for Ofwat, the government requires the regulator to consider how promoting competition in markets can drive long-term sustainable investment that benefits customers. It goes on to name a number of market areas that should be Ofwat's focus, including those above.

We explain how we will make material improvements and provide support across these key market areas further in this chapter.

8.14.2 Overview of markets-based activities in our plan

The new connections market: Developer services

We are experiencing ever greater competition and innovation in the market for water and wastewater new connections to serve new housing and new commercial premises in Yorkshire. We are pleased that many developers are looking to exercise choice in the provision of their new connections' needs. Ofwat has recognised the increasing level of competition across England, which will benefit developers, and has made changes to how it will regulate incumbent water companies serving this market. Ofwat will allow more flexibility than it did at PR19 for water companies to forecast their levels of contestable on-site new connection activity and manage the associated costs and revenues to best serve their customers' needs.

While this places greater uncertainty risks with water companies, reflecting the dynamic nature of this market is fairer to all customers. Developer customers, who are less able to benefit from a choice of service providers, will continue to be given protection through the charging rules set by Ofwat that water companies must comply with – principally that charges reflect the water company's relevant costs and are fair and transparent.

In the 2025- 2030 period, Ofwat will continue to incentivise water companies to improve the experience they give to their customers, supporting developers, self-lay providers (SLPs) and new appointees (NAVs) through the D-MeX performance commitment. During the early years of the 2020-2025 period, Yorkshire Water has struggled to give our customers the service experience they would like, and consequently we have faced significant financial penalties through D-MeX as a result. We are encouraged by our performance in 2023/24 and plan to build upon this turnaround to provide a service that better meets the needs of all our customers more consistently. Our plans to improve our

service experience are detailed in **Section 8.10** and include more digital enablement and opportunities for customers to self-serve their new connections enquiries and requests, allowing more bespoke support for complex new connection schemes.

For more details see Section 8. 10

We continue to work collaboratively with customers, their representative bodies, and other stakeholders across the sector on how both our contestable and non-contestable services can best support new development and housebuilding across the country. This includes collaborative efforts to incentivise developers to build homes that are more efficient and sustainable, and deploy water saving and surface water management solutions to benefit both the environment and households in future.

Network adoptions market: New Appointees (NAVs)

From 2020, we have seen significant growth in new appointee organisations – NAVs – adopting the networks of new developments in the Yorkshire Water region. These have mainly concentrated on serving new housing, with the majority being single-service water only network appointments. More recently, a number of new adoptions have been for dual-service, water and sewerage.

Competition for 'last-mile' network adoption and operation, and by extension household retail services, is progressing well with many new networks in construction by independent providers, and many others in the new appointment pipeline. We are also seeing new NAV organisations entering the market and working with us to commence their first applications in Yorkshire. We look to engage early with new NAV organisations in order to confirm the processes for making bulk supply new connections to our upstream water and sewerage networks as relevant, and to share our standard bulk supply/discharge agreements and explain how our charges for bulk services are structured.

We forecast significant expansion of NAV operations in Yorkshire throughout the 2025-2030 period. Even though there is much uncertainty when trying to predict the level of house construction in the region, due to the influence of macro-economic as well as local factors, we believe the share of the new connections market that NAV companies will secure is set to grow. Unlike the fixed and narrow relationship a developer has with a regional incumbent water monopoly, many NAVs are part of multi-utility businesses. They can provide their developer clients with multi-utility connections services under more attractive commercial models, often spanning several regions of the UK.

We have consulted current and new NAV organisations directly and received feedback from the Independent Networks Association (INA – the INA represents the interests of several NAV organisations). In general, their ambitions are to see the level of competition in this market, in time, mirror that seen in the more mature electricity and gas networks market, where the vast majority of new networks are adopted and managed by independent network operators (IDNOs and IGTs). The ambition we see mirrors the findings of the report by the London School of Economics on utilities connection competition[1] that *"…not only has the scale of competition continued to grow since liberalisation, over a period that now spans almost a quarter-century for gas connections, but also the scope of competition: the range of offerings is still expanding, as firms adapt to customer demands. The available choices now span multiple utilities including fibre and renewables; the full range of partnership options across the design, build, and ultimate ownership of the connections; and offerings to both new-build developers and "infill" connections to existing sites that previously lacked connections."*

We forecast that by the end of the 2025-2030 period, NAVs will serve over 40,000 household properties and their occupants in Yorkshire, with many tens of thousands more properties committed to be served, due to the lag between the NAVs appointment being confirmed by Ofwat and the network connections being made and new houses built and occupied.

We believe NAVs will continue to target larger multi-unit developments that have 'unserved' status, but that there will also be some progress on NAV adoptions of networks serving commercial premises, including existing premises that are served by Yorkshire Water, requiring consent to transfer the network ownership and support of the impacted customers.

With the increasing transition from the adoption of new 'last-mile' networks by incumbents to independent providers, our focus on the provision of wholesale services or bulk services to NAVs will become greater, and the complexity of service relationships with end customers may increase. We expect a greater volume and value of water and sewerage will be accounted for via bulk supply arrangements (see Figure 4 below) and we predict the working relationships between Yorkshire Water, multiple NAVs and other incumbents at regional boundaries will need to become more sophisticated and consistent.

[1] Building Back Faster - Utility connection competition and UK policy priorities for the 2020s: LSE/Tony Hockley PhD – Oct 2020

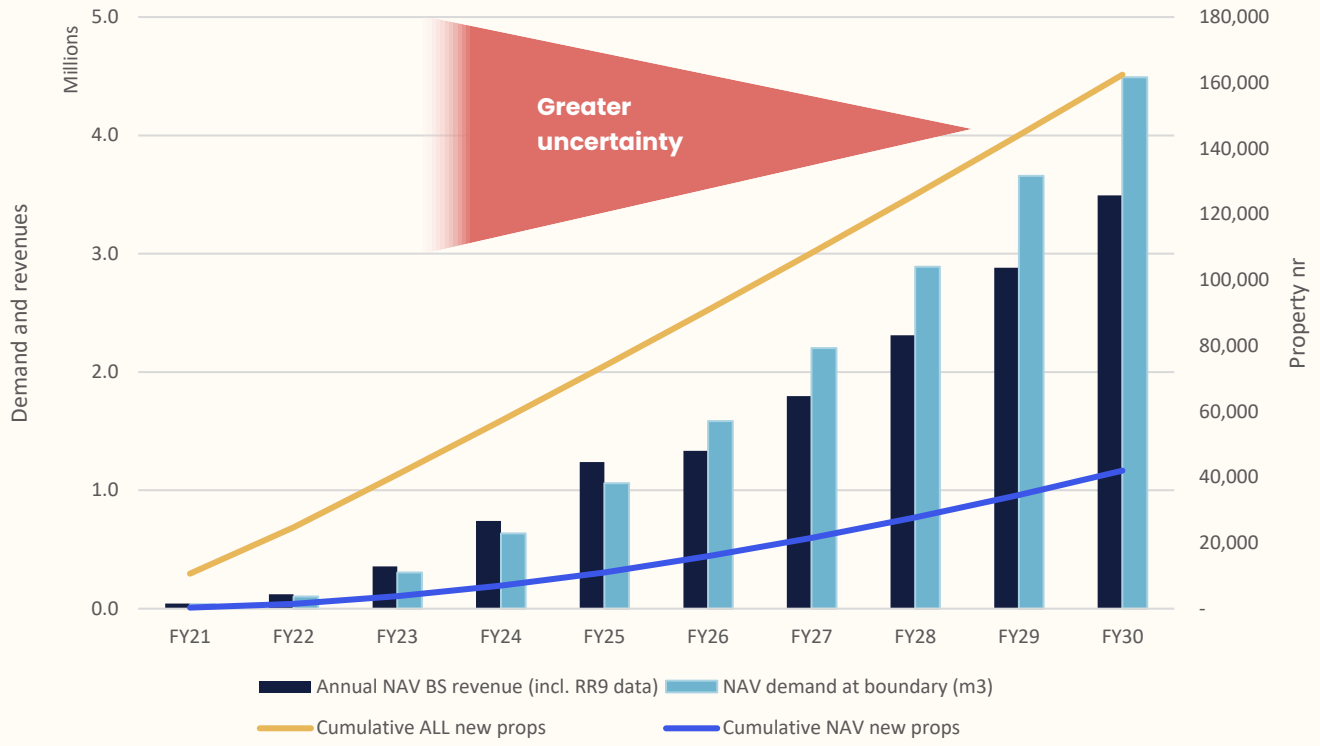


Figure 4: Forecast growth in bulk supply of water to NAVs

In the 2020-2025 period we offer a water emergency incident response service to NAVs, and in the 2025-2030 period, we will review what further added value services we could provide to the market, while safeguarding services for our customers.

Where we and a NAV serve the same premises for different services, the collection and management of customer, meter asset and usage data becomes more challenging and costly. Working through complexity and streamlining arrangements and processes is essential to ensure that the customers receive excellent services from both their retailers.

We will work collaboratively with NAVs, the INA, Ofwat and other stakeholders directly and through industry groups, such as the Bulk Charges Working Group and the WaterUK New Connections Committee, to identify and resolve frictions and issues in order to help both developers and end customers experience high quality services, from both Yorkshire Water and their NAV service providers.

We will continue to refine our wholesale charges for the provision of bulk services to NAVs. This will ensure the charges fully reflect the unique costs we incur to facilitate the market. They will also reflect the long-run costs we avoid, having not adopted the relevant 'last mile' networks. In compliance with guidance on charges from Ofwat, we aim to best protect fairness in charging across the generality of customers whilst providing a level playing field for NAVs to compete. This balances our inherent advantages as an incumbent regional monopoly with their strengths as multi-regional, multi-utility commercial operators.

Wholesale services – the business retail market

As a wholesaler, we continue to fulfil our obligations under the market codes to serve non-household retailers and business customers. The services we deliver are ranked among the best in the sector, and we plan to be a leading Company in how we perform and supply our range of services to retailers.

In the 2025-2030 period, we will continue to make improvements in how we integrate our systems with the central market operator systems, and work to increase the quality and consistency of asset data required to drive successful market transactions. We will also continue to offer added value services to retailers in our region, including evolving our meter reading service solution, as we transition towards a smart meter population at business premises. We will work with Ofwat and MOSL to ensure any market design changes around meter reading responsibilities and cost allowances are adhered to. Smart meters will also allow Yorkshire Water to trial innovations in wholesale tariff structures that could incentivise efficient water use from business customers.

We want to use any opportunities to evaluate and innovate to help the market improve its overall performance for the business customer base. In the 2020-2025 period, we ran projects on data quality and business vacancy performance, with the help of

funding from the Market Innovation Fund (the MIF). We are scoping additional funding and we plan to bid for further MIF competitions. We hope these will be well received by other market participants.

With the introduction of the customer experience measure, BR-MeX, we are striving to build upon our current stable performance. With the exact details of how Ofwat will define and incentivise this new performance commitment, yet to be confirmed, we know we will have some refinements to make to our plans, ahead of 2025. However, we are working on our collaborations with retailers and other wholesalers via industry groups like the RWG – as well as liaising with customer representative bodies like the Major Energy Users Council (MEUC), the NFU, and of course CCWater. This, combined with our market performance, leads us to believe we will have a good foundation to build upon.

For the 2025-2030 period, we expect there to be a greater focus on delivering more for business customers, from improving the switching experience and providing reliable and regular meter read data to resolving issues quickly when things go wrong, and addressing complaints. Although the primary commercial relationship in the liberalised market is between non-household retailers and business customers, we know these customers depend on the continuous day-to-day services of Yorkshire Water to supply clean water and take wastewater and trade effluent away for treatment. Businesses also need us to do this at a price they can afford. For Yorkshire to thrive as a region, we must ensure we continue to support the businesses, charities and public sector bodies that operate across our region, serving the people in our communities. This includes helping those same organisations to get the best value from their water supply by using it efficiently and helping us manage wastewater discharges safely for the good of the environment.

We work closely with a range of business sectors on how they use water and drain their wastewaters, from hospitality, healthcare and the emergency services to farming, and through to large industrial users. We will do more engagement and collaboration with these customers during the remainder of the current pricing period, and into the 2025-2030 period, to further promote the careful use of precious water resources. As part of the suite of water demand solutions within our WRMP, and in light of the new business demand PC, we will be investing more in water efficiency campaigns, water use audits, and targeted efficiency interventions across our region. We will also be exploring bespoke solutions where we can offset growth in potable water use with final effluent reuse for industrial process purposes. Such solutions will be good for the environment, requiring less initial raw water abstraction, but also good for the customers in terms of cost. They will be more sustainable, with a lower carbon intensity.

Direct Procurement for Customers (DPC)

The DPC market within the regulatory framework involves a water company competitively tendering for services in relation to the delivery of certain large infrastructure projects. This results in the selection of a third-party, competitively appointed provider (the CAP) who will deliver the project, including its finance. DPC goes beyond a more conventional use of expert service partners in the delivery of our capital projects, as the CAP under a DPC would own and operate the assets that it funded and built. Through this delivery mechanism, more aspects of large infrastructure will be open to competition under DPC than is common today in the sector. Even though a third-party provider, the CAP, finances the asset build and operations, our customers will ultimately fund these key asset solutions through their bills, over time. Therefore, it remains paramount that DPC is demonstrably more efficient and effective at solution delivery than more conventional in-house delivery.

We will use DPC as a preferential asset delivery method, where we can determine that such broad outsourcing can achieve significant benefits for customers. This includes the emergence of more innovative solutions, and lower whole life costs of the project, which should lead to greater efficiencies and contribute to lower bills for customers. In order to help us determine which infrastructure assets projects are most suitable for DPC, we have used Ofwat's guidance, published and updated for PR24, and independent expertise. This has helped us evaluate which investment schemes are a good fit for such commercial outsourcing and includes market testing interest and capabilities with the types of organisations that could be future CAP candidates. We provide full details of how we carried out our evaluations and the outputs of this work in Section 8.15.

For more details see Section 8.15

In summary, we plan for DPC to be the vehicle used to finance, build and operate around £941 million of lifetime investment through three large capital asset schemes that we are required to deliver as key parts of our WINEP programme. In order to deliver our proposed DPC schemes and run successful outsourcing to the market, we have included £19 million of expenditure in our plan for the early years in the 2025-2030 period. Although Ofwat has evolved its approach to DPC in some areas, we hope to learn valuable lessons from those water companies who, as pathfinders, have successfully taken the small number of DPC schemes to market.

Yorkshire Water will also incur ongoing costs to manage the relationship and performance of the

selected CAPs for the three investments throughout their full lifecycles, so that our current and future customers see the best value possible from the DPC schemes in delivery. We plan to set up a dedicated multi-disciplinary team to design and deliver our DPC outsourcing activity, working with CAP candidates, Ofwat, and experts in this field. Ofwat will assure and approve any final DPC outsourcing arrangements between Yorkshire Water and the commercial providers to help ensure our customers are getting the best long-term outcomes.

To facilitate the use of DPC by Yorkshire Water, Ofwat will amend our licence so we can collect charges from our customers that will be payable to the CAPs for their service provision and recoup their capital investments.

We are encouraged by the early interest from potential DPC market participants, in relation to the three investment schemes we propose to take through DPC outsourcing. However, should one or more of our proposed DPC schemes not be successfully outsourced to a CAP, with the investment delivered via the in-house route as an alternative, Ofwat provides an uncertainty mechanism through an Interim Determination to our 2025-2030 revenue allowance. This ensures that customers are protected in such an eventuality, and the scheme benefits can still be delivered at an efficient cost.

Use of commercial outsourcing and 'data as a service' solutions

There are two key investments we are making in assets where DPC is not assessed as the best fit. For our investments in smart water meters and river water quality monitoring (as explained in section 15), we do plan to fully embrace market solutions to support our needs in the 2025-2030 period, and beyond.

Our ambitious smart metering plans require an accelerated programme of meter exchange activity, a compatible and robust communications network rollout to deliver the two-way remote data collection capability, and new systems and processes for handling the very large amounts of data that a large smart meter portfolio will send to Yorkshire Water on a daily basis. We plan to source strategic commercial partners to deliver a full 'data as a service' model to Yorkshire Water. This will include the funding and ownership of smart meter assets that are rolled out to our customers' homes and businesses.

Through market testing of costs and capabilities, we have assessed that this will be a more efficient and effective model, and will deliver the benefits of smart metering to our customers earlier than would be the case with our current supply chain delivery model. We have looked at key features of the smart meter rollout of electricity and gas meters in Great Britain, where a competitive metering market has matured over the last two decades, and ownership of a meter asset base has less significance than the beneficial usage and alert data these meters can collect.

Full details of our plan for smart metering are covered in Section 8.5

Under WINEP, we are required to deliver a river water quality monitoring programme to install and operate continuous monitoring of qualifying discharge points. This will be a large and complex programme of deployment of monitoring assets and their associated communications across a range of, at times challenging, urban and rural environments alongside watercourses. We have commenced enquiries with potential suppliers in the market for both monitors and deployment and maintenance aspects of the programme and have been sufficiently encouraged by the response that we plan to pursue a full market solution, including the financing of the programme. Like smart metering, the river water quality monitors are not of high enough value on a per asset basis to qualify for Ofwat's criteria to follow the regulatory DPC pathway, however we believe the market solutions will optimise delivery of the programme to meet the best outcomes for the environment.

Opportunities with markets and assessing bids

Yorkshire Water commissions large and complex programmes with third party providers to deliver some of our statutory requirements. However, we are aware that some opportunities can and do come to us directly, and these can play a part in the delivery of better and more sustainable solutions for customers.

A range of approaches allows us to consider proposals fairly in comparison with our existing solutions, whether they are delivered in-house or through our supply chain. We operate two formal frameworks covering opportunities and proposals within the water resources and bioresources markets. As with PR19, we continue to publish a Bid Assessment Framework (BAF) for each of these marketplaces. We hope this will encourage third parties with resource proposals that could contribute to our water resource plans and sludge management strategy.

The Bid Assessment Frameworks are user-friendly documents that explain how a third party can bring a water resources or bioresources opportunity or innovation to Yorkshire Water, how we treat bids in a non-discriminatory way and how we operate within the Utilities Contracts Regulations 2016. These documents give confidence that there is a level playing field in the assessment of bids.

Commercial energy generation

Yorkshire Water will proactively engage with markets in the pursuit of innovation, efficiency and performance. We have developed plans with commercial partners to increase the level of our energy generation with a comprehensive programme of solar PV deployments across 28 of our operational sites planned for the 2020-2025 and 2025- 2030 periods, and a new commercial scale gas-to-grid export arrangement.

At two of our large wastewater treatment sites, Knostrop and Blackburn Meadows, we will install new plants to upgrade the biogas that is a by-product of our sewage wastewater processes. This process will separate out the biomethane from the other component gases. Biomethane gas will be injected into the UK grid via underground pipelines from these plants, and used as a renewable fuel. It will displace natural gas and provide a cleaner gas supply, with a peak of 125GWh of gas a year. Yorkshire Water has entered into a 15-year agreement with SGN to produce gas power for the UK. We will be operating the new plants and Centrica will be managing the gas shipping and trading. Centrica is currently working to accelerate biomethane production across Europe and the UK, with an aim to grow the production of biomethane by more than 10 times by 2030. Solutions such as ours at two key wastewater sites can make a valuable contribution to these renewable energy aims that will deliver long-term environmental and societal benefits.

Yorkshire Water's Competition and Markets Committee

In parallel with our rollout of the Bid Assessment Frameworks in 2020-2025, Yorkshire Water introduced a new Competition and Markets Committee. The purpose of this is to provide strategic direction for the Company, supporting better outcomes for customers through the development and use of effective markets. We advised Ofwat of our plans to do this during the regulator's industry-level review of incumbents' support for the regulated markets, in 2019/20.

The Competition and Markets Committee also ensures the Company actively engages in the development of new and existing markets. The committee is currently chaired by our Director of Strategy and Regulation and has covered a broad agenda so far in the 2020-2025 period. Topics have included the strategic use of markets by Yorkshire Water; the support for NAVs in our region (including added value service offerings, and how our charges for the provision of bulk services comply with Ofwat's guidance); our bioresources and energy self-generation strategies, and reviews of our obligations under the Competition Act 1998 and associated risks.

8.15 Direct Procurement for Customers: a summary of proposals

8.15.1 Our approach to Direct Procurement for Customers

We are fully supportive of market-based approaches, including direct procurement for customers (DPC). We are proposing three DPC schemes as part of our AMP8 programme.

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 investments. Following internal review, 18 investments were highlighted and reviewed for their relative attractiveness. These were:

1) Smart meters
2) Living with Water (high scenario)
3) WINEP (bathing water improvements)
4) WINEP (urban wastewater)
5) River water quality monitoring
6) WINEP (Storm Overflow Reduction Plan)
7) NITRO water treatment works (WTW)
8) WSS Resilience Strategy
9) WINEP (WFD phosphorus improvement and no deterioration)
10) Network blocks
11) dWRMP
12) Mains replacement
13) Growth (water)
14) H&S Investment Programme
15) Sewer replacement
16) New WTW (York)
17) West Yorkshire WTW
18) Ilkley Bathing Water

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 focused on applying the three key Ofwat tests, combined with the HM Treasury Value for Money tests:

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 and 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?

Key: The key deciding factors

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 rick 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 YW 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. Of the 18 investments highlighted, and having sought any additional opportunities through engagement with relevant Yorkshire Water colleagues, the following four investments were found to be most suitable for DPC:

New WTW (York)

West Yorkshire WTW

Smart meters

River water quality monitoring

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

Ilkley: Standalone treatment works

- Potential suitability increases, should the value be greater when finalised, and if the perceived regulatory dates of 2026 are not a blocker.

WINEP: Storm Overflow Reduction Plan

- Potential suitability increases, should it be possible to improve the inherent lack or discreteness 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 Reduction Plan and Ilkley wastewater treatment works (WwTW)

Baringa – Smart meters and river water quality monitoring

The review of options on the shortlist focused on:

- Outline view of value for money against in-house delivery.
- Market interest.
- Key risks that will be retained by Yorkshire Water and managed by the DPC provider.
- Best assessment of costs which customers will incur in the 2025- 2030 period.

Studies sought to conclude whether the highlighted investments would be deemed suitable, against the Ofwat three DPC tests, and furthermore would they be likely to offer positive value for money for customers against in-house delivery.

The Arup and Baringa reports are presented in the **DPC approach and assessment appendix**

8.15.2 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)
- West Yorkshire WTW
- WINEP – Storm Overflow Reduction Plan (discrete batches)

Each scheme is discussed below:

8.15.2.1 Suitable investments: New WTW (York) and associated infrastructure

This investment would increase the WTW capacity within the existing site footprint, using spare licenced abstraction capacity at Acomb Landing WTW and an 18km bulk raw water transfer to a new WTW near the existing WTW, sized to provide an additional 50 megalitres/day (ML/d) into supply. Associated with this is a WTW 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 expected to be a suitable candidate for DPC. The project is considered suitably discrete, of the correct scale, with limited operation or maintenance required, and minimal construction risks. The main construction risk will be ground condition for the c90km of transmission pipes to the south of the Yorkshire Water supply area, and potentially the c18km pipe from the river to the WTW. This scheme is best suited to early or late DPC (as a result of the requirements to create a design as part of the Water Resource Management Plan, and the requirement to secure land). The recommended approach to market would be a Design, Build, Fund, Operate and Maintain (DBFOM).

The potential for positive value for money 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), experienced in design, construction and/or operations.

8.15.2.2 West Yorkshire WTW and associated infrastructure

This investment would deliver a new WTW with treatment capacity of 75ML/d and 150ML 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 the 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 operation and management, 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 (due to the requirement for Yorkshire Water to create a design as part of the Water Resource Management Plan, and the requirement to secure land) 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 used to design and deliver the required solution.
- Complexity – complex projects such as this can benefit from a competitively appointed provider (CAP), experienced in design, construction and/or operations.

8.15.2.3 Storm overflow reduction plan

The 2025-2030 programme of works to reduce storm overflows to rivers and coastal waters comprises 211 schemes, selected to allow Yorkshire Water 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 2025-2030 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 2035-2045 (AMP9-10) Storm Overflow, 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. A 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.

Unsuitable investments

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

8.15.2.4 Ilkley WwTW

In the drive to improve river quality for the part of the river Wharfe at Ilkley designated as bathing water, one 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 £200 million target for totex (at £90 million). There is also concern around timescales as elements of the delivery are required by 2026.

8.15.2.5 Smart meters

The Yorkshire Water smart metering programme intends to install c1.6m smart meters in the 2025-2030 period, made up of c1.4m Automatic Meter Reading (AMR) end of life replacements, 150,000 optant installs (customer request) and 75,000 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 Yorkshire Water'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 £5 million.

8.15.2.6 River Water Quality Monitoring

The River Water Quality Management (RWQM) programme is an activity mandated by regulators. It automates the measurement of river water quality near to Yorkshire Water-owned discharge points into rivers. Frequent measurements must be automatically shared with public monitoring sites, as well as with Yorkshire Water. To meet the regulatory requirements, Yorkshire Water has estimated that sensors are required for 2,800 discharge points.

The potential for positive VFM is based primarily on:

- Innovation – This is a new capability area, with new technology, processes and skillsets required. There is therefore lots of scope for innovation.
- Efficiency & Operating Model – There is an opportunity for CAPs to design and deploy solutions across multiple water companies, increasing efficiency and value to customers. Similarly, competition between CAPs in this area could also drive innovation and efficiency. CAPs have an opportunity to become more efficient than water companies themselves in delivering these capabilities.
- Quicker delivery/outcomes – Without a DPC funding model, Yorkshire Water would look to install 1,500 sensors in the 2025-2030 period, and 1,300 in the 2030-2035 period. DPC would allow for additional funding to facilitate full rollout in the 2025-2030 period. This would allow for earlier monitoring of 1,300 discharge points, meaning customers could have an earlier view of performance in their area, and water companies and other industry participants can potentially act on data sooner.

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

8.15.3 Impact on bills

There will be no bill impact from DPC projects expected in the 2025-2030 period, as costs payable to the CAP will commence when assets are available for use. The first expected assets to be in use are within the Storm Overflow Reduction Plan and will become operational at the start of the 2030-2035 period.

8.16 Delivering the plan

8.16.1 Our approach to delivery in the current period (AMP7, 2020-2025)

For the 2020-2025 programme, we made a number of significant changes to our delivery approach which we will carry forward and build on into the 2025-2030 period. These changes sought to improve our capability and enable us to deliver more efficiently. They included:

- **Improved governance** – introduction of a new end-to-end gated process to govern capital projects, in line with best practice set out by the Association for Project Management (APM).
- **Additional oversight** – creation of a new role on our Executive Committee for an Asset Delivery Director with responsibility for overseeing our engineering function and delivery of the capital programme.
- **Optimised solutions** – appointment of a Strategic Planning Partner to support with implementing a 'totex hierarchy' to optimise solutions at an early stage in the project lifecycle, with a focus on reducing the need for new grey (or engineered) infrastructure.
- **More sustainable solutions** – implementation of a new, improved technical assurance process, overseen by our engineering team, to ensure the solutions we develop are of the appropriate quality to sustainably provide the desired outputs while being safe to operate and maintain.
- **More standardisation** – implementation of Modern Methods of Construction (MMC), including standardisation, offsite manufacture, 4D modelling to simulate construction and enable 'digital rehearsals'. These techniques have reduced cost and time on site.
- **New approach to partners and suppliers** – procurement of new supplier frameworks and the appointment of 24 capital partners, including direct relationships with a number of partners who previously operated at a tier 2 level.
- **New contracting model** – which allows for detailed investigations and a high level of solution definition before entering into lump sum construction contracts. This minimises the impact of change in the construction phase of projects.

8.16.2 Operational delivery

The 2020-2025 period has seen significant operational challenges, including the Covid-19 pandemic, high rates of fuel/energy/chemical inflation, a rapidly changing environment, and a heightened focus on wastewater infrastructure. Despite these pressures, we have continued to deliver sustained improvement across the majority of performance areas (see Chapter 7 for details). We are determined to go even further to meet the expectations of our customers.

For more details see Chapter 7

We are undertaking a substantial modernisation programme to deliver our current investment plan as efficiently as possible. This programme also lays the foundations for further efficiency in the 2025-2030 period. We have also delivered a successful programme of innovation which has helped to shape our future plans.

Chapter 4 outlines our modernisation programme and innovation approach in more detail. This has enabled us to deliver improved performance and efficiency in the 2020-2025 period, whilst also preparing the conditions for greater improvement in the 2025-2030 period.

Delivering our AMP7 (2020-2025) plan

In addition to our investment plans, we have implemented numerous initiatives to improve learning, governance and performance in AMP7. All these approaches have helped to create the right conditions for further improvement in the 2025-2030 period and will continue to be part of our operational delivery plan.

Performance Excellence – During the 2020-2025 period, we have rolled out Performance Excellence (PEx) principles to all operational teams. Every operational department now runs weekly performance hubs at all levels, with a clear line of sight from frontline hubs right up to the Executive team.

PEx Hubs focus on key lead indicators, helping operational teams identify issues, prioritise direct action and escalate issues for support. We are continuing to develop our teams with continuous improvement techniques, such as problem solving, to equip them with the skills to get to the root cause and drive improvement.

Environmental and Water Quality Learning Review Boards – To ensure we learn when incidents occur, we have set up review boards for incidents which impact the environment and water quality. The boards are run by members of the Executive team and ensure that root cause is established, resolution action taken, and learning disseminated across the business.

Delivery Action Groups – We have tracked the delivery of our key 2020-2025 objectives (both performance and financial) through targeted Delivery

Action Groups (DAG). Each DAG is senior manager-led and ensures our improvement plans are clear, resourced, on track and that emerging dilemmas are resolved or escalated.

Target Operating Model Changes – We have aligned our MEICA maintenance resources alongside our operational teams to support joint working and better enable future multi-skilling opportunities. We have centralised our engineering resources in capital delivery to provide consistent horizontal support across the business and align with our new Above Ground Maintenance (AGM) processes.

Network maintenance – At the beginning of the 2020-2025 period, we insourced non-civils sewer network maintenance activity, delivering improved service and greater efficiency. Over the course of the period, we have changed working patterns so that they better meet customer demand. Extended day, weekend and night shift working have all been implemented to allow us to respond to reactive issues swiftly and carry out our key planned activities in a way that minimises disruption to customers; for example, night-time sewer de-silting to reduce the impact of road closures.

Delivering our AMP8 (2025-2030) plan

Our operational approach falls into four main areas, which will work in combination to ensure we deliver the right outcome for customers, the environment and colleagues:

1) **Enhanced maintenance plans that improve asset health** – Through our Dynamic Asset Maintenance (DAM) programme and new AGM system, we have created new asset maintenance plans and enhanced our asset data gathering capabilities. This lets us tailor our maintenance interventions to get the best possible performance out of our assets. We will see reduced asset failure, extended asset life and improved PC outcomes across our WwTW, SPS, WTW and WPS assets. We are proposing a targeted allowance to improve asset health in water mains through renewing 3.3% of the network in the 2025-2030 period, and additional capital maintenance at treated water storage tanks. Filters and clarifiers will reduce long-term asset health risks too and improve outcomes for customers sustainably.
2) **Increased visibility to enable centralised intelligence** – We have greatly increased the visibility of our network assets, enabling us to better predict failure and respond proactively before there's an impact on customers. Going forward, we intend to make another significant step change in asset visibility and AI analytical capability to drive further improvements in networks performance and operational efficiency. By investing in smart networks and data analytics, we will improve blockage prediction and move from time-based maintenance to needs based maintenance, boosting efficiency and reducing sewer flooding. This will improve proactive leakage reduction and interruptions to supply by reducing response and detection time in our clean water networks.
3) **Effective operational response and data capture** – Through our Integrated Planning Scheduling & Logistics (IPSL) programme, we deliver improved colleague productivity and reduced incident response times. We will continue to invest in the training and capabilities of our operational teams to deliver an efficient and effective 'right first time' response to customers and our assets. We will ensure that the right data is captured to inform our plans for the future. Through an effective target operating model and working patterns, we will meet the demands of our customers.
4) **Targeted totex investment to improve resilience at best whole life cost** – We will continue to use our totex hierarchy to make the best whole life cost decisions and interventions for our customers and the environment. We will progress low carbon, nature-based solutions, wherever possible, taking a catchment and water supply system-based approach to planning to improve resilience and efficiency. We will use our DWMP, WRMP and DWI plans to inform our investments so they meet the needs of customers in both the short, medium and long term.

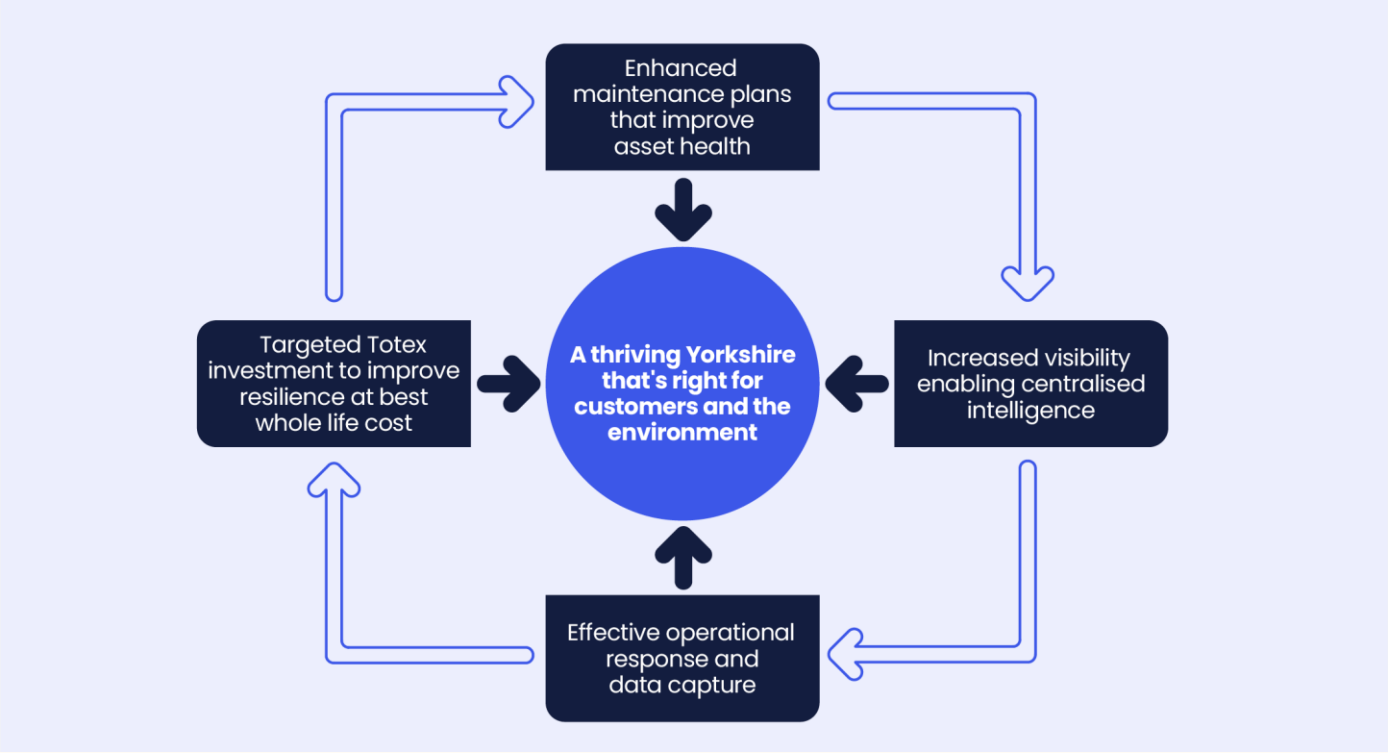


Figure 4: A summary of our high level operational approach.

8.16.3 Capital delivery

How we have performed in AMP7 (2020-2025)

Delivering our regulatory outputs:

We have a significant number of regulatory outputs to deliver over the course of the 2020-2025 period. These are clearly described timebound deliverables from the Drinking Water Inspectorate (DWI), where we have 12 notices under Regulation 28(4) of the Water Supply (Water Quality) Regulations 2016, and from the Environment Agency, where we have 883 obligations via the Water industry National Environmental Programme (WINEP).

Up to the end of the 2022-23 financial year, we have achieved all of the due outputs on or before their due date, including 536 WINEP outputs delivered on time with a further 32 outputs, for financial year 2024-25, delivered early. One DWI output was due by the end of 2022-23 and was delivered on time.

A small number of the outputs which are due in 2023-2024 and 2024-2025 are at risk of late completion, albeit still within the 2020-2025 period. This relates to more complex projects where significant design and planning work and/or external stakeholder approvals have been required. Mitigation activities are underway; for example, early procurement of long lead time equipment, re-sequencing work to deliver more activities in parallel, and acceleration through additional working hours. If successful, our planned mitigation activities will secure these outputs ahead of their required date.

Spend against allowances:

To the end of 2022-23, we have overspent our 2020-2025 base totex allowances (expenditure of £2,234 million vs allowance of £2,001 million) and underspent our 2020-2025 enhancement totex allowances (expenditure of £258 million vs allowance of £566 million). Most of this variance is related to the timing of expenditure, in particular within our enhancement programme where investment is being delivered later in the period than was originally anticipated.

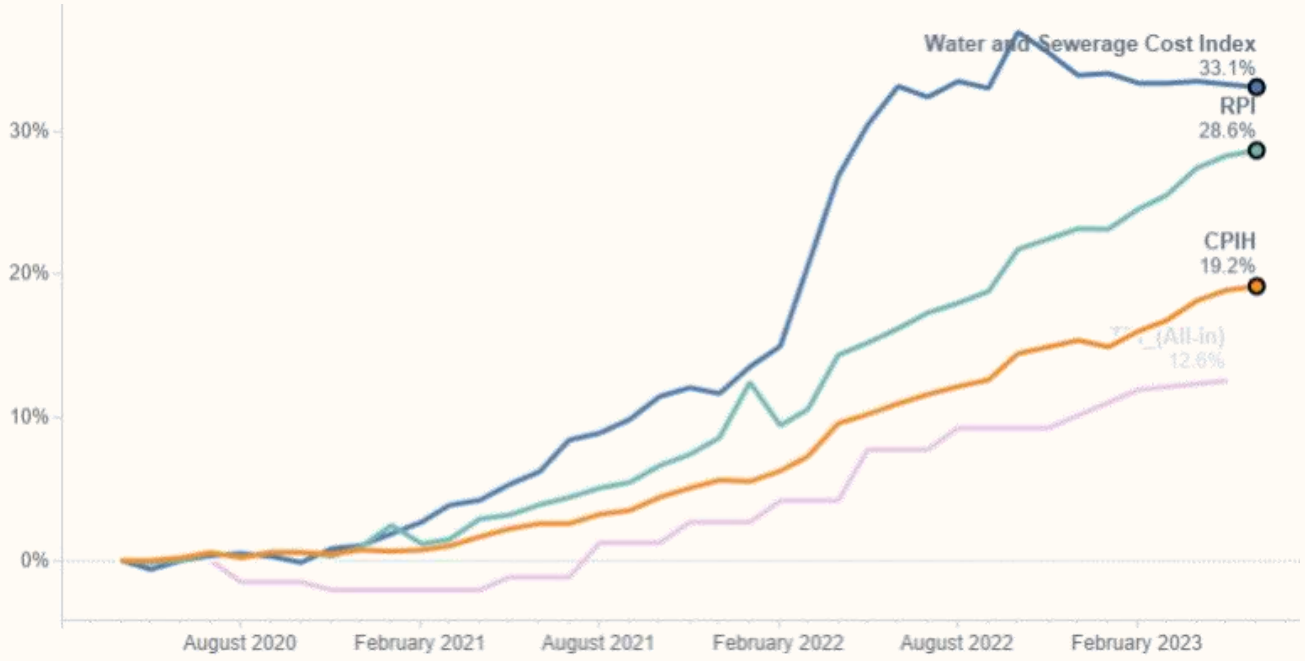


Figure 5: Capital inflation, water and sewerage cost index

This pattern is reflected in our capital investment programme, where our spend profile is back-loaded, in part due to the impact of Covid-19. This allowed time for design optimisation of schemes but meant that we faced a delivery peak in Year 4 of the period, with a slow ramp up in Years 1 and 2, as set out in the graph below. Up to the end of the latest reporting period (July 2023), we are still on track to deliver our Year 4 planned expenditure:

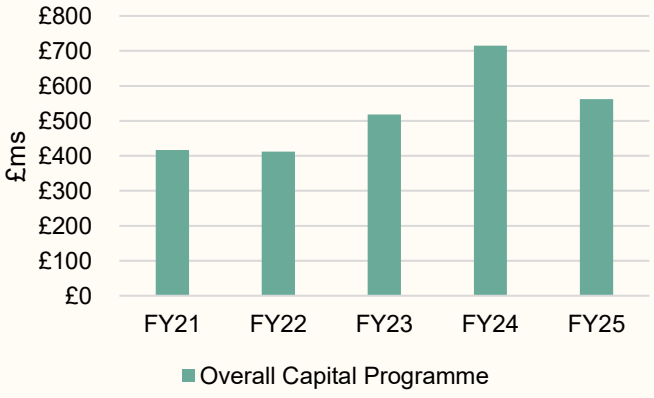


Figure 6: AMP7 Capital programme expenditure profile

We are forecasting to overspend in all areas apart from wastewater enhancement, where we have secured outperformance benefits through application of the totex hierarchy and realising savings and efficiencies in the design and construction of projects.

For example, at Sutton WwTW WINEP (original cost estimate £8.23m), we were able to save over £6 million. This was done by developing a no-build solution for primary settlement tanks, increased maintenance on scraper bridges and use of a standardised off-site manufactured chemical dosing rig. This solution achieved the same outcome of 2mg/l phosphorus and 23.16km of river length improved for a significantly lower cost.

During the course of the 2020-2025 period, we have experienced a significant upward cost pressure from inflation which has impacted the availability and price of labour, materials and equipment, and has been particularly prevalent in the construction sector. The impact of inflation is shown in the graph below, which describes the period between April 2020 and June 2023. This shows the BCIS Water and Sewerage Cost Index (the index most closely aligned to our construction costs) over this period at 33.1% vs CPIH at 19.2%.

We have responded to this upward cost pressure by prioritising base expenditure on the work which is immediately essential to maintain service to customers and to fulfil our environmental obligations. We have also challenged ourselves on our risk appetite and driven savings and efficiencies through the design and delivery of our projects. This has allowed us to redeploy £245 million of savings (£127 million after inflation) achieved on parts of the programme to address increased costs in other parts.

Other areas of AMP7 (2020-2025) performance:

Innovative solutions: Over the course of the 2020-2025 period, we have sought to deploy more natural 'blue green' solutions in lieu of traditional engineering or 'grey' infrastructure options. This has included:

- Hollym Myers WwTW, where we have used Aero-Fac® technology for a new wastewater treatment facility. This is a low carbon treatment system that uses renewable energy and nature-based biological treatment.
- Chellow Heights, where we have taken the approach of managing upstream water quality entering the reservoir to reduce discolouration rather than chemical intensive end-of-pipe treatment.
- Clifton WwTW, where we have introduced the UK's first fully-integrated wetland for the removal of phosphorus.
- Our Living 249ith Water programme in Hull, where we have worked in partnership with the Environment Agency and local government organisations to use innovative blue green solutions to mitigate flood risk.

Improved safety: our rolling 12-month Lost Time Injury Rate (LTIR) is our key lagging measure for construction safety performance on the capital programme. This measures the number of lost time injury accidents per 100,000 person-hours worked on the programme. Our LTIR stands at 0.2 at the end of the 2022-23 financial year and represents a 50% improvement on our previous performance. This has been achieved through a series of improvement campaigns focusing on our key risk areas, which we have co-created with our supply chain partners covering elements such as confined space working and plant-person interface. We have also deployed an improved project and site safety audit regime.

Reducing carbon emissions: our commitment to reduce our capital greenhouse gas emissions has seen the introduction of the Capital Carbon Hub, a focal point for collaborative working across the current programme to reduce embedded carbon. This is the subject of a bespoke PC for 2020-2025 to reduce our emissions from capital work and emissions from land by over 23%. We have outperformed this target in 2021, 2022 and 2023, and we are forecasting that we will achieve the target over the full 2020-2025 period.

Improving quality: our new end-to-end delivery process for capital projects includes hold-points for technical reviews and approvals by our Engineering team. These reviews offer challenge and assurance, giving confidence that proposed solutions will provide value for money, be safe and practical to operate, maintain, and ultimately decommission. They are designed and constructed to the correct standard in accordance with our engineering specification. As a result of this process, we are collecting and reporting new information on the quality of design submissions and construction workmanship. We will use this to drive improvement.

How we are learning and continuously improving

We have developed our approach to reviewing performance, learning lessons and implementing continuous improvements. Our actions include:

- Improved process for post-project reviews, with a focus on planned vs 249 realised benefits.
- Improved monthly programme performance reviews to ensure that we are monitoring key enablers for successful delivery and identifying and acting on potential deviations from plan at the earliest opportunity.
- Capturing lessons following learning events as well as more regular lessons captured at key stages in the lifecycle of projects.
- Introduction of a continuous improvement ideas capture process, with a small team in place to plan and co-ordinate the implementation of ideas.

Some of the key learning points we identified are:

1) We have improved the professionalism and maturity of our programme delivery capability by bringing in expertise from outside the sector and applying best practice project and programme management tools and techniques. This has enabled early identification of performance issues, allowing us to respond earlier. For the remaining part of the 2020-2025 period and the 2025-2030 period, we will continue to improve our maturity, with a focus on:
    - Management of performance baselines and change.
    - Demand forecasting and resource profiling.
    - Improved schedule management.
    - Wider availability of up-to-date cost intelligence.
    - Improved management information.
    - Standardisation and automation of processes.
2) Through our implementation of blue green solutions in the 2020-2025 period, we have identified some important success factors, which we will address in the coming period. These include:
    - We have found that blue green solutions tend to include a greater level of interdependence with external stakeholders such as local authorities. We will identify key external stakeholders and build improved relationships to support this.
    - Blue green solutions typically require a larger land footprint and, as such, are more likely to require land acquisition and/or planning permission. We have developed a new procedure to identify land and planning needs

earlier in the project lifecycle, with processes to manage this requirement.

- The time required to deliver blue green solutions is typically longer than the equivalent grey infrastructure solution. We are factoring this learning into our planning of future projects with a view to starting earlier to accommodate this additional time.
- The planting requirements for wetland solutions can put a significant demand on the nurseries which produce the plants. Through our supply chain hub, we are collating our demand needs to give early visibility and pursue bulk purchase of the plants we require.

3) Our end-to-end gated process, which we introduced to govern the project lifecycle, has improved our ability to monitor and control the programme. It has also enabled better management of delivery risks. We will continually refine and improve this process for the 2025-2030 period, including:

- Improvements to how the gates are documented and signed off by introducing clearer hold points for sign-off with the delegated authority, linked to the value and risk profile of the project.
- Reduction of time waste and unnecessary bureaucracy to ensure that projects can pass through the gates in an efficient and timely manner by simplifying and automating processes.
- Implementation of a lighter-touch process for smaller projects by removing the requirement for certain deliverables at each stage, where they add limited value to smaller projects.
- Improvements to how lessons are captured at each gate review by introducing a simple process for Project Managers to capture these lessons.

4) In the 2020- 2025 period, we have deviated significantly from the expenditure profile established at the time of our Final Determination. A feature of our actual spend profile is a significant peak of work volume to be delivered in Year 4 of the 2020- 2025 period. For our 2025-2030 Business Plan, we have improved the assurance process for our expenditure profile to ensure that input from the delivery team is taken into account. So that we achieve our outcomes and regulatory obligations effectively, we intend to smooth this profile as far as possible across the 2025-2030 period, avoiding too high a peak in Years 3 or 4. We are aiming to have enough of the work ready to go for Year 1 to start the period at pace, and support a smoother profile. This will require investment in modelling, investigation, and design during the remainder of the 2020-2025 period, to make sure we are ready. Currently transition spend is focused on preparing for regulatory deliverables which are early in the regulatory period. However, we are also considering spend to allow for longer lead times on equipment and materials (resulting from increased demand across the sector), and to allow more time to develop nature-based solutions. We set out how nature-based solutions form part of our plans for storm overflows, biodiversity and river water quality in Chapter 7.

For more details, see Chapter 7

5) Our 2025-2030 delivery model included frameworks providing delivery routes from around 24 capital partners. This provided resilience and choice, however it also meant that several partners in our frameworks had insufficient work to effectively commit to collaboration and delivery of the programme. We have carried out a market testing process and, as a result, have based the 2025-2030 model on an estimated turnover, per partner, of £30 million to £50 million, using a slightly reduced number of partners to strike the right balance between maintaining a resilient supply chain while maintaining the opportunity for a continuous workload for each partner. Our infrastructure framework partners proved most effective, with a significantly reduced cycle time and ability to deliver the programme, as well as responding to emergency work. The nature of our infrastructure programme and the performance of the partners has led us to extend these frameworks.

6) Our 2020-2025 capital partners have performed strongly in these areas: driving improved safety performance, efficiency realisation, design for offsite manufacture and assembly (DfMA), and increasing our focus on net zero carbon. We intend to build on these, with increased DfMA driving both safety and efficiency. When developing our 2025-2030 procurement model, we have considered lessons learned over previous delivery periods, as well as taking into consideration feedback from market engagement and key industry publications. Areas which we need to improve in the 2025-2030 period include programmatic efficiency, partner incentivisation, collaboration, and the stability and visibility of the base programme. The new delivery models and frameworks proposed will support improved performance in these areas. We will also build on our collaborative supply chain hub to support better demand forecasting and early supply chain engagement across tier 1 partners and the wider supply chain.

Delivering our AMP8 (2025-2030) plan

Our proposed approach will address the main risks associated with the deliverability of the 2025-2030 programme, namely:

- Insufficient time and cost allowances to deliver requirements.
- Insufficient capacity/capability within our delivery team.
- Insufficient capacity/capability within the supply chain.
- Failure to optimise the delivery profile across the pricing period.
- Failure to secure external dependencies on time.

To address these risks and deliver the plan successfully, we have identified five critical success factors. Through these, we can make sure the plan represents good value for our customers, and address the issues which resulted in our 2020-2025 wastewater enhancement programme being delivered later than the original proposed spend profile.

The critical success factors are:

- Accurate pricing of our business plan.
- Effective sourcing of the materials, equipment and delivery partners required to secure value for money in the delivery of our programme.
- Developing asset solutions and ways of working that are efficient.
- Deploying a mature and continuously improving programme management capability.
- Successfully managing critical external dependencies.

These are further explained below.

1) Accurate pricing of our business plan for 2025-2030

Yorkshire Water has cost models which include all historical capital investment data across our asset base, which is collated on completion of each of our capital projects. By using these historic norms, we can quickly build up accurate prices for a portfolio of work. We have used these models to inform the pricing of our business plan. To further assure our pricing of the plan we have:

- **Undertaken partner pricing of sample schemes:** We have developed a small number of projects to a level of detail to enable partner pricing. We have commissioned partners to price these projects and used these to test our modelled prices.
- **Testing recent AMP7 tender results against our model:** We have reviewed the results of recent mini-competitions (competitive tenders within our frameworks) and compared the winning price against the outputs of our models. This showed that on average the winning tender was 3.7% higher than the model.
- **Used tendered prices for ongoing projects:** We have used tendered prices for a small number of schemes which are currently in progress.
- **Tested storm overflow unit costs from market:** We have reviewed emerging unit cost information from partners on the 2020-2025 period storm overflow programme (m^3 storage equivalent) to test the process in the coming period.
- **Reviewed experienced inflation:** The inflationary pressure experienced during the 2020-2025 years has been compared with commonly used inflation indices. This shows that actual inflation has been higher than both RPI and CPIH, thereby introducing an efficiency stretch into our plan.
- **Pricing sample schemes in AMP8 procurement:** As part of our procurement exercise for the 2025-2030 period, we will be including sample schemes for pricing. While these will not be available in advance of plan submission, they will provide a useful check beyond this point.

2) Effective sourcing of materials, equipment and delivery partners

Our approach to sourcing for the 2025- 2030 period will be:

Application of Direct Procurement for Customers (DPC): We have undertaken a full review of the programme against Ofwat's criteria for DPC, and identified packages of investment where this approach meets these criteria.

This is described in Section 8.15

- **Procurement of new frameworks for our non-infrastructure programme:** These frameworks (one for complex projects and one for minor projects) will be competitively tendered using sample schemes, and fixing key commercial elements to ensure the benefits of procurement are enduring throughout the period of the framework. These frameworks will follow a similar model to our 2020-2025 frameworks, with lessons incorporated to refine and improve our approach.
- **Extension of our AMP7 infrastructure framework:** This is performing well and will provide the opportunity for continuity and continuous improvement.

- **Creation of a new alliance for the delivery of our storm overflow programme:** The alliance approach will build on best practice identified by the Infrastructure Client Group, and will create an enterprise model with aligned budgets and incentives to deliver the programme successfully with the benefit of a programmatic approach.
- **The ongoing development of our supply chain hub:** This takes a collaborative approach to sourcing materials and equipment with our tier 1 partners, helping us to secure the best value opportunities from the tier 2 and 3 supply chain. Through our supply chain hub, we will carry out demand forecasting to identify critical supply chain dependencies early and work with suppliers to help build capacity and smooth workload. We will also work with other water companies to help balance our collective demand on these critical resources. These are likely to include Monitoring Certification Scheme (MCERTS) inspectors, hydraulic modellers, and equipment such as river water quality monitors.

3) Developing efficient solutions and methods

We have grown our engineering capability further in the 2020- 2025 period, enhancing our abilities as an intelligent client. Through this function, and in combination with our strategic planning partner and delivery partners, we seek value engineering of projects. This will continue to use the totex hierarchy approach to efficient investing. In the 2020-2025 period, this has seen significant savings delivered through intelligent design, process re-engineering, and reuse/re-lifing of existing assets (e.g. refurbishing an existing asset so it can be reused rather than having to re-build it).

We will continue this in the 2025-2030 period by engaging a smaller number of partners, and providing earlier and more certain workloads with incentive arrangements which are aligned to our customer and environmental outcomes.

4) Programme management capability

Over the course of the 2020-2025 period, we have developed and matured our programme management capability, enabling us to deliver and assure an increasing volume of work more effectively. We have learned from other major infrastructure owners through our membership of the Infrastructure Client Group as well as adopting current best practice from current industry thinking (for example, the Construction Playbook).

Examples of steps we have taken include:

People: Improved our team capacity and capability by growing our programme management team by 40% since Year 1 of the 2020-2025 period, including candidates from other sectors, and by rolling out a Learning and Development programme covering aspects such as Project Management training and accreditation (APM and NEC). Project Management is our largest area for current apprenticeships with 33 apprentices now in place, supporting the growth of this capability within the organisation. Similarly, we are running an engineering apprenticeship with 29 apprentices in place. We are committed to continued professional development through the support of charterships, Association of Project Management (APM) membership and qualifications.

Process: We have introduced a new end-to-end gated process to govern capital projects, in line with best practice set out by the Association for Project Management (APM). We have used a P3M3 review and other continuous improvement techniques to refine and mature our processes. This has improved our ability to manage and control large numbers of projects. We are developing this in line with our AMP8 procurement model, with the aim of continuing with the gated process and expediting cycle times for efficient delivery.

Technology: We have introduced new digital tools to improve our efficiency and effectiveness for contract management, financial management and reporting and design management.

For the 2025-2030 period, we have developed a capital delivery workforce plan to maintain the correct levels of internal resource. During AMP7, we mapped out roles required within our Project Management, PMO and Engineering teams and profiled this by volume of spend and work type on a weekly basis over the AMP. We have used the AMP8 spend profiles to project requirements for AMP8 with consideration given to our proposed delivery model changes.

Two key elements of our programme management capability are our Programme Management Office (PMO) and our commercial function:

Our PMO provides the governance oversight, systems and processes and programme and project controls for effective monitoring and reporting. We also monitor expenditure and efficiency performance, reporting on variances monthly with the opportunity for weekly escalations via our Performance Excellence Hubs if required.

Delivery of the programme of asset investment within the funding available requires effective commercial management. To ensure that partner prices represent market rates, a combination of bottom-up cost estimation, direct negotiation and competitions are deployed. We have significantly developed our capability in this area, partnering with industry experts. Use of competitions is typically targeted at higher value contracts where the commercial improvement has the greatest prospect of giving a return on the investment of tender activity. Our detailed commercial feedback process works in tandem with our value engineering

approach, highlighting the highest cost elements of scope and focusing our innovation effort.

5) Successfully managing critical dependencies

Throughout the 2020-2025 period, we have learned from constraints associated with critical dependencies, sometimes outside of our direct control. This can include:

- Interactions with Network Rail
- Land acquisition
- Land access
- Planning permission
- Environmental permits (potential operating techniques agreement)
- Highway interactions – road closures/lane closures/speed restrictions
- Environmental constraints (working within Sites of Special Scientific Interest, for example, may need an Environmental Impact Assessment)
- Marine Management Organisation consent (for coastal work)
- New or upgraded power supplies.

At the end of Year 3 of the 2020-2025 period, we carried out a 'lessons learned' exercise and adapted our processes to manage these critical dependencies. We have already implemented new ways of working, including early milestones for identification and progression of land and planning requirements so that they can be de-risked. We have also brought in a requirement to put earlier contingency plans in place for projects with external risks, and improved clarification of key roles and responsibilities.

Additionally, aligned to our partnerships approach, we are actively engaging with key stakeholders to strengthen relationships in advance of the 2025-2030 period. For example, we are developing our relationships with local authorities, focusing on those areas where we have the most significant levels of interdependency.

Delivering through the supply chain

Overall, we are confident in the deliverability of our 2025-2030 programme but acknowledge there are some areas of higher risk. We have highlighted these below, alongside our mitigation strategies.

Our combined WINEP and WRMP plans for the 2025-2030 period will be around twice the size of the current plan.

We remain confident in our ability, and that of our supply chain, to scale-up delivery into the 2025-2030 period. However, this cannot be considered in isolation from other companies' plans. We are aware that some companies are planning a more significant scale-up of delivery. We are concerned this may be unsustainable, both for the companies themselves and the UK supply chain, as its ability to deliver the 2025-2030 programme nationally is impacted.

To assess how this step-up in expenditure impacts Yorkshire Water and the sector as a whole, we have worked with Water UK and most other water and sewerage companies to undertake a deliverability study based on our draft plans for the 2025-2030 period. The summary view on deliverability from this study was:

"The overall scale of the programme is unprecedented for the water sector. It marks a step change in the delivery challenge at a time when contractors are leaving the sector because of programme uncertainty, risk allocation and poor margins/loss-making performance and the entire sector is struggling to recruit. Also, such capacity that there is might not be in the right regions, exacerbating AMP8 deliverability challenges.

- The sector needs to provide an attractive and compelling long-term offer to the supply chain to draw them in – company and regulatory actions will be required to achieve this.
- The sector needs to be attractive to people – this is likely to require coordinated action and won't have an instantaneous effect.
- Regulatory flexibility in timelines for investigations and solutions will enable better mobilisation, improve benefits, achieve environmental, net zero and biodiversity ambitions and contribute more to tackling climate change."

To help us face into this challenge, we are proposing a change to our capital delivery model between the 2020-2025 period and the 2025-2030 period, with a combination of new contract partners and the extension of existing partner frameworks.

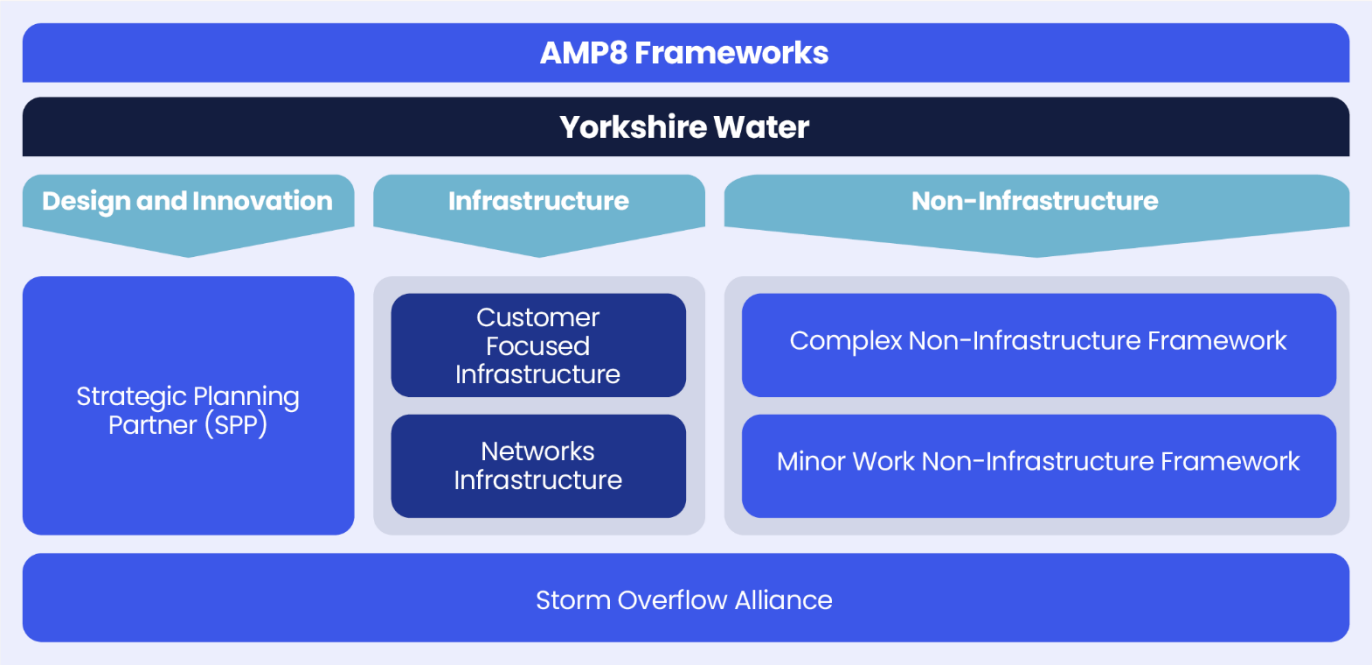


Figure 7: AMP8 Frameworks

Our 2025-2030 proposals are the result of a review and consideration of options to ensure our approach represents value for money and is deliverable. The proposals are supported by a significant market testing exercise with input from more than 30 suppliers, some incumbent on existing Yorkshire Water frameworks and some not. The proposals include extending our infrastructure frameworks where we have seen strong performance from our supply chain; for example, in regions that have reported additional capacity. The Mechanical, Electrical, Instrumentation, Control and Automation (MEICA) and Civils frameworks will be rationalised into complex and minor non-infrastructure frameworks, which will span across both MEICA and civils on the entire non-infrastructure asset base. We will also be introducing a new alliance, specifically focused on the delivery of the Storm Overflow Reduction Plan.

The alliance will be made up of between two and four construction partners, and one designer, alongside Yorkshire Water. We intend to base the number of partners (for both the alliance and non-infrastructure frameworks) on an estimated annual turnover of £30 million to £50 million. This is based on feedback from our market testing.

Our 2025-2030 delivery frameworks described above will support deliverability by:

- Ensuring that we have access to the right level of tier 1 supply chain capacity to deliver the requirements of the programme, based on input secured through market engagement.
- Organising our approach into functional areas aligned with the needs of the programme we are delivering; for example, by introducing a new delivery route for the Storm Overflow Reduction Programme.
- Leveraging the scale of the programme to secure value for money for our customers at tier 1 level, through our frameworks.
- Providing visibility and certainty of workload to our supply chain to enable our partners to secure the necessary resources to deliver.
- Supporting and promoting a positive supply chain management approach with the extended supply chain.

For the extended supply chain, we will continue to build our supply chain hub in the 2025-2030 period, and increase our level of demand forecasting. We will drive collaboration across all frameworks, as well as the alliance, to optimise early supply chain engagement based on improved programme visibility and demand forecasting. This will allow us to identify and secure the resources required for successful delivery. The 2025-2030 delivery risk is driven by the high volumes of activity challenging the capacity of the supply chain, but also by external factors such as environmental permitting, planning consents, land purchase and other pre-construction work. We need to ensure that the environmental regulators have the resources available to manage their inputs on permitting and enabling works that are required for prompt delivery of an environment programme of this scale. Delivery prospects could be further improved through rationalising the planning and environmental assessment processes to support timely delivery of nature-based solutions, or incentivising local authorities

and highway agencies to work on multi-agency approaches to deliver more surface water removal and nature-based solutions.

8.16.4 Protecting customers: Price control deliverables

Price control deliverables (PCDs) are a new mechanism for PR24 which provide additional protection for customers against non-delivery or late delivery of our committed enhancement programmes and cost adjustment claims (CACs).

We have engaged fully with the new guidance set out by Ofwat for PCDs in IN23/05 and have included PCDs for all material enhancement areas of our plan. These PCDs offer customer protection in two ways:

- **Programme Scope** – Where enhancement outcomes are no longer required, or not delivered, we commit to returning the money to customers at the end of the pricing period.
- **Programme Delays** – Where customers are not protected by performance commitment ODI penalties, we have introduced annual incentives to protect customers against late delivery.

Our process for considering and applying the guidance is set out in detail in the **Introduction to Enhancement Cases appendix**

We have proposed 18 enhancement PCDs, covering 90% by value of our requested enhancement programme. In addition, we have introduced three PCDs to demonstrate our commitment to delivering the full step change in activity set out in our targeted allowance Cost Adjustment Claim, and discussed in **Chapter 8 – Part 2.**

For more details see Chapter 8 – Part 2

Where possible, we have proposed PCDs at an outcomes level (i.e. delivering compliance with WINEP obligations) rather than specifying individual defined solutions. We think this is important, as it maintains our incentive to innovate and deliver the best value solutions to customers throughout the 2025-30 period while ensuring we still meet our statutory obligations.

We intend to provide annual, and end of period, assurance against these PCDs through an independent third party as part of our Annual Performance Reporting process.

We note that PCDs present a potential additional downside risk to companies as well as an increased regulatory reporting burden.

Chapter 9
Risk and reward

We have sought to ensure that potential returns to shareholders appropriately reflect the risk of operating in the sector, made up of base allowed returns and potential additional returns/penalties linked to future performance (through outcome delivery incentives).

For the company to remain financeable, and deliver our plan for 2025-2030, we have used a revised view of allowed returns using more up to date information from financial markets.

We have also included the significant financial support of our shareholders who have injected funding into the company in June 2023, together with further planned injections in FY25 and FY27 to enhance financial resilience and help fund the planned net investment costs of £7.8bn.

Chapter 9
Risk and reward

Supporting appendices

Uncertainty mechanisms and RoRE risk analysis
Notional financeability analysis
Cost recovery rates
WACC Assessment
Reconciliation models
Financial resilience

9.1 Chapter summary

This chapter details how we have understood and assessed the risks and returns within our business plan and provides evidence of the risk management processes that we have adopted. Importantly, this chapter also sets out our view that our plan is financeable, both under Ofwat's notional capital structure, and on Yorkshire Water's actual capital structure, and provides the key assumptions underpinning that assessment.

Significant shareholder capital injections underpin our plan:

Significant capital injections into Yorkshire Water in June 2023, together with further planned capital injections in FY25 and FY27 (all through repayment of intercompany loans) and lower dividend yields, enhance our financial resilience and help fund the planned 2025-2030 programme of £7.8 billion.

Responsible policies on dividends and executive pay:

Our policies are consistent with Ofwat's final methodology and recent licence update, providing a specific link to delivery for customers. We have included a base dividend yield of 3%, reflecting our desire to retain equity in the business to support financial resilience. Any dividend payments in excess of this in the 2025-2030 (AMP8) period will depend on performance against our plan and financial resilience assessment. We are also proposing a voluntary sharing mechanism to 2030, such that improved returns from performance would be shared with customers, enabling us to increase further our support to vulnerable customers.

Fair sharing of bills between current and future customers:

The average bill for our customers in 2022/23 pricing for the 2025-2030 period (AMP8) compared to the 2020-2025 period is expected to rise by 25%, with a natural bill profile over the period. We have set pay as you go (PAYG) and run-off rates at the "natural" level with no inter-AMP transition of revenues. This is in line with Ofwat's guidance, and we believe a fair balance of the bill profile between current and future customers.

Our plan is notionally financeable based on Ofwat methodology when the weighted average cost of capital (WACC) is updated for latest market data:

There have been material increases in the cost of debt since Ofwat published its early view of WACC in September 2022. Ofwat has stated that it will update its view of WACC for the latest market data and that companies may adopt an allowed return, in line with its methodology, updated for more recent market data. We have sought two independent expert opinions which reflect Ofwat's approach to WACC, with market data updated to July 2023, and have used this independent evidence to set an appointee WACC of 3.66% for our plan. This is consistent with Ofwat's methodology.

Our plan is financially resilient on Yorkshire Water's actual financial structure over the period 2025-2030 (AMP8) and beyond:

Our investors continue to support the Company. Our plan includes further capital injections, by way of intercompany loan repayments of £100 million in 2025 and £437 million in 2027, together with a reduced dividend yield of 3% for the 2025-2030 period, in addition to the repayment of £400 million already provided in 2023. This results in our forecast regulatory gearing reducing to 67% by the end of the 2025-2030 period, despite the significant levels of investment included within our plan.

Credit ratings are targeted to remain at existing levels, with an average Class A rating across all three agencies of Baa1/BBB+. We have assessed financial resilience to the end of the 2025-2030 period in line with our long-term viability assessment approach and have based that assessment on the statutory pathway included in our Long-Term Delivery Strategy (LTDS). Based on this, we believe Yorkshire Water is financially resilient for the period 2025-2030 and beyond.

Notional company RoRE range of +2.8% to -4.9%

Using Ofwat's methodology, we have carried out a review of potential risks and rewards around our plan and represented that assessment as a range around allowed notional company return on regulated equity (RoRE). We have proposed a stretching plan, with a significant increase in investment to meet regulatory requirements on storm overflow and flood risk, as well as investing more in asset health to support the long-term sustainability of our network, together with challenging customer performance commitments (PCs) and efficiency improvements to reduce costs to customers and bring down bills. We have proposed two uncertainty mechanisms which we believe affect the industry as a whole: an input price pressure true-up mechanism, and bio-resources land bank reopener. These mechanisms will reduce the volatility of these two risks, helping to support companies and customers.

Based on this risk assessment, we estimate a RoRE range of +2.8% in the high case and -4.9% in the low case. This compares to Ofwat's notional company symmetrical RoRE range of +4.9% to –4.9%. The negative skew within our range reflects the challenge and increased risk within our plan. We feel this is realistic given the targets we have set for our plan and customers' expectations; however, it means we will need to work hard to secure a net reward position and would ask Ofwat to factor this range into their assessment of the level of ambition in our plan.

9.2 Overview

To ensure that we can deliver the desired environmental improvements and excellent levels of service that our customers require, at a price that they can afford, it is important that our business plan for 2025-2030 and beyond strikes an appropriate balance between risk and return. This allows our plan to be financed on a fair and efficient basis.

Our plan meets the statutory requirements under Water Industry National Environment Programme (WINEP), Water Resource Management Plan (WRMP) and Drainage and Wastewater Management Plan (DWMP), which results in a need for significant new investment across the next five years.

For us to achieve this investment, it is critical that we remain attractive to investors who can provide the finance necessary for large-scale investment programmes. Attractiveness to investors does not come at any cost and we are committed to maintaining legitimacy in the eyes of customers and wider society.

This chapter details how we have understood and assessed the risks and returns within our business plan and provides evidence of the risk management processes that we have adopted. Importantly, this chapter also sets out our view that our plan is financeable, both under Ofwat's notional capital structure, and on Yorkshire Water's actual capital structure, and provides the key assumptions underpinning that assessment.

Further detail on the key topics within this chapter can be found within the following sections:

Section 9.3 sets out the importance of aligning risk and return.

Section 9.4 summarises the risk and return range within our business plan through RoRE analysis.

Additional evidence supporting this section is provided in the **Uncertainty mechanisms and RoRE risk analysis appendix**

Section 9.5 provides further detail on our approach to key financial elements within our plan, such as WACC, retail margins, taxation and pensions.

For each wholesale price review, we have aligned the cost of capital with the methodology included within Ofwat's 'early view'. As there have been material movements in the debt markets since Ofwat's 'early view', we have updated WACC to 3.66% based on advice from two independent WACC experts to reflect the latest market data to July 2023, as we expect Ofwat to re-assess WACC at both draft and final determination.

Whilst we have adopted Ofwat's methodology and used this as part of the overall risk and return package within our PR24 plan, there are a number of elements of Ofwat's approach that we disagree with. We have set these out in **Section 9.5.**

We ensure our customers receive all taxation benefits from our capital structure, higher gearing, and capital allowances on our significant capital investment programme.

Additional evidence supporting this section is provided in the **WACC assessment appendix**

Section 9.6 sets out our proposed approach to cost recovery.

We have included pay as you go (PAYG) and run-off rates for cost recovery on a "natural" basis, consistent with prior price reviews and Ofwat's guidance. Our proposed wholesale run-off rates are within Ofwat's guidance range.

Additional evidence supporting this section is provided in the **Cost recovery rates appendix**

Section 9.7 provides further detail behind our proposed average bill.

Our plan proposes an average bill in 2022/23 prices of £553 across the 2025-2030 period, with a natural bill profile. This equates to a rise of 25% over the period as a whole, relative to PR19. Customer research indicates 78% of customers found our plan to be acceptable (see Yorkshire Water Affordability and Acceptability Testing in Customer research appendix).

See Yorkshire Water Affordability and Acceptability Testing in **Customer research appendix**

Our research has also shown that, given the increase in bill level, customers generally prefer a natural bill profile. Based on this and the current cost of living challenges, we have used a natural bill profile in our business plan.

Section 9.8 sets out our approach to assessing notional financeability.

We confirm that our plan is financeable on a notional basis, as detailed within the Board's assurance statement provided in **Chapter 10,** subject to WACC being updated to reflect latest market data.

Additional evidence supporting this section is provided in the **Notional financeability analysis appendix**

Section 9.9 sets out our approach to assessing financial resilience.

We confirm the financial resilience of Yorkshire Water across the 2025-2030 period and beyond, as detailed within the Board's assurance statement provided in Chapter 10. This is subject to Ofwat's WACC for the 2025-2030 period being updated to reflect latest market data, and for the period beyond 2030, on the basis of the statutory pathway set out in our LTDS. In making this assessment we have taken account of Ofwat's statutory duty to secure that companies can finance the proper carrying out of their functions.

Our investors continue to support the Company. Our plan includes a reduced dividend yield of 3% and further capital injections, by way of intercompany loan repayments, of £100 million in 2025 and £437 million in 2027, in addition to the repayment of £400 million already provided in 2023. This ensures that our forecast regulatory gearing reduces to 67% by the end of the 2025-2030 period, despite the significant levels of investment included within our plan.

Additional evidence supporting this section is provided in **Financial resilience appendix**

Section 9.10 provides an overview of our benefit sharing, dividend policy and approach to executive performance pay.

We have set out a clear and responsible approach to dividends, executive pay and benefit sharing for the 2025-2030 period. This approach illustrates our commitment to responsible financing and benefit sharing, building trust and confidence in the Company.

Our dividend policy reflects Ofwat's guidance with an explicit link to performance delivered for our customers, and a base yield of 3%. Any dividend payments in excess of this will be dependent upon financial resilience and overall performance against our plan.

We will continue our voluntary contribution to supporting customers in need and will increase that in the 2025-2030 period in line with the increase in customer bills. In addition, we are committing to providing additional support to customers where the business performs well as part of a voluntary benefit sharing mechanism.

9.3 Aligning risk and return

The importance of aligning risk and return

A fair balance of the overall risk and return is crucial to a successful business plan. It must be attractive enough to raise the necessary capital to fund our planned investment, whilst delivering an acceptable level of service and price for our customers and maintaining the Company's financial resilience.

We have proposed a stretching plan, with a significant increase in investment to meet regulatory requirements. We estimate a RoRE range of 2.8% in the high case and -4.9% in the low case. The negative skew within our range reflects the challenge and increased risk within our plan. We feel this is realistic given the targets we have set for our plan and customers' expectations; however, it means we will need to work hard to secure a net reward position and would ask Ofwat to factor this range into their assessment of the level of ambition in our plan.

Alongside offering customers a high quality, resilient and value for money price and service package, it is important that the investment proposition offers returns commensurate with the level of systematic risk. An appropriate WACC which reflects the risk in our plans and the sector generally is thus critical to successful delivery. This helps to ensure that, in an environment where there is an abundance of alternative investment options, financing remains accessible. It also helps keep the cost of that finance as low as possible, allowing us to continue to attract the most economic funding available. We can then invest this in maintaining and improving services and managing risk.

This is particularly important given the significant increase in interest rates since Ofwat set their early view of WACC based on September 2022 market data. We expect that Ofwat will rectify this issue when they revisit their WACC calculation, as suggested within their methodology and recent guidance. Given the materiality of the issue, we have updated the WACC within our plan to reflect expert opinion of the current market impact. This is detailed further in section 9.5 below.

Components of a stretching and responsible plan

There are a number of key components that make a plan demonstrably stretching. At its core, it must embed stretching customer service performance targets, while delivering cost efficiency to keep customer bills as low as possible.

- In chapter 7 we explain our approach to setting stretching customer performance targets. Delivering these will require innovation, while exposing investors to out and under performance risks to incentivise delivery for customers.

For more details see Chapter 7

- In chapter 8 part 1 we outline the steps we have undertaken to ensure that we will provide services at an efficient level of operating and capital expenditure. This helps to minimise our need for financing and ensures customer bills are kept as low as possible.

For more details see Chapter 8 Part 1

We have assessed the overall balance of risk and return within our plan, through RoRE analysis (detailed in section 9.4). This analysis illustrates an overall risk and return range within our plan of +2.8% to -4.9%. We believe this range, which is slightly skewed towards greater risk, highlights the challenge we have in delivering our plan. It needs to be supported by an appropriate regulatory regime, in particular WACC, ODI and totex sharing mechanisms.

Regulatory framework for risk and return

The regulatory framework for the coming price review period (PR24) enables companies to earn a greater return by delivering improvements to customer service at lower costs, above their baseline plans. This requires us to innovate and challenge ourselves to do things differently. But in doing so, we must also be aware of the potential consequences of such changes and ensure that we continue to operate the business in a responsible manner. This means that risks we do take need to be within our control and appropriately managed.

This sharing of risk and reward above our baseline plan is achieved via regulatory mechanisms which incentivise performance to push the industry forward. These mechanisms enhance the quality of services provided to all customers and penalise companies where baseline performance is not delivered. The shape of these reward and penalty mechanisms also contribute to the RoRE range that we see.

The range of incentives and penalties set by Ofwat will encourage us to meet and exceed our baseline PCs. They ensure we continue to improve services for our customers, while maintaining reduced costs to keep bills as low as possible in the long term.

Our baseline plan includes a fair sharing of risk and reward between us and our customers. We work on the principle of placing risk where it is most efficiently managed to benefit our customers.

Our ultimate returns are derived from the benefits we can earn for out-performance (rewards) and penalties we receive for under-performance (risks), through the following three mechanisms:

- The weighted average cost of capital (WACC) – our base allowed notional return. Please see section 9.5 for further details.

For more details see Section 9.5

- Outcome delivery incentives (ODI) – rewards or penalties linked to our performance commitments. Please see chapter 7 for further details.

For more details see Chapter 7

- Total expenditure (totex) incentive mechanisms – rewards or penalties linked to our efficiency when delivering our investment plans.

The overall balance of risk and return is described in the next section. It is represented by the opportunity to improve, or to underperform, against the baseline Return on Regulated Equity (RoRE), allowed by Ofwat.

9.4 Our assessment of risk and RoRE analysis

Understanding the risks that could impact our plan

We embed risk identification in all our management systems. A network of 'risk champions' work with leadership teams to prompt risk identification and keep the measurement and review processes consistent. Risks are logged, and we run risk identification workshops with our Board twice a year. Each risk is allocated an owner, who is responsible for the monitoring, management, and reporting of that risk through its lifetime.

We have also examined our plan and considered its resilience to changes in circumstances, the operating environment and inherent uncertainty, to identify any further risks specifically associated with the delivery of our plan.

Our approach to risk management

Effective risk management is essential for us to manage uncertainties and achieve our objectives. It is embedded in our normal business process and culture and overseen by an executive-led Risk Committee. This committee consists of senior executives from across the business.

We manage risk in line with the following key principles:

- Transparent risk culture: all risks are measured, managed, monitored and reported.
- Proactive approach: risk management is dynamic, with risks and opportunities identified and escalated, to be managed at the appropriate level in the business.
- Risk governance: all risks are subject to appropriate controls and governance.
- Risk appetite: a clearly defined risk appetite framework is aligned to the business strategy and reflects our Board's approach to risk-taking.

RoRE analysis – summary

We have implemented a thorough and robust approach to appraising the risks associated with our PR24 plan. The RoRE analysis below aims to quantify the risk included within our plan through the modelling of the following scenarios, specified by Ofwat:

- Revenue risk
- Totex cost risk
- Retail cost risk
- ODI related risk
- Measures of experience risk
- Financing risk

The analysis we have undertaken is consistent with Ofwat's methodology.

Further details on specific methods used for each scenario are provided in **Uncertainty mechanisms and RoRE risk analysis appendix**

Key features of our approach:

- We have drawn on a range of evidence, including both bottom-up and top-down analysis, using a combination of historical and forward-looking data, plus independent expert opinion where appropriate.
- High and low risk scenarios are specified in terms of P10 and P90 values at the appointee level. Where risk impacts are shown by price control, this reflects appointee-level risk, rather than simply summing individual risks, which is considered inappropriate. All impacts are reported relative to our plan and are in 2022/23 prices. Where RoRE ranges are reported, these reflect notional gearing of 55%, as specified by Ofwat.
- Our approach to modelling ODI risk uses a Monte Carlo simulation model developed internally and assured by Economic Insight.
- We have applied our thorough assurance process across our risk analysis.

Ofwat's final methodology for PR24 contained an illustrative RoRE range, which was primarily based on actual historical data from the 2015-2020 period. The approach to setting cost allowances and performance targets changed significantly at PR19 (new econometric modelling and upper quartile comparative targets were introduced), therefore we believe inclusion of actual data for the three years to March 2023 into the analysis provides a more accurate base for comparison.

Figure 1 summarises the following three indicative RoRE ranges:

1) Our expected notional RoRE range for PR24 before uncertainty mechanisms.
2) Our adjusted expected notional RoRE range for PR24, including the two uncertainty mechanisms we have proposed.
3) Ofwat's PR24 final methodology illustrative range.

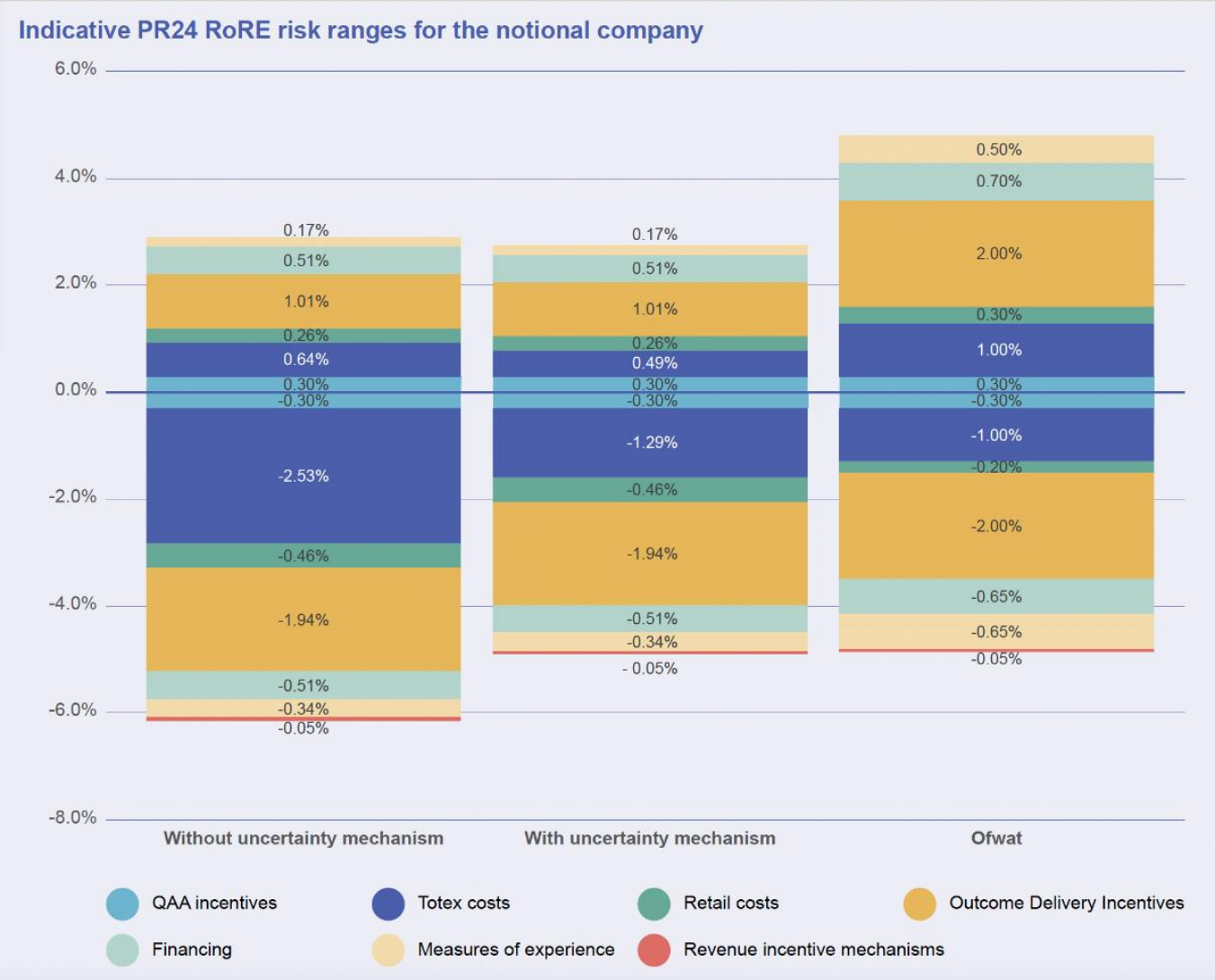


Figure 1: RoRE analysis

We estimate a RoRE range of +2.8% to -4.9% once the uncertainty mechanisms we have proposed are included. Ofwat's methodology set out a broadly symmetrical range of +4.8% to -4.9%.

While our downside risk ranges are broadly comparable to Ofwat's in total, we forecast lower upside potential, primarily within ODI related risk where penalty-only ODIs and existing high-performance levels limit the upside available.

The two key elements within the risk and return range are totex cost risk and ODI-related risk. Further details on these are provided below.

- Totex risk of +0.5% to -1.3%: The increased negative skew versus Ofwat's methodology range of +/-1.0% primarily reflects the fact our estimate is based on industry performance across the 2016-2023 period. This is longer than the 2016-2020 period used by Ofwat so is more reflective of the cost challenges experienced by the industry in recent years (including inflationary pressures and the stretching PR19 determination).
- The analysis also reflects the extra challenge associated with the significant increase in investment across the industry within PR24. This has brought an associated risk of increased supply chain costs, particularly within the enhancement programme. It also includes a potential downside risk in bioresources in the event of landbank loss.

This risk range is reduced by the inclusion of our two proposed uncertainty mechanisms (discussed below.)

- ODI related risk of +1.0% to -1.9%. With regards to ODI, we have proposed stretching targets for customers. We have reviewed performance across the industry for PR19 and note that the majority of the industry is under-performing the targets set.

We consider our base plan to be very stretching. There is a significant increase in investment for PR24, including new technologies and new investment areas – for example, a major increase in storm overflow investment and asset health. In addition, we have

included a significant increase in performance outcome targets. Delivering this will be dependent upon the successful realisation of cost savings and achievement of efficiencies and service improvements from our Efficiency and innovation in chapter 4.

For more details, see Chapter 4

Uncertainty mechanisms

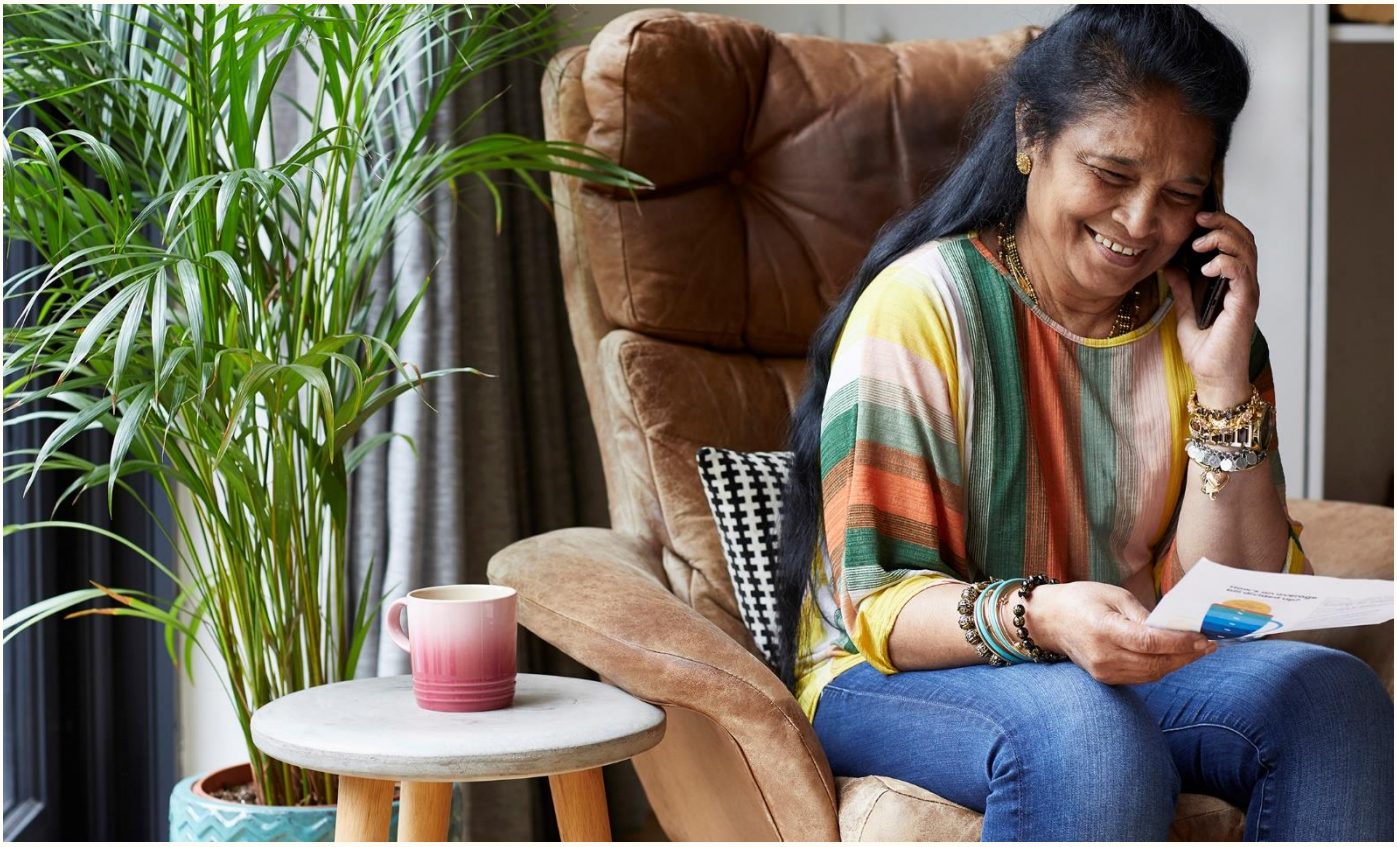
There are sometimes risks which are difficult for the business to manage alone. In these cases, we propose uncertainty mechanisms which enable any materialising risks to be managed outside of the price control determination.

We are proposing two uncertainty mechanisms to balance the risk/reward in our plan. We note that, as these are not bespoke Yorkshire Water risks, Ofwat may consider applying these mechanisms across the industry as a whole.

Details of these uncertainty mechanisms are set out in **Uncertainty mechanisms and RoRE risk analysis appendix.**

In summary:

- **Input price pressure true-up mechanism**: Recent volatility in price inflation across a number of costs (for example, energy and chemical costs) has demonstrated that CPIH is not a good proxy for the inflationary pressures experienced by the water industry. We believe that customers and companies will be better protected from this volatility with a true-up mechanism to cover all major input costs, rather than the simple labour cost true-up used in PR19.
- **Uncertainty related to land bank availability in bioresources**: Uncertainty remains in the bioresources price control, regarding the industry's ability to return solids to agricultural land, post-treatment. There is a risk that the land bank available for biosolids will reduce significantly following anticipated legislative changes, reinterpretations of existing legislation or the rejection of biosolids by farmers. This uncertainty over both scale and timing of land bank loss means that costs, timings and best value solutions remain uncertain, with a worst-case impact of over £160 million. We believe a common reopener limited to the bioresources price control is the appropriate way to manage this risk.



9.5 Key financial elements within our plan

A responsible financing structure

The water industry is a long-term industry which requires a long-term, stable approach to the financing and management of its assets. Financial resilience is a primary strategic objective, along with service, operational and corporate resilience.

Our approach to financial resilience is managed through the Finance Governance Group. This group meets monthly (and ad-hoc where necessary) to consider all aspects of our financial arrangements and resulting indicators. Chaired by the CFO with senior leaders from the Treasury, Finance and Regulatory functions, it takes a holistic approach to our financial arrangements.

During the 2020-2025 period, we have taken a number of actions to strengthen our financial resilience and balance sheet. These include:

- Across 2020-2023 we have paid an average dividend yield of 2.6% versus Ofwat's suggested base yield of 4.0% and have constrained dividends to cover Kelda Group operating costs and interest costs only.
- Our investors introduced £400 million of new capital, by way of repayment of intercompany loans, into the appointed business in June 2023, with a further £100 million committed for March 2025. Our PR24 plan also includes a further repayment of intercompany loans of £437 million from our investors in 2027.

The actions above have significantly reduced our gearing, such that regulatory gearing is forecast to reduce to 67% by the end of the 2025-2030 period, despite the notable increase in enhancement costs included within our plan.

Whilst our forecast regulatory gearing of 67% is above Ofwat's proposed notional gearing of 55%, it is well below the 85% allowed within our securitised structure. This provides a robust buffer to absorb any unexpected cost or performance shocks.

Our approach to the allowed return (WACC)

Our plan adopts the WACC methodology used by Ofwat in determining their 'early view' appointee, WACC; however, we note that market data has changed materially in the last 10 months. Ofwat has stated that it will update WACC for latest market data and that companies may use an updated position in their business plans.

To determine what this market-updated WACC would be, based on current market conditions, we commissioned two independent consultants. First Economics and Oxera provided an updated WACC calculation for us, using Ofwat's methodology and updating purely for latest market data to July 2023. The results of this analysis are summarised below:

	Ofwat Sep 22	Ofwat Oct 22	Oxera Jul 23	First Econ Jul 23
Cost of equity	4.14%	4.42%	4.59%	4.53%
Cost of debt	2.60%	2.81%	2.94%	2.92%
Appointee WACC	**3.29%**	**3.53%**	**3.68%**	**3.64%**

Table 1: Summary WACC analysis

Oxera and First Economics suggest that current market data would result in an increased WACC of 3.64% to 3.68%. This is a small increase from the 3.53% highlighted by Ofwat (based on October 2022 data), which primarily reflects the impact of using updated March 2023 APR data to determine the cost of embedded debt.

We have utilised a WACC of 3.66% within our plan, which is the midpoint of the range provided by the independent experts.

Other observations on Ofwat WACC

We also commissioned expert reports from First Economics (FE) and Oxera, as well as participating in an industry project with KPMG to review the methodology Ofwat uses for assessing WACC.

The reports provided by First Economics, Oxera and KPMG can be found in WACC assessment appendix, with the tables below summarising the ranges and key points provided within them.

Additional evidence supporting this section is provided in the **WACC assessment appendix**

As shown within the summary table below, even when updated for latest market data, Ofwat's WACC methodology results in a cost of equity which:

- lies below the ranges provided by Oxera and KPMG
- lies at the bottom end of the range provided by First Economics.

WACC analysis (CPIH)	Ofwat PR24	July update	First Econ range	Oxera range	KPMG range
Cost of equity	**4.14%**	**4.55%**	**4.39%–5.37%**	**4.66%–5.67%**	**5.11%–5.71%**
Cost of debt	**2.60%**	**2.94%**	**2.76%–3.09%**	**2.99%**	**n/a**
Notional gearing	55%	55%	55%	55%	55%
Appointee WACC	**3.29%**	**3.66%**	**3.49–4.12%**	**3.74%–4.20%**	**n/a**

Table 2: Summary of expert WACC ranges

The above table highlights that Ofwat's 'early view' cost of equity at 4.14% is especially low given market movements since it was assessed.

The difference in the cost of equity between Ofwat's updated 4.55% and the range provided by our experts of 4.39% to 5.71% is mainly due to Ofwat discounting a number of the methodologies adopted by the CMA during the PR19 appeal. We note that across the following six key elements of the cost of equity, Ofwat has adopted a different approach than the CMA at PR19 and/or Ofgem as part of its recent 2022 RIIO2 determinations which reduces the WACC:

- Ofwat adopts a lower notional gearing than both the CMA and Ofgem.
- Ofwat adopts a lower risk-free rate than both the CMA and Ofgem.
- Ofwat adopts a lower total market return than both the CMA and Ofgem.
- Ofwat adopts a lower unlevered beta than both the CMA and Ofgem.
- Ofwat adopts a higher debt beta than both the CMA and Ofgem.
- Ofwat does not include any aiming up, like the CMA.

Further detail on our concerns with specific aspects of Ofwat's methodology can be found in the **WACC assessment appendix**

The table below provides a more detailed summary of the constituent elements of WACC within each of the expert ranges, updated for latest market data.

WACC analysis (CPIH)	Ofwat PR24	July update	Oxera Low	Oxera High	First Ec Low	First Ec High	KPMG Low	KPMG High
Total equity market return	6.46%	6.46%	6.70%	7.70%	6.50%	6.80%	6.39%	6.96%
Real risk-free rate	0.47%	1.52%	1.75%	1.75%	1.49%	2.13%	1.93%	1.93%
Equity market risk premium	5.99%	4.94%	4.95%	5.95%	5.01%	4.67%	4.46%	5.03%
Notional gearing	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%	60.00%	60.00%
Aiming up	0.00%	0.00%	0.00%	0.00%	0.00%	0.25%	0.15%	0.15%
Asset beta	0.33	0.33	0.32	0.35	0.32	0.34	0.36	0.38
Debt beta	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Equity beta	0.61	0.61	0.59	0.66	0.58	0.64	0.75	0.80
Cost of equity	**4.14%**	**4.55%**	**4.66%**	**5.67%**	**4.39%**	**5.37%**	**5.43%**	**6.10%**
Embedded debt	2.34%	2.65%	2.69%	2.69%	2.47%	2.65%		
New debt	3.28%	3.74%	3.84%	3.84%	3.75%	3.90%		
Ratio	83.00%	83.00%	83.00%	83.00%	85.00%	85.00%		
Liquidity and fees	0.10%	0.10%	0.10%	0.10%	0.10%	0.25%		
Cost of debt	**2.60%**	**2.94%**	**2.99%**	**2.99%**	**2.76%**	**3.09%**	**2.99%**	**2.99%**
Appointed WACC	**3.29%**	**3.66%**	**3.74%**	**4.20%**	**3.49%**	**4.12%**	**3.96%**	**4.24%**

Table 3: Detailed breakdown of expert WACC ranges

The recent significant increases in the cost of debt have highlighted the risk of disparity between the cost of equity and the cost of debt. If there is an insufficient premium within the cost of equity, it would not be rational to expect the necessary equity investment to be forthcoming. Within their reports both First Economics and Oxera suggest the use of additional cross-checks to ensure there is an appropriate differential between the cost of equity and debt. We recommend that Ofwat implements these additional cross-checks for the cost of equity when they reassess WACC at draft and final determination.

Criticality of WACC in terms of raising finance

Our financeability and financial resilience analysis, as detailed in **Sections 9.8** and **Section 9.9,** highlights that our plan is based on a capital commitment intended to finance the repayment of intercompany loans. We have included an intercompany loan repayment of £437 million and reduced dividend yield of 3% within our business plan, therefore it remains important that investors are adequately rewarded for equity risk so as to attract this investment. An inadequate cost of equity settlement could increase the risk that equity investors may lose confidence in the sector and withdraw support. Credit investors also rely on a well-functioning equity buffer and may not be willing to lend to the sector in such a scenario. Therefore, an adequate cost of equity is important for all providers of finance.

WACC for different price controls

We have considered whether a different wholesale WACC would be appropriate for any of the individual price controls, due to a different risk profile. We have not found a compelling reason to indicate that the risk profile for the different price controls diverges enough to have a material impact. We have, therefore, applied a consistent WACC across all wholesale price controls.

Retail margins

In line with regulatory guidance, we have used Ofwat's December 2022 preliminary estimate of 1.0% within our plan.

Corporation tax

We are committed to acting in a responsible manner in relation to our tax affairs and will continue to pay our fair share of tax. We are forecasting minimal corporation tax payments during the 2025-2030 period due to allowable deductions for capital allowances (due to the size of our capital programme) and interest costs. However, we expect to make c£500 million of other economic contributions in the form of business rates, employer national insurance contributions, environmental taxes and other regulatory fees.

We expect to have to pay no corporation tax as we will make use of available tax reliefs on the Company's capital expenditure and use tax losses brought forward. This is supported by a full tax deduction applicable to all the Company's interest costs. Such available reliefs having been explicitly encouraged by successive governments. Our approach thereby ensures that we maximise the available benefit for customers whilst also embodying responsible corporate behaviour in relation to tax.

We have made the following assumptions with respect to the calculation of tax:

- Interest costs have been calculated based on our actual gearing, as this is higher than the notional gearing of 55%, ensuring our customers benefit from our financial structure.
- Opening capital allowances pools have been calculated based on our anticipated actual pool values, which are higher than the equivalent notional pool values. Any capital allowances disclaimed during the current period can be available for future customers benefit.
- Corporation tax and capital allowance rates have been assumed to be either at current levels or reflective of announced revisions. For example, the corporation tax rate is assumed to be 25%.
- Where we expect to receive losses from other group companies, payment is made at the headline corporation tax rate.

Pensions

Yorkshire Water operates a defined contribution pension scheme for the majority of current employees, and all future employees with funding levels in line with Ofwat affordability. We also have a defined benefit scheme which remains in place for longer-serving employees and a robust and resilient funding position for that scheme.

9.6 Cost recovery

Our plan seeks to recover costs in line with Ofwat's methodology, and in a method consistent with prior regulatory periods (excepting our change to IRE recovery to align with Ofwat methodology for PR24). Ofwat's PR24 methodology has sought to create greater consistency within the industry, which has led us to transfer the recovery of our base maintenance costs (IRE) through RCV run-off rates, rather than through PAYG rates, as we did previously.

The table below shows our proposed PR24 cost recovery rates in comparison to the prior PR19 rates, under both methodologies. It highlights the impact caused by the change in IRE methodology.

Cost recovery rates	PR24 proposed rates		PR19 restated		PR19 original	
	PAYG	Run-off	PAYG	Run-off	PAYG	Run-off
Water resources	56.3%	4.5%	61.7%	4.1%	82.2%	2.5%
Water networks	49.9%	4.5%	64.3%	5.0%	75.5%	3.5%
Wastewater networks	31.3%	4.5%	34.4%	4.9%	45.2%	3.7%
Bioresources	45.0%	8.0%	58.2%	9.4%	58.2%	9.4%
Total wholesale	**40.4%**	**4.6%**	**48.7%**	**5.1%**	**59.3%**	**3.8%**

Table 4: Cost recovery rates

Overall wholesale PAYG rates are lower than at PR19 due to the increased proportion of capital spend within our overall proposed cost allowances. Our PAYG rates have been set based on the proportion of operating costs within our total proposed cost allowance, in accordance with Ofwat's PR24 methodology.

Our overall wholesale run-off rate for PR24 is lower than our equivalent rate for PR19, when the treatment of IRE is aligned. Our run-off rates have been set based on an analysis of current depreciation rates and prior run-off rates, which is in accordance with Ofwat's PR24 methodology.

Further detail behind the calculation of PAYG and run-off rates is provided in the **Cost recovery rates appendix**

Our proposed cost recovery rates are in line with the approach and boundaries proposed by Ofwat, whilst also providing consistency with prior periods, when IRE is considered on a consistent basis.

We do not propose any deviation from the 'natural' cost recovery rates detailed above.

Basis of recovery

We have decided to recover costs at our natural rates, which we explain below.

Natural recovery rates

When recovering costs, we take the natural rate as the most appropriate starting point. This ensures that operating costs are recovered as they are expensed, and capital costs are recovered in line with the economic use of those assets that we invest in.

- For PAYG rates, we have recovered operating costs as fast money, in line with Ofwat's PR24 methodology.
- For RCV run-off rates we have considered analysis of current depreciation rates, together with prior run-off rates. This is consistent with Ofwat's PR24 methodology.

We believe that these approaches provide a fair starting point for customers from an intergenerational point of view. We consider that deviation from these rates should only occur where there is a compelling reason to do so that is in the interest of customers. At all points in the decision making process, we have considered the impact on customer bills.

PAYG rates

The following table illustrates the level of fast money, or PAYG rate, we have used for recovering wholesale costs:

Wholesale - PAYG rates	FY26	FY27	FY28	FY29	FY30	Total
Operating costs (£m)	584.6	602.3	587.5	595.8	618.0	2988.1
IRE (£m)	201.2	132.8	122.1	134.7	157.1	747.9
Capex (£m)	583.9	815.5	870.8	806.0	578.9	3655.1
Totex (£m)	**1369.7**	**1550.6**	**1580.4**	**1536.5**	**1354.0**	**7391.1**
Natural fast money (£m)	**584.6**	**602.3**	**587.5**	**595.8**	**618.0**	**2988.1**
Natural PAYG rate	**42.7%**	**38.8%**	**37.2%**	**38.8%**	**45.6%**	**40.4%**
Actual PAYG rate	42.7%	38.8%	37.2%	38.8%	45.6%	40.4%
Variance vs natural rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5: PAYG rates

Further detail on the assumptions made and resultant rates by price control can be found in the **Cost recovery rates appendix**

Overall, for the 2025-2030 period, we have recovered fast money in line with how we expect to incur operating costs. We have not slowed down nor accelerated cost recovery into the 2030-2035 period, as we have not found a compelling reason to do so.

Run-off rates

We have derived the natural run-off rates from an analysis of current depreciation rates reported within our Annual Report and Financial Statement (ARFS) and APR over the last two years, together with a comparison against past run-off rates, to preserve inter-generational fairness. This approach is consistent with the one adopted by Ofwat in determining their run-off rate guidance.

Our assessment determines separate run-off rates for each of the four wholesale price controls. The results of this analysis are shown in the table below:

Run-off rates (%)	Proposed rate	FY23 APR	FY22 APR	Avg	Ofwat max	PR19 restate	PR19 orig
Water resources	4.5%	3.8%	3.3%	3.6%	4.5%	4.1%	2.5%
Water network plus	4.5%	4.6%	4.9%	4.8%	4.5%	5.0%	3.5%
Wastewater network plus	4.5%	4.4%	4.8%	4.6%	4.5%	4.9%	3.7%
Bioresources	8.0%	5.9%	6.5%	6.2%	8.0%	9.4%	9.4%
Wholesale total	**4.6%**	**4.6%**	**4.9%**	**4.7%**	**4.6%**	**5.1%**	**3.8%**

Table 6: Run-off rate analysis

On a total basis, the depreciation rate analysis suggests a rate of 4.7%. This is lower than our restated rate for PR19 of 5.1%, but slightly higher than Ofwat's maximum rate guidance, which is equivalent to an overall average rate of 4.6%.

Given the closeness to Ofwat's maximum rate guidance, we have chosen to use the regulator's maximum rates for each price control. Whilst this results in a higher rate for water resources and bioresources than implied by the asset life analysis (and lower rates for the other price controls), the total amount of run-off will still be lower than the rate suggested by the asset life analysis.

The data included within data table RR28 results in an increasing depreciation rate over the 2025-2030 period versus the FY23 and FY22 historical data above. This suggests a higher run-off rate may be applicable for new assets. However, as our proposed run-off rate is already at the maximum level proposed by Ofwat, we have chosen not to include a higher rate for new assets and have used the same rate for all assets.

We have not advanced or delayed the natural run-off rate.

Further detail on our assessment of run-off rates can be found in the **Cost recovery rates appendix**

Consideration of the longer-term impact of our decisions

The primary concern has been the impact of our decision on the 2025-2030 period. We chose to start with natural rates of recovery as these are the fairest method for mitigating intergenerational issues. We would consider moving away from this position should there be obvious benefits to customers regarding:

- Maintaining financeability and financial resilience.
- Customer affordability over proposed bill movements.

When considering the 2025-2030 period and beyond, we do not find compelling evidence that either of the above factors should be used to adjust the method or rates we are proposing for PR24. Increasing regulatory requirements to improve pollution, storm overflows and flood risk will require further increases in investment from 2035 onwards. This, along with the fact that customers will be benefitting from the increased investment for PR24 (under proposed run-off rates) is important to consider when assessing intergenerational issues and deferring costs to future customers.

9.7 Allowed revenue and impact on customer bills

Our business plan proposes a £7.8 billion net investment programme to drive stretching improvements in service to our customers, and significant improvements in environmental standards, such as storm overflow improvements, flood resilience and asset health. As a result, the average bill for our customers in 2022/23 pricing for the 2025-2030 period (AMP8) compared to the 2020-2025 period is expected to rise by 25%.

Chapter 6 sets out the results of research on the acceptability of our plan from a customer perspective. This shows that 78% of customers found our plan to be acceptable.

For further details see Chapter 6

Chapter 7 sets out our package of stretching service improvements in more detail. This section sets out the price control "building blocks" components of our plan, and how this has resulted in our proposed bill increase over the 2025-2030 pricing period.

For further details see Chapter 7

The building blocks of our revenue requirement

Our revenue calculations reflect the costs of delivering the plan (as set out in chapter 8 section 2) along with assumed WACC, PAYG ratios, RCV run-off rates and past performance (as set out in this chapter).

For further details see Chapter 8 section 2

We have calculated the revenue requirement for each of the price controls using Ofwat's financial model. For more information on the calculation of our revenue requirement please see our accompanying data tables.

We have also provided our financial model alongside our business plan submission in **PR24 Data tables, commentary and models appendix**

The table below summarises our total proposed revenue requirement across the five price controls:

Revenue requirement £m (2022/23 CPIH)	Water resources	Water networks	Waste network	Bio-resources	Retail	Total
PAYG (Fast money / operating costs)	239.3	1,340.4	1,176.3	232.2	-	**2,988.1**
RCV run-off	158.6	708.8	1,276.0	172.6	-	**2,316.0**
Return on RCV	122.0	545.1	981.2	73.3	-	**1,721.6**
Taxation	10.7	15.0	2.2	17.3	-	**45.2**
AMP7 performance	21.5	68.9	60.7	22.5	3.9	**177.5**
Capital and other income	(12.1)	15.2	30.2	(1.7)	-	**31.6**
Retail costs	-	-	-	-	448.7	**448.7**
Retail margin	-	-	-	-	59.9	**59.0**
Revenue re-profiling	-	-	-	-	-	**-**
Total revenue requirement	**540.0**	**2,693.5**	**3,526.6**	**516.1**	**512.5**	**7,788.6**

Table 7: Revenue requirement per price control

Annual revenue movements over the period will vary by price control, reflecting their different expenditure profiles and financing requirements. The table below shows the breakdown of Company revenue between each price control:

Annual revenue by price control £m (2022/23 CPIH)	FY26	FY27	FY28	FY29	FY30	Total
Water resources	106.6	109.7	108.7	107.6	107.3	**540.0**
Water network plus	503.1	524.4	547.7	554.3	563.9	**2,693.5**
Wastewater network	636.1	675.6	696.4	737.9	780.2	**3,526.6**
Bioresources	94.8	102.4	104.3	106.2	108.5	**516.1**
Wholesale total	**1,341.0**	**1,412.1**	**1,457.0**	**1,506.0**	**1560.0**	**7,276.1**
Residential retail	**102.1**	**102.0**	**102.6**	**102.0**	**103.9**	**512.5**
Total revenue requirement	**1,443.1**	**1,514.1**	**1,559.6**	**1,608.0**	**1,663.8**	**7,788.6**

Table 8: Annual revenue requirement per price control

Impact on customer bills

Based on the revenue requirement detailed above, we are proposing that residential customers' bills (all in 2022/23 prices) will average £553 across the 2025-30 period, which equates to a £111 increase over the equivalent average for the 2020-25 period.

We have adopted a natural bill profile which results in bills increasing from £519 in 2025/26 to £585 in 2029/30.

In line with the industry-wide standardised approach, we have carried out extensive testing on the affordability and acceptability of our business plan with our customers. Whilst 78% of customers surveyed found our plan acceptable, only 22% found our plan affordable. We also conducted our own Yorkshire Water study, providing customers with a wider view of our plan. This found 79% of customers found our plan to be acceptable with 60% of household customers and 56% of non-household customers finding the bill to be affordable. Therefore, when shown the extent of services and improvements being made across the 2025-2030 period, our customers find our plan both affordable and acceptable.

The proposed bill increase of £111 is predominantly due to the increased costs required to meet the service improvements and statutory environmental obligations included within our plan.

Further analysis of the constituent elements of the proposed bill movement versus equivalent figures in the 2020-25 period is provided below:

Breakdown of bill movement	PR24 £ (22/23)	PR19 £ (22/23)	Var £ (22/23)
Operating costs (PAYG)	253	244	8
Capital run off	164	111	53
Financing costs	122	79	43
PR19 reconciliations	12	7	5
Other	3	1	2
Total average bill	**553**	**442**	**111**

Table 9: Comparison of PR24 and PR19 average bill

Operating costs have increased within our plan (as detailed in **Chapter 8 section 2**; however, the bill impact shown above is mitigated by the change in cost recover policy for IRE detailed above, which results in a greater bill increase attributed to capital run-off.

The capital run-off element of the bill relates to the recovery of our capital expenditure. As detailed in **Chapter 8 section 2,** our capital costs are increasing significantly to meet our statutory requirements.

The increase within the financing cost element of the bill is broadly split evenly across the following three elements:

- Financing of additional capital expenditure
- Full transition to CPIH inflation, which increases real bills in the short term but reduces nominal bills in the longer term

- Increased WACC, primarily as a result of recent increases in the cost of debt

Reflecting the above, the table below summarises the key elements contributing to the bill increase across the 2025-30 period:

Breakdown of bill movement	Bill increase £ (22/23)	% total
Cost increase	76	68%
CPIH transition	13	12%
WACC increase	14	13%
PR19 reconciliations	5	5%
Other	2	2%
	111	**100%**

Table 10: Breakdown of bill movement

The analysis above shows that the majority of the bill increase (68%) can be attributed to the proposed increase in costs included within our plan. Further details on the reasons for this increase in costs can be found in Chapter 8 section 2.

The balance of the increase is primarily attributed to Ofwat's continued transition to CPIH inflation (12%) and the impact of the recent significant increase in the cost of debt from PR19 to PR24 (13%).

Household bill profile

The graph below shows the proposed annual profile of the household bill across the 2025-2030 period in both real 2022/23 prices and expected nominal prices including CPIH inflation.

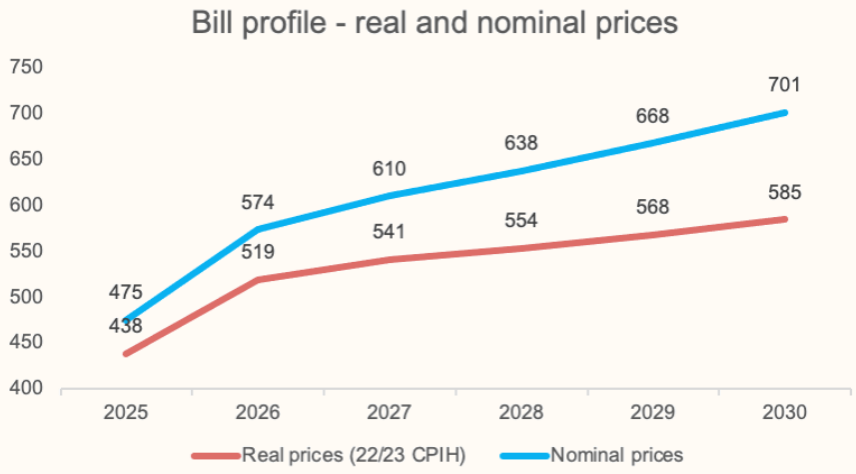


Figure 2: Annual bill profile

We considered a range of profiles for customer bills for PR24 (see Yorkshire Water Bill Profile Research in Chapter 6 Customer research appendix) and consulted customers on the profile that they would prefer. Overall customers were supportive of a natural bill profile that matches the bill to the money that Yorkshire Water will spend on improvements across the next five years. This provides a smaller step up in bills in 2026, than under a flat bill profile, with further annual increases across the 5-year period to 2030 as shown within the chart above.

As this was the preference of our customers, and it lessens the initial impact of bill increases in the early years of the 2025-2030 period, we have adopted a natural bill profile within our plan.

See Yorkshire Water Bill Profile Research in the **Customer research appendix**

Figure 2 above shows that, in addition to the real increase in bills of £111, when the forecast Consumer Prices Index (including owner occupiers' housing costs (CPIH) inflation of c2.0%) is applied, a further average increase of £85 due to inflation will be incurred. This results in an overall increase in average nominal bills of £196 across the period.

The overall increase in bills across the period from £519 to £585 (£66) is predominantly due to increases within the wastewater network (£46) and water network (£16) elements of the bill as the majority of the proposed cost increases are within these price controls.

Household bill per price control

The table below shows the annual profile of the household bill split between the price controls:

Annual bill by price control £ (2022/23 CPIH)	FY26	FY27	FY28	FY29	FY30	Average
Water resources	37	38	38	37	37	**37**
Water network plus	174	180	187	188	190	**184**
Wastewater network	228	241	247	261	274	**250**
Bioresources	34	37	37	38	39	**37**
Wholesale total	**473**	**496**	**509**	**523**	**539**	**508**
Residential retail	**45**	**45**	**45**	**45**	**45**	**45**
Total revenue requirement	**519**	**541**	**554**	**568**	**585**	**553**

Table 11: Annual bill per price control

9.8 Our notional financeability assessment

This section demonstrates that our business plan submission is financeable on a notional company basis and sets out the methodology and evidence that supports our assessment.

In order to raise environmental standards and deliver the service improvements and other commitments in our plan, we will invest a total of £7.8 billion. To fund this, we will need to raise an additional £437 million from investors through repayment of intercompany loans, as well as refinance debt of £1.5 billion and raise further new debt of £1.5 billion. To do this efficiently for our customers, we will need continued access to low-cost finance, which we will secure by maintaining our current investment grade ratings.

Our plan is financeable on a notional company basis once Ofwat's early view of WACC is updated for latest market data

As detailed within **Section 9.5**, we note that the regulator states it will revisit the WACC assumption which was based on September 2022 market data. Given the materiality of the WACC assumption to the financeability of our plan, we have used independent evidence to update Ofwat's WACC for latest market data to July 2023 and use that updated number of 3.66% in our plan.

On the basis that WACC will ultimately be updated by Ofwat to reflect market rates, this suggests our business plan can be considered financeable on a notional company basis. Our Board has provided a clear statement of assurance on this basis, with appropriate supporting evidence in its assurance statement provided in **Chapter 10** stating:

The Board can provide assurance that the business plan is financeable on the basis of the notional capital structure. This assurance takes into account all of the components of the business plan, is consistent with Ofwat's early view on the allowed return on capital for PR24 (updated for market data to July 2023) and is consistent with maintaining target credit ratings at least two notches above minimum investment grade.

The Board's financeability assessment has been supported by the evidence in the **Notional financeability analysis appendix**

Our approach to assessing notional financeability

We have assessed our financeability on a notional basis. We have undertaken a thorough assessment to ensure financeability at an overall Company level, while also ensuring each price control is financeable on a standalone basis. Please see the Notional financeability analysis appendix for further details.

Our financeability assessment targets the maintenance of appropriate credit ratings and investor returns to enable us to finance our activities in order to achieve a stretching, fair and balanced plan.

We have targeted credit ratings of Baa1/BBB+ for the notional company, as this is equivalent to the A/BBB rating assumption used within the notional cost of debt assumption in Ofwat's PR24 methodology and provides two notches of headroom versus minimum investment-grade ratings.

To ensure that we are financeable and can maintain the ratings detailed above throughout the 2025-2030 period, we have considered the full range of financial ratios prescribed within the PR24 plan methodology.

We have primarily assessed our financeability by ensuring we meet the target levels for each of the key ratios illustrated within the table below, as these are the key metrics utilised by the ratings agencies. Notional targets have been set, based on guidance from Moody's and S&P, for a standard Baa1/BBB+ rating. For downside sensitivities we have also considered key metrics against the threshold for a minimum investment grade rating of Baa3/BBB-.

Notional financeability Key metric target thresholds	Base target	Sensitivity target
Adjusted interest cover (alternative)	1.50	1.10
FFO to debt (alternative)	9.0%	7.0%

Table 12: Notional financeability – key metric targets

Whilst we have utilised Ofwat's notional gearing of 55% as the opening gearing at March 2025, we have not set an explicit target for gearing given the differential between notional gearing of 55% and agency targets for a Baa1/BBB+ rating of 72%.

Notional financeability analysis

The full detail of our financeability analysis can be found in the **Notional financeability analysis appendix**

We analysed the key metrics within our base plan versus the target measures highlighted above. We also

conducted sensitivity analysis to test the level of headroom versus minimum investment grade ratings.

As noted above we expect Ofwat to revisit its WACC estimate to reflect latest market data, which the expert opinion we have received suggests could result in an increase in WACC to 3.66%. We have included that increase within our plan.

We have run our financeability analysis using this updated WACC. Our notional plan also includes increased shareholder support, with a reduced dividend yield of 3% in order to support financeability. We summarise the results of our financeability assessment below:

Notional financeability analysis Key metric analysis	Target	FY26	FY27	FY28	FY29	FY30	Avg
Adjusted interest cover (alternative)	1.50	1.66	1.60	1.55	1.50	1.48	1.56
FFO to debt (alternative)	9.00%	9.82%	9.41%	8.93%	8.66%	8.56%	9.07%
Gearing (regulated)		56.5%	57.7%	59.4%	61.0%	61.9%	59.3%

Table 13: Notional financeability analysis

The analysis above shows that the updated WACC and reduced dividend yield result in core metrics remaining within target on average across the period, albeit reducing over the period, as additional debt finance is raised, such that both metrics are slightly below target at the end of the period.

Notional gearing, which starts the period at 55%, does increase to 62% at the end of the period, with an average of 59%. Whilst above Ofwat's notional gearing level of 55%, we do not believe this presents a financeability constraint given this level of gearing would be consistent with an A3/A- rating, one notch above the notional company's target rating.

Sensitivity analysis (detailed in Notional financeability analysis appendix) shows that on an average basis key metrics remain above target across the five-year period. Some sensitivities result in key metrics falling below target in individual years; however, it is considered that the impact can be mitigated, particularly as ratings agencies typically review metrics over a longer period. Therefore, we have concluded that once potential mitigations are reflected there is adequate headroom within the plan to absorb severe but reasonable sensitivities.

Reflecting the above analysis, we consider our plan to be financeable on a notional basis.

Financeability by price control

We have assessed notional financeability primarily at the appointee level, as providers of finance are chiefly concerned with the sufficiency and sustainability of financial metrics at that level. Performing a full financeability assessment across each of the individual price controls would be very challenging, as allocating the existing debt and associated interest charge across the individual price controls is a key issue.

We can, however, take some assurance that the individual price controls can stand alone, as each control has revenue designed to cover:

- Overall totex for wholesale and cost to serve for retail.
- Ongoing day-to-day expenditure through the pay-as-you-go (PAYG) rate.
- Longer-term expenditure through RCV run-off.
- A consistent cost of capital applied across each control with separate margins for retail.

This building block method, consistent with the PR24 methodology and Ofwat's financial model, and run in parallel with our own internal model, gives us assurance that each price control has the correct revenue requirement to cover its day-to-day expenditure, longer-term expenditure needs, and the return needed to cover past and future borrowing requirements.

We have included a suite of financial ratios for each of the wholesale price controls in the Notional financeability analysis appendix, which adopts the assumption within Ofwat's financial model that the total appointed debt is allocated to each price control in proportion to the RCV. This analysis shows that each price control is financeable.

We have included a suite of financial ratios for each of the wholesale price controls in the **Notional financeability analysis appendix**

9.9 Financial resilience

The Board has assessed the financial resilience of the Company over the 2025-2030 period, and beyond. It has taken into account the current position and capital structure, our investment and performance plans, the potential impact of the principal risks facing the business in severe but plausible downside scenarios, and the effectiveness of any mitigating actions.

Summary

In June 2023, we received a £400 million capital injection, by way of intercompany loan repayment. We have existing cash and committed facilities, plus further planned intercompany loan repayments of £100 million and £437 million in March 2025 and March 2027 respectively. Consequently, the Company currently has a strong liquidity and capital solvency position. This provides a strong basis for our financial resilience over the 2025-2030 period, and to absorb the "severe but plausible" scenarios identified by the Board and those prescribed by Ofwat.

Along with the insurance policies the Company has in place, the economic and regulatory environment in which Yorkshire Water operates provides considerable protections. In addition, the Company has a number of mitigating actions available to it, providing us with significant scope to improve our liquidity and capital position and absorb any threats from severe downside scenarios.

The Board has provided an assurance statement within **Chapter 10** that Yorkshire Water is financially resilient over the 2025-2030 period, and beyond. To make this statement, the Board has assessed viability using the Company's strategic planning process, which includes the risks associated with the impact of climate change, economic uncertainty and recent global events.

Further detail on our financial resilience assessment can be found in the **Financial resilience appendix**

Our financial resilience assessment has been conducted on a consistent basis with our annual long-term viability (LTV) assessment. Further details on our assessment process can also be found within the LTV statement in our last annual report and financial statements.

Assessment period

The Board has considered the appropriate length of time over which to provide the financial resilience assurance statement. In making their assessment, they have taken account of the balance between timescale and robustness of analysis, together with the five-year price control periods that the Company operates within.

As part of our PR24 submission, we have an established forecasting process that provides a detailed medium-term plan through to the end of the AMP8 period in 2030. Beyond 2030, there is much greater uncertainty around the variability of potential outcomes, which reduces the robustness of any forecasting past this point.

Taking all of the above into account, the Board considers that a period through to the end of the following pricing period in 2035 (PR29) provides an appropriate balance between assessing as long a period as possible, whilst also providing an appropriate level of robustness and assurance to the process.

We provide below a summary of the key assumptions in our plan for the 2030-2035 period, which support our financial resilience assessment:

- WACC of 4.14% as detailed in the WACC Assessment appendix
- Totex per LTDS statutory pathway
- PAYG and run-off rates on consistent 'natural' basis with 2025-30 period
- Interest rates consistent with AMP8
- Dividend yield of 4.0%

Our approach to assessing financial resilience

Our approach to assessing financial resilience is consistent with the approach we have adopted to assessing long-term viability (LTV) within our audited Annual Report and Financial Statements.

Our financial resilience assessment primarily targets the maintenance of key financial metrics against the appropriate default and trigger levels within the financial covenants attached to our existing debt portfolio. We have also considered the potential impact on our target credit ratings, and the potential for any downside sensitivities to result in a downgrade below minimum investment grade levels of BBB-/Baa3.

Our current Class A ratings have an average rating of Baa1/BBB+ across the three ratings agencies as detailed below. Given the current variance in our rating between them, we have targeted maintaining an average rating of Baa1/BBB+ across all three agencies, rather than seeking to maintain a certain rating with each agency.

- Fitch: A- (stable)
- S&P: A- (negative outlook)
- Moody's Baa2 (stable)

We have chiefly assessed our financial resilience according to the target levels for each of the key ratios illustrated within the table below, as these are the key

metrics used by the ratings agencies or included within the covenants of our debt portfolio. For downside sensitivities, we have also considered key metrics against the threshold for a minimum investment grade rating of Baa3/BBB-. Actual targets have been set with reference to our current ratings thresholds, and the trigger/default levels within the specific covenanted ratios applicable to our existing Class A debt portfolio.

Financial resilience Key metric target thresholds	Base target	Sensitivity target
Class A Adjusted interest cover (YW covenanted)	1.30	1.00
Gearing (YW covenanted)	85.0%	95.0%
Adjusted interest cover (alternative)	1.30	1.10
Class A FFO to debt (alternative)	7.0%	4.0%

Table 14: Financial resilience – key metric targets

Based on our assessment of the principal risks faced by our business (see pages 73-77 of our ARFS) we have created two Yorkshire Water-specific risk scenarios that form the core element of our financial resilience assessment. In addition to these two specific principal risk-based scenarios, we have also applied an additional top-down ODI penalty scenario together with the eight top-down stress tests requested by Ofwat.

Our stress testing process has enabled us to create 11 sensitivities, based on a robust assessment of the principal risks faced by the business. These sensitivities have then been applied to our PR24 Business Plan to enable us to determine whether the business has sufficient headroom to absorb these potential risks throughout the 2025-2030 period. We have also applied these sensitivities to our high-level plan over the five-year period through 2030-35 (PR29). In making this assessment, we have taken account of Ofwat's statutory duty to secure that companies are able to finance the proper carrying out of their functions.

In addition to the above forward stress testing based on specific scenarios, we have also conducted reverse stress testing by assessing how much headroom is inherent within our key financial ratios. The benefit of reverse stress testing is that it provides an indication of the amount of resilience in the plan, irrespective of the risks identified. It shows whether risks are identified through detailed bottom-up analysis, a historical precedent, or expert opinion and judgement. The ability to cope with shocks is explicit and quantified.

As part of this financial resilience assessment, we have also taken account of the impact of other group companies, in particular the following inter-group transactions which are often met through the dividend payments made by the Company:

- Head office costs paid through Kelda Group Limited.
- Third party interest costs paid through the Kelda Finance group of companies.

Base plan financial resilience analysis

The full detail of our financial resilience analysis can be found in the **Financial resilience appendix**

A summary of our analysis is presented below:

Financial resilience analysis Key metric analysis	Base plan		
	Target	AMP8	AMP9
Class A ICR (covenanted)	1.30	1.89	1.59
Senior ICR (covenanted)	1.10	1.78	1.53
Adjusted ICR alternative (agency)	1.30	1.96	1.53
Class A FFO to debt (agency)	7.0%	8.6%	8.0%
Gearing (YW covenanted)	85.0%	68.2%	70.3%
Gearing (regulated)	n/a	66.1%	68.6%

Table 15: Financial resilience: summary analysis

The analysis above shows that all core metrics remain within target on average across both the 2025-30 and 2030-35 periods. Further detail on annual profiling across the periods is provided below:

AMP8 financial resilience Key metric analysis	Target	FY26	FY27	FY28	FY29	FY30	Avg
Class A ICR (covenanted)	1.30	1.70	2.20	2.09	1.78	1.71	1.89
Senior ICR (covenanted)	1.10	1.56	2.03	1.96	1.69	1.64	1.78
Adjusted ICR alternative (agency)	1.30	1.98	2.07	2.13	1.87	1.77	1.96
Class A FFO to debt (agency)	7.00%	8.11%	8.65%	9.27%	8.48%	8.44%	8.59%
Gearing (YW covenanted)	85.0%	70.5%	65.9%	67.2%	68.4%	69.2%	68.2%
Gearing (regulated)		68.1%	63.8%	65.0%	66.4%	67.1%	66.1%

Table 16: Financial resilience: AMP8 annual analysis

In the period 2025-2030, financeability metrics remain above target across the period, with a good level of headroom. Based on this assessment, we expect to maintain credit ratings at our target levels. Financial resilience in this period is supported by a further £437 million repayment of intercompany loans from shareholders, and a reduced dividend yield of 3%.

There is more headroom within our actual metrics than there is in the notional metrics. This is due to the inclusion of revenue relating to 2020-2025 (AMP7) period reconciliation mechanisms, which are excluded from notional calculations. Whilst we have higher gearing than the notional company, this is largely offset by our higher proportion of index-linked debt, which reduces the cash cost of the interest over the 2025-2030 period.

AMP9 financial resilience Key metric analysis	Target	FY26	FY27	FY28	FY29	FY30	Avg
Class A ICR (covenanted)	1.30	1.67	1.61	1.61	1.55	1.52	1.59
Senior ICR (covenanted)	1.10	1.61	1.56	1.55	1.48	1.45	1.53
Adjusted ICR alternative (agency)	1.30	1.61	1.56	1.55	1.48	1.45	1.53
Class A FFO to debt (agency)	7.00%	8.23%	7.96%	8.19%	7.72%	8.04%	8.03%
Gearing (YW covenanted)	85.0%	69.7%	70.1%	70.5%	70.6%	70.6%	70.3%

Table 17: Financial resilience: AMP9 annual analysis

In the period 2030-2035, financial resilience metrics also remain above target. For this purpose, we have assumed investment in line with the statutory pathway in our LTDS.

Financial resilience stress testing

We have applied three of our own sensitivities together with the sensitivities prescribed by Ofwat. The table below summarises the impact of the scenarios on the average metrics across each AMP.

Further details on the sensitivities applied and the impact of them can be found in the **Financial resilience appendix**

AMP8 Average	Class A ICR (Cov)	Gearing (Cov)	Adjusted ICR (Alt)	FFO/ Net debt (Alt)
Sensitivity trigger	**1.00**	**95.0%**	**1.10**	**4.0%**
Base	1.89	68.2%	1.96	8.6%
LTV extreme (all years)	1.37	73.3%	1.47	6.7%
LTV high (all years)	1.47	72.2%	1.56	7.0%
1% ODI (all years)	1.71	68.9%	1.79	8.0%
3% ODI (1 year)	1.73	68.9%	1.80	8.0%
10% totex (all years)	1.40	73.0%	1.49	6.8%
Low inflation (all years)	1.83	70.0%	1.92	9.7%
Deflation (2 years)	1.82	70.0%	1.92	9.3%
High inflation (3 years)	1.90	66.8%	1.96	6.3%
Interest +2% (all years)	1.85	68.7%	1.89	8.4%
Fin penalty (6% 1 year)	1.74	69.0%	1.82	8.1%

AMP9 Average	Class A ICR (Cov)	Gearing (Cov)	Adjusted ICR (Alt)	FFO / Net debt (Alt)
Sensitivity trigger	**1.00**	**95.0%**	**1.10**	**4.0%**
Base	1.59	70.3%	1.53	8.0%
LTV extreme (all years)	1.29	74.7%	1.24	6.5%
LTV high (all years)	1.44	70.3%	1.38	7.4%
1% ODI (all years)	1.46	71.0%	1.40	7.4%
3% ODI (1 year)	1.46	71.0%	1.40	7.4%
10% totex (all years)	1.33	74.2%	1.28	6.7%
Low inflation (all years)	1.48	72.9%	1.46	8.9%
Deflation (2 years)	1.50	72.8%	1.47	8.4%
High inflation (3 years)	1.73	66.2%	1.67	7.0%
Interest +2% (all years)	1.52	70.8%	1.45	7.7%
Fin penalty (6% 1 year)	1.51	71.0%	1.45	7.6%

Above target

Table 18: AMP8 sensitivity analysis

Key metrics across AMP8 all remain above target on an average AMP basis under all sensitivities. The FFO/net debt metric falls below target in one year under the high inflation sensitivity; however, this is not considered to be a significant financial resilience issue as where a metric threshold for a particular rating is not met, a downgrade might not necessarily be applied if the agency considers the situation to be temporary and likely to reverse in the future. This is evidenced by a lack of ratings downgrades over the last year where inflation has spiked in a similar manner to the sensitivity.

Table 19: AMP9 sensitivity analysis

Key metrics across AMP9 all remain above target on an average AMP basis under all sensitivities. In-year analysis shows that metrics fall below target in one year under the high inflation and 3% ODI sensitivities. The impact of the 3% ODI sensitivity can be mitigated as Ofwat's PR19 reconciliation rulebook notes that where ODI adjustments exceed +/- 1% of RoRE, companies can ask to defer the excess to a subsequent year to mitigate extreme cash flow. The impact of this would be to reduce the impact of the 3% ODI scenario down to the 1% ODI scenario, where metrics remain above target in all years.

The stress testing above indicates that none of the scenarios would result in an impact to the Company's expected liquidity, solvency or debt covenants that could not be addressed by mitigating actions and are therefore not considered to be a threat to the Company's financial resilience over the ten-year period through to 2035.

Mitigating actions

The mitigating actions available are described in more detail in the **Financial resilience appendix**

A number of these were successfully implemented during the last financial year to lessen the impacts of the extreme events occurring in that year.

When selecting an approach, we attempt to balance the interests of our stakeholders, including our commitments to our customers, whilst prioritising the most effective mitigating actions.

Securitised financing arrangement

Our securitised structure provides a number of creditor protections which ultimately benefit our customers, particularly during periods of financial stress. These protections provide the opportunity to address issues proactively before they become critical and prevent Yorkshire Water being able to secure finance.

Further details on our securitised financing arrangements are provided in the **Financial resilience appendix**

Liquidity facilities and raising new debt

Yorkshire Water has credit facilities totalling £982 million with a minimum targeted liquidity of at least 15 months. In our stress testing process, we assumed new debt would be raised to fund the additional costs incurred and to refinance maturing debt. The Board has confidence that Yorkshire Water will be able to continue to raise the necessary new debt under any of the scenarios considered above, given our successful track record since our securitised financing structure was implemented in 2009. Management of key credit ratios against covenants is regularly reviewed to ensure that Yorkshire Water meets its obligations, and to provide the ongoing assurance that the debt obligations can be serviced, and future requirements funded. Using this financing structure, Yorkshire Water has been able to maintain access to several different sources, raising debt in public and private markets as well as bilaterally.

Treasury policy is for the business to maintain 15 months' liquidity at all times. In the event that new debt could not be raised due to external market factors, there would be adequate capacity within the current liquidity facilities to fund the additional costs included within the financial resilience scenarios in any given year.

Financial resilience conclusion

The stress testing above indicates that none of the scenarios would result in an impact to the Company's expected liquidity, solvency, or debt covenants that could not be addressed by mitigating actions and are therefore not considered to be a threat to the Company's financial resilience over the ten-year period from 2025-35.

Yorkshire Water has confidence that it will be able to continue to raise the necessary new debt under any of the scenarios considered above, given its successful track record since its securitised financing structure was implemented in 2009.

In assessing the financial resilience of Yorkshire Water, the Board has taken account of:

- The detailed financial projections developed as part of the PR24 process, which include the best available information about the 2025-2030 period (AMP8) and the 2030-2035 period (AMP9).
- The downside sensitivities and stress testing linked to the risk management process described above.
- Yorkshire Water's robust solvency position, including its likely ability to raise new finance in most market conditions.
- The strength of mitigations available and the stability which exists under the regulatory model.
- Ofwat's statutory duty to set price controls in a manner which will secure that companies are able to finance their proper functions. For the PR29 period (2030-2035), appropriate capital funding will be available to meet investment needs.

Taking this information into account, the Board has concluded that Yorkshire Water is financially resilient over the period 2025-2030, and beyond.

9.10 Dividend policy, executive pay and benefit sharing

In this section we cover dividend policy, executive pay and benefit sharing, including the main ways in which we will manage the potential upside return to ensure that, should we significantly outperform our service commitments, there is an appropriate sharing of benefits between customer and investors. We also cover the level of bill support we have included for customers as part of our baseline plan.

Over the 2020-2025 period, we have demonstrated responsible sharing with our customers. Yorkshire Water was one of only three water and sewerage companies in England and Wales to build into our plan a voluntary financial contribution to support customers – £10 million over the five years. In 2022 we committed a further £15 million, providing additional support to our customers. We are investing £100 million in storm overflow reductions, paying sustainable dividends below Ofwat's recommended base yield, and maintaining a responsible long-term approach to financial stewardship. In addition, in June 2023 our investors provided £400 million of additional equity, by way of repayment of intercompany loans.

We intend to continue our benefit sharing approach into the 2025-2030 period, with a further £100 million and £437 million repayment of intercompany loans from shareholders planned in 2025 and 2027 respectively.

Our track record of responsible financing and customer sharing

We seek to demonstrate fairness to customers, while taking a responsible long-term approach to financial stewardship.

- **Benefit sharing**: Across the 2020-2025 pricing period (AMP7), Yorkshire Water has voluntarily committed £100 million of reinvestment in storm overflows for the benefit of services to customers and the environment. In doing so, the Company chose to reinvest for the long term, rather than paying additional dividends. This built confidence that investors were taking a long-term view of investing in the region. In addition, Yorkshire Water has voluntarily contributed £25 million of support directly to customers to support bill reductions for those that need it most.
- **Dividends**: Across the 2020-2025 period, Yorkshire Water has continued to adopt and refine its PR19 dividend policy to ensure it meets all the latest guidance from Ofwat. Payments above Ofwat's recommended AMP7 base yield of 4% would only be made where there is demonstrable outperformance. During the 2020-2023 period, our dividend yield averaged 2.6%, as dividends have been reduced to reflect underperformance, compared to our PCs.
- **Executive pay**: During the 2020-2025 period, we have maintained an executive pay approach which links rewards to customer performance and financial resilience.
- **Gearing**: During the 2015-2020 period and the 2020-2025 period, we have steadily reduced gearing such that regulatory gearing at March 2023 was 70%. The introduction of a further £400 million of equity from our shareholders in June 2023, through repayment of intercompany loan, will be used to help fund the significant levels of investment expected across 2023/24 and 2024/25. Planned introductions of £100 million and £437 million of further capital (by repaying intercompany loans in 2025 and 2027 respectively) will help finance our planned £7.8 billion of investment. This means our projection is to end 2030 with covenanted gearing of approximately 69%. While our gearing is higher than Ofwat's notional gearing of 55%, it is broadly consistent with the current sector average of 68%, and within target levels of our financing structure and target credit ratings. Our average projected gearing level of c68% provides significant headroom against our covenanted gearing level of 85%. Our customers also fully benefit from the tax advantages of our higher gearing as noted in **Section 9.5** above.

Benefit sharing

In our plan for the 2020-2025 period, we included a voluntary contribution to customers to support bill affordability as a voluntary sharing mechanism. We have retained this in our PR24 plan and have increased the amount of voluntary contribution to customer bills in line with the increase in average bill. This will see us contribute £2.5 million per year. In addition, we propose a further voluntary sharing mechanism such that if the business performs well, then we will increase the level of voluntary contribution we make to support customers.

Dividend policy

Our dividend policy, as detailed in our latest ARFS is to:

- Determine a base dividend from a set yield, applied to regulatory equity that has been derived by reference to the company's actual capital structure.
- Adjust this base dividend to reflect and recognise in-the-round Company performance, particularly performance against relevant targets set in the determination of price limits; the continuing need for

reinvestment of profits in the business and the funding of employee interests.

- Ensure there are sufficient profits available for distribution in the foreseeable future, and the Company remains financially resilient, following the payment of a dividend, when considering the undertakings and financial covenants that are part of Yorkshire Water's financing arrangements.

Our dividend policy is considered to meet all the guidelines recently set out by Ofwat. It explicitly states that distributions will only be made after an appropriate financial resilience analysis has been undertaken, that dividends will be adjusted to reflect and recognise Company performance and benefit sharing from service and efficiency performance, and states the continuing need for the reinvestment of profits in the business and the funding of employee interests. The policy ensures that delivery for customers and colleagues is not just considered, but factored into any amounts that are to be paid out as dividends.

When considering the potential dividend to be paid in a financial year, the Board will assess both Company performance in that year and that expected for the whole of the pricing period, to determine the total dividends that could be paid for the whole period. As such, dividend payments are considered within the longer-term context of the business, and not just on the basis of one year's performance.

When assessing the quantum of any 'in the round' adjustment to the base dividend, the Board will consider a number of factors, including, but not limited to: delivery of performance commitments that incorporate incentive-based rewards and penalties, circumstances where performance has exceeded or not met targets, customer service, environmental performance, and the ability to maintain financial resilience.

Our plan includes a base dividend yield of 3% for the 2025-2030 period. This is in line with the recommendation to reduce yield, provided within Ofwat's PR24 methodology in order to support financial resilience.

Executive variable pay

Our plan is both ambitious and stretching. It will challenge our senior executives and our Company as a whole in its delivery.

To deliver for our customers and for the environment in Yorkshire, we need to have the right people in role, appropriately remunerated, to drive the Company forward and improve our performance overall. The roles of Chief Executive and Chief Financial Officer are complex, and we require people with multiple skills, integrity and resilience. Key to recruiting new talent and retaining existing talent is a competitive remuneration package.

We are acutely aware that there is great scrutiny over the remuneration of directors and senior executives at the present time, both within the water sector and beyond. Our colleagues and communities have been impacted, like those elsewhere in the country, by the increased cost of living. The sector has also seen an erosion of trust and confidence, and we are keen to restore this. Executive remuneration has an important role to play in all of this, and we acknowledge the increased focus this is rightly receiving from our colleagues, communities, customers and Ofwat.

We are very aware of the need to use our resources to deliver the best results for Yorkshire. We consider various factors in our remuneration decisions, including the pay and employment conditions of others across the rest of the business and in the communities we serve.

We are committed to ensuring that our executive remuneration is fair and transparent. We want our remuneration policy to be easy for all to understand and one which only rewards good performance.

We publish details of the remuneration paid to our Board members and our remuneration policy for the coming year in our Annual Report and Financial Statements and Annual Performance Report each year.

https://www.yorkshirewater.com/about-us/reports/

The current scheme

We weight our executive remuneration towards variable pay so that the pay each year reflects actual performance; both financial and non-financial.

Currently, our variable pay consists of an Executive Incentive Plan. This is a rolling five-year plan, with awards made annually. There are two elements to the scheme; a short-term element with a performance period of one year and a long-term element, which is reduced at the end of the first year to the same amount that has vested for the short-term element. This is then carried forward and paid out in three equal instalments, subject to further performance criteria which may reduce the vesting further, in years three, four and five.

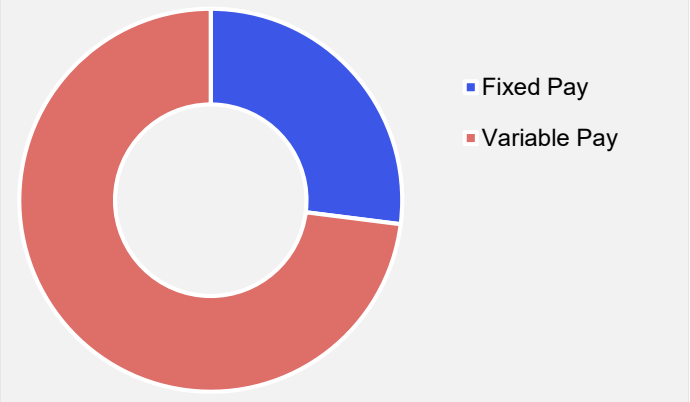


Figure 3: Maximum executive remuneration each year

The short-term element of the scheme is designed to maximise financial and non-financial performance in the year, and to ensure that this is delivered safely and efficiently. The long-term element is designed to ensure that the short-term performance is not delivered at the expense of the long-term health and resilience of the company.

Payments under our variable pay scheme are based on stretching performance targets and performance measures. These are selected to promote the long-term success of the Company and enhanced customer experience and are reviewed regularly.

We include variable pay performance measures that relate to customer satisfaction, delivery of our services, the engagement of our colleagues, the health and safety of our colleagues, and our impact on the environment, as well as our financial efficiency. The latter also delivers for customers by ensuring we are using their money wisely and delivering on our promises without overspending. Our variable pay also considers compliance with statutory and regulatory obligations, with a particular focus on delivery for customers and the environment, and on regulatory performance.

The split of the measures for the short-term scheme awarded in 2022 and the long-term scheme awarded in 2021 are set out below for information:

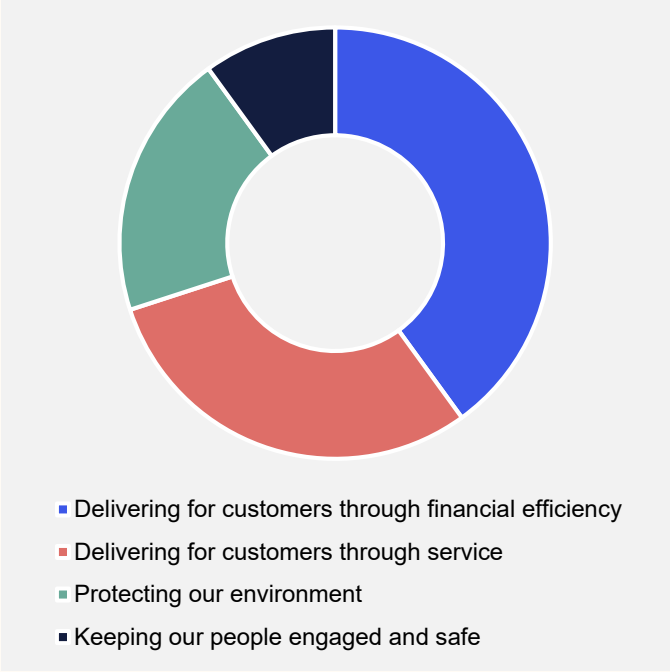


Figure 4: Short term measures

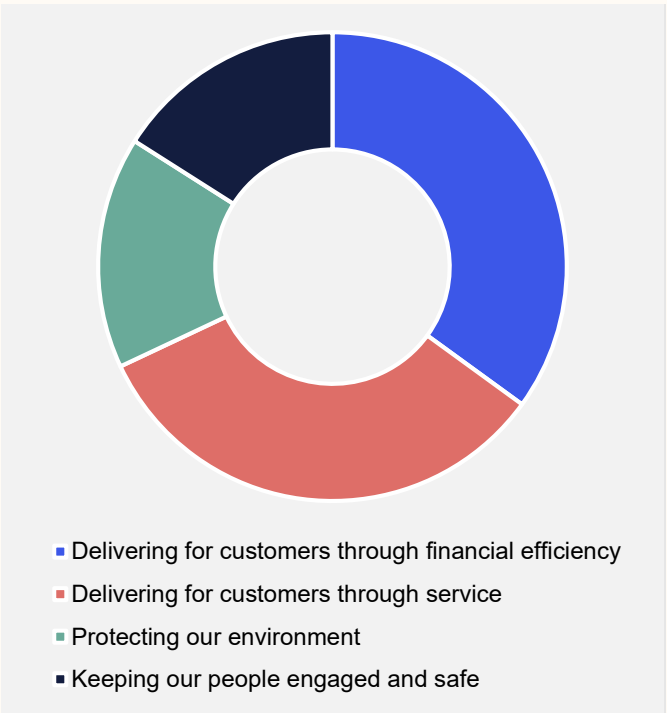


Figure 5: Long term measures

We have gradually increased the proportion of measures that relate to performance for customers, the environment, and people in line with Ofwat guidance. We also ensure that our remuneration policy is aligned to the Ofwat Board Leadership, Transparency and Governance Principles and the UK Corporate Governance Code.

In addition to the performance measures set by the People and Remuneration Committee, our variable pay is subject to a performance underpin. The committee

must be satisfied that the financial and non-financial performance of the business over the performance period warrants the allocated level of vesting.

Our variable pay is also subject to malus and clawback provisions.

It is essential to the achievement of our long-term aim of openness that the pay structure and award of our executives is fair, understandable, openly reported and assured. We will continue to report openly in our Annual Report and Financial Statements and Annual Performance Report. We will also continue to have the associated calculations externally assured.

9.11 Reconciliation of past performance

As part of the price review, Ofwat must reconcile companies' 2020-2025 performance against the PR19 final determination.

Reconciliation mechanisms form an important part of how water companies are regulated and are important in ensuring that the right amount of revenue is collected over the price control period.

We have submitted the specific data and information required by Ofwat in order to reconcile companies' performance during the 2020-2025 period. This information consists of a number of defined data tables, reconciliation models and commentaries.

The reconciliation mechanisms provided alongside the PR24 Business Plan submission are summarised in **Reconciliation models appendix**

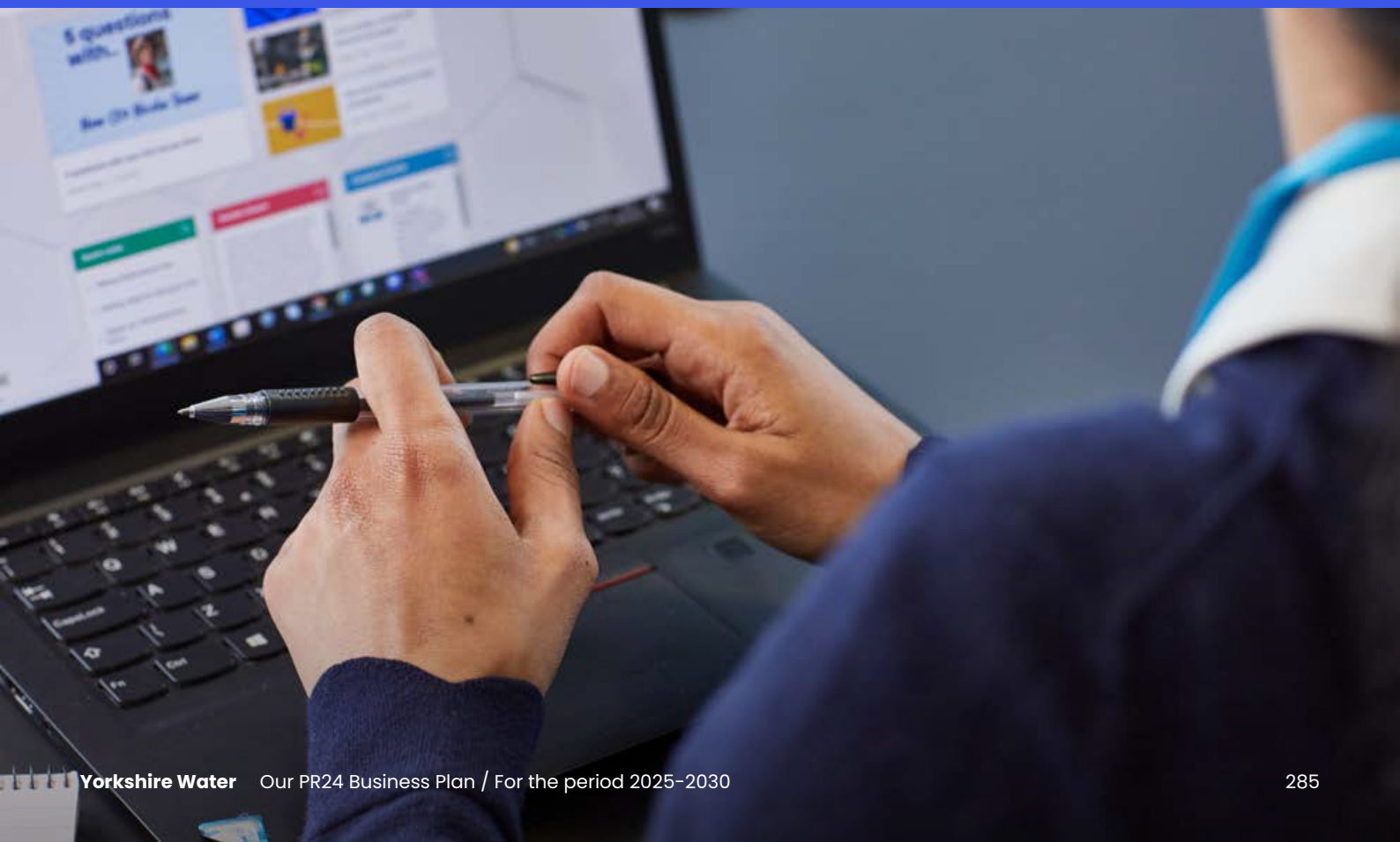
Chapter 10
Board assurance

The Board takes full and collective responsibility and ownership of this plan and is committed to meeting the needs of our customers.

Through the governance process, the Board has challenged the elements of the plan at all stages. The Board has considered customer feedback and thought hard about how stretching the plan can be given statutory and regulatory obligations on the business and the need to ensure the plan provides an appropriate balance of risk and return, improves asset health and that it is deliverable.

Feedback from customers has been a key part of their consideration and helped them reach the conclusion that company support for vulnerable customers should be increased.

The submitted plan is intrinsically linked with all components working together to create an overall plan that is financeable, deliverable, in the interests of current and future customers and the environment, and which provides resilience in the long term.



Chapter 10
Board assurance

Supporting appendices

Assurance process and findings

Board overview of development of the plan

10.1 Introduction

The Board's aim has been to produce a high-quality business plan that meets the expectations of customers in delivering the services they need now and, in the future, at a price they can all afford to pay. These needs must be balanced with operational, financial and corporate resilience over 2025-2030 and into the longer term and must meet our statutory obligations:

- The legislative and regulatory framework under which the Company operates
- UK government's strategic policy statements
- Ofwat's final methodology for the 2024 price review
- The Drinking Water Inspectorate's long-term planning for the quality of drinking water supplies
- The Environment Agency's water industry strategic environmental requirements and water resource management planning requirements.

This chapter provides information on key messages from the Board regarding the PR24 Business Plan, the role of the Board in the development of the plan and a summary of the assurance processes in place. The chapter finishes by providing the Board Assurance Statement for PR24.

10.2 Key messages

We have a clear vision for the region – a thriving Yorkshire: right for customers, right for the environment. This means we invest in infrastructure, create jobs, and work in partnership with other organisations across the region. Our business plan for 2025-2030 will help deliver our vision.

We must get the basics right – delivering the resilient water and wastewater services that the public expects. This is in keeping with what our customers consistently tell us is most important to them. We also need to consider what else is important to Yorkshire.

We are anchored in the heart of Yorkshire and play a vital role in the social and economic development of the region. Every day we work with local councils, the Environment Agency and a wide range of environmental interest groups and stakeholders to ensure that our activities are aligned to the needs of the region.

This plan has been produced during a period of immense challenge for the business and economy. The Board has reflected on the experience and challenge of delivery during AMP7 as well as its learning from the periodic review process of 2019. The Board understands Ofwat's need for plans based on asset health and service delivery and the need to achieve a step change for customers during AMP8, while protecting the environment for us all for the long-term.

The Board takes full and collective responsibility and ownership of this plan and assures that it is financeable, affordable, deliverable and credible. The Board has reviewed and challenged the proposals, the stretching levels of future performance, the requirement to meet statutory and regulatory obligations, the need to ensure the plan provides an appropriate balance of risk and return, focuses on improving asset health to provide a better core infrastructure, and is affordable for customers.

The Board intends the plan to be stretching and ambitious, yet also achievable and realistic given lessons learned, the ongoing economic uncertainty (including inflation), and increasing societal expectations.

The submitted plan is intrinsically linked with all components working together to create an overall plan that is financeable, deliverable, in the interests of current and future customers and the environment, and which provides resilience in the long-term. The Board has also received assurance from third parties on the data tables and on the plan as a whole which has helped them form their views and to make the statements in this assurance chapter.

The Board is committed to its ongoing role of providing oversight and challenge to delivery in AMP8.

As we experienced throughout AMP7, there are always events that happen outside of management control. The Board has consciously reviewed the known risks to delivery of the plan and is clear on the mitigations should these risks crystallise. As with all plans though there are unknowns and the Board has also therefore considered the organisational capacity to respond to any additional challenges if they were to arise. The company has had to withstand, as have our customers, many such events over the last few years including the Pandemic, the drought of 2022, and the high levels of inflation.

The Board provides assurance on the entirety of the plan as at the date submitted. Additional assurance would be required to obtain the same level of confidence should any changes be made to this submitted plan, or in the event of any material change in circumstances.

10.3 Board leadership

The Board is accountable to our customers and stakeholders for its activities. It is responsible for the control of our business, strategy and the decisions we make. It is focused on the strategic development and delivery needed to meet the service and performance expectations of our customers and stakeholders.

The Board and our process for decision making allows for well-informed, high-quality decisions in the best interests of our customers, the environment and our Company. The composition of the Board aligns with the Ofwat Board Leadership, Transparency and Governance Principles. Board members represent a broad range of experience, from water and regulated industries, construction, customer and social value, and finance. Appointments are made following a rigorous process to ensure the Board is equipped to carry out long-term strategic, sustainable decision making in the interests of current and future customers and stakeholders.

This plan seeks to balance the often-competing demands and requirements of all our stakeholders, including government, regulators, regional authorities, local government, interest groups, environmental groups, and the full spectrum of our customers as well as our investors. The plan also seeks to ensure we balance decisions over time and are not pushing investment costs into the future and the next generation, while recognising the challenges of the current economic climate. It is not possible to meet all expectations and demands, and we have had to make difficult decisions to strike what we believe is the right balance. We have carefully considered stakeholder input in all decisions in relation to this plan so that we are confident we have balanced interests, issues and risks appropriately.

The Board constantly witnesses the commitment of Yorkshire Water colleagues to achieving positive results for our customers, the wider region and our business. It is of no surprise to the Board that this commitment has also been seen during the development of this business plan. The capability, capacity, skills and welfare of colleagues will continue to be a key priority for the Board.

10.3.1 Board governance

The Board has been accountable for the leadership and preparation of this PR24 Business Plan, including the quality and transparency of the information provided as well as setting the strategic direction for the business.

The Board has made sure that the business plan reflects the company's wider strategy and has received papers relating to PR24 covering matters such as the quality statutory submissions, customer engagement, financeability, bespoke performance commitments, cost adjustment claims, affordability and acceptability, and direct procurement for customers, price control deliverables and uncertainty mechanisms. The Board has also been involved in a full review of various iterations of the business plan.

As part of the governance around the PR24 programme, the Board has used three committees in the support of its duties: the Audit and Risk Committee, the Public Value Committee and the PR24 Committee. These committees played an integral role in the development of the plan. Board members are part of these committees.

The Audit and Risk Committee supports the Board by providing oversight and challenge to the Company's systems for reporting and managing risk and for maintaining the integrity of its operational and financial reporting. The Audit and Risk Committee focused on assurance over financial resilience, via risk scenario planning and a detailed review of key financial risks, alongside a review of the risks, internal controls and assurance in place for PR24.

The remit of the Public Value Committee is to focus on the social purpose and public accountability of the Company and to embed the consideration of public value in strategy and decision making across the business. The Public Value Committee challenges Company management to ensure that the impact on our communities, the environment and other stakeholders is carefully considered before decisions are made. During the year the Public Value Committee considered and reviewed a range of matters, including our long-term plans for water resources and wastewater drainage, the affordability of bills for customers and our response to climate change and environmental matters.

The PR24 Committee was established early in 2023 following publication of Ofwat's final methodology for PR24. The purpose of this Committee is to provide strategic oversight, challenge and steer to the development of the PR24 plan. The PR24 Committee also considered the impact of the PR24 plan on the residual risk position of the business. The PR24 Committee membership included at least three independent non-executive directors and two investor directors. All members of the Board have had a standing invitation to join the committee in its discussions and received all the relevant papers.

More information on our corporate governance can be found within our most recent Annual Report and Financial Statement:

Yorkshire Water Services Limited – Annual Report and Financial Statements

10.3.2 Board challenge

The Board has challenged itself and the Company to put forward the best possible plan for PR24. The Board has been involved in discussion, review and challenge of various iterations of the plan throughout its development and shaped changes and further evolution of the plan during each iteration.

The PR24 Committee held a number of deep dive workshops, which allowed for detailed review and challenge in areas covering performance commitments and outcome delivery incentives, financeability and financing, and ambition, risk and stretch.

The Board has challenged management to demonstrate that all elements of the plan, including the performance commitments, are ambitious yet achievable and realistic, delivering benefits to customers and the environment.

The Board has challenged management to demonstrate that it understands the risk in the plan, how corporate risks are impacted and mitigated by the plan across AMP8, and that it has risk management processes in place to ensure that most risks can be managed by the Company, whilst recognising that, just like any other company, there will always be “black swan” (very high impact, very low likelihood) risks that may be very difficult to manage.

The Board has also been assured that the full range of benefits being delivered by the plan are presented clearly, given the increased statutory investment requirements and their impact on customer bills. For example, the Board has challenged matters covering the scale and design of schemes to help vulnerable customers, measures to increase protection from Cryptosporidium and other water quality matters, bringing forward storm overflow investment, the quality of evidence for inclusion of non-statutory elements within the plan, on financeability and of deliverability. More examples of Board challenge during the development of the PR24 plan are included throughout this Board Assurance Statement.

Company management held challenge workshops, over three phases throughout 2023. At these sessions, the team considered the consistency and connectivity of the proposed portfolio and challenged that the overall plan met long-term planning objectives with a view to ensure any additions to historic levels of expenditure were appropriately challenged, there was understanding of the regulatory requirement, customer needs were met, and intergenerational fairness was considered. The first challenge phase consisted of four workshops and reviewed the inputs into the plan. The second challenge phase also consisted of four workshops and reviewed the response and action taken in the first phase. It also looked at an overall bottom up build of the plan in the 25-year context to ensure alignment with the corporate strategy, quality submissions and customer priorities in the long-term.

The third and final challenge phase considered alignment with Board ambition, intergenerational fairness, bill impacts, efficiency and deliverability. The workshops were attended primarily by the departmental heads across the Company, with subject matter expertise as required. The outputs of these sessions were fed into the various iterations of the plan, which were then scrutinised by the Board.

More information on the governance and challenge in place through the development of the PR24 plan is included in our **Board oversight of PR24 plan development appendix.**

10.4 Assurance overview

The Board has provided assurance in the preparation and publication of this plan.

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 assurance model, as set out in our published assurance plan.

Regulatory reporting assurance plan

In summary:

- Assurance has followed the three levels of assurance model. The three lines approach provides structure around risk management and internal controls within an organisation by defining roles and responsibilities in different areas and the relationship between those different areas. The first checks (Level 1) take place when the people doing the work check what they have done is correct. Level 2 is completed by senior managers or oversight teams, who make sure that the work carried out is correct and aligns with any requirements. Level 3 is independent, and they check final outputs and overall compliance with processes. The assurance process includes assurance checks and challenges by data providers and subject matter experts (Level 1), oversight, challenge and scrutiny by data managers, senior managers, directors and oversight teams (Level 2), and reviews by independent assurance providers for the PR24 programme (Level 3 provided by Turner & Townsend and KPMG).
- The PR24 programme sought independent challenge and a high-level ‘red team’ review of its

draft PR24 Business Plan, to obtain additional feedback on the plan, stress test its approach and identify potential risks.

- Findings from assurance processes have been reviewed and actions to address any material concerns have been addressed.
- The Board has received the findings from the assurance reviews through the agreed governance process in place.
- The Board has received assurance that the plan implements the strategy and direction set by the Board.
- The Board's assurance process has extended to the preparation, production and publication of the data that underpins the plan.
- The Board's assurance process has ensured that all relevant information and risks have been exposed to its independent assurers.
- Key elements of the plan, such as the wider strategic frameworks, have already been through formal Board approval as part of those individual submissions. The Board has satisfied itself that the PR24 plan is fully aligned with these frameworks.
- The Yorkshire Forum for Water Customers has engaged with the PR24 Committee to provide assurance to the Board of Yorkshire Water on the quality of customer research and that customers' views were considered in the development of the 2025-2030 business plan, long-term delivery strategies, and strategic planning frameworks.
- The Board has constructively challenged, sought changes where needed and then approved the plan.

More information on our assurance processes is included within the assurance process and findings appendix.

10.5 Links to appendices

Board oversight of PR24 plan development appendix

Assurance process and findings appendix

10.6 Board assurance statement

In making this Board Assurance Statement, the Board has considered Ofwat's requirements carefully. This Board Assurance Statement is structured in alignment with the PR24 Final Methodology and contains the assurance from the Board, covering:

- Long-term delivery strategies
- Affordability
- Costs and outcomes, including deliverability, price control deliverables and affordability.
- Risk and return, including financeability and financial resilience
- Customer engagement.

The Board takes full and collective responsibility and ownership of this plan and assures that it is financeable, affordable, deliverable and credible. The Board has reviewed and challenged the proposals, the stretching levels of future performance, the requirement to meet statutory and regulatory obligations, the need to ensure the plan provides an appropriate balance of risk and return and is affordable for customers.

The Board has put in place internal and independent external assurance to support it in ensuring that its direction and strategy have been incorporated at an operational level in the best interests of current and future customers and the environment. The Board has sought confirmation throughout the development of the plan that the expectations set out in the UK government's strategic policy statements have been incorporated. The Board is assured that the plan takes account of all statutory and legal obligations.

The Board has reviewed and challenged the final plan through its formal Board meetings and specific PR24 Committee workshops. The Board has obtained confirmation from the Audit and Risk Committee that its controls and assurance processes have been implemented.

The Board is satisfied that its plan meets the expectations of a responsible Company and is in the best interests of its current and future customers and the environment.

The Board is particularly aware of the challenges in producing a detailed business plan. There continues to be uncertainty around elements of our plan, such as the finalisation of various statutory requirements. We have been in discussions with Defra regarding these requirements until late in the process and understand that further changes in the plans may still be required. In addition, the price review process has also proved challenging due to changing data table requirements

and the size, complexity and interdependencies of the data tables, meaning uncertainty is magnified. As a result, the Board recognises that the assurance received from third parties in relation to the price review process, which serves to underpin this Board Assurance statement, whilst appropriate for the purpose, is less thorough than the level of assurance undertaken in support of the annual report and financial statements and tariff setting processes.

As we experienced throughout AMP7, there are always events that happen outside of management control. The Board has consciously reviewed the risks to delivery of the plan and to achieving our 10-year strategy and longer-term ambitions. The Board is clear on the mitigations should these risks crystallise. Using Yorkshire Water's corporate risk management approach, the risks to delivery through AMP8 have been identified and assessed taking account of planned investment, modernisation and efficiency. The Board has reviewed the residual risk assessment, which shows that the level of residual risk reduces for all 11 principal risks during the life of the AMP. The Board notes that, as in most companies, effective risk management does not eliminate all risks and that "black swan" (very high impact, very low likelihood) risks remain, such as aggressive cyber-attacks or another pandemic, which, if they were to occur, would be very difficult to manage. The Board signs off the plan on the basis that the key risks underpinning the delivery of AMP8 have been identified and will be managed in line with Yorkshire Water's corporate risk management approach. Risks that materialise after the plan has been submitted will need to be assessed by the Board and mitigation actions put in place.

The Board provides assurance on the entirety of the plan as at the date submitted. Additional assurance would be required to obtain the same level of confidence should any changes be made to this submitted plan, or in the event of any material change in circumstances.

10.6.1 Long-term delivery strategies

Our vision is to create 'A thriving Yorkshire: right for customers, right for the environment.'

Our Long-Term Delivery Strategy to 2050 defines how our vision will be delivered in terms of the long-term performance outcomes we aim to achieve, and the actions and investments we intend to undertake to deliver them for our current and future customers and the environment.

In developing our strategy, we considered areas where we already have statutory or legal requirements, existing commitments that we have made in the past, and the long-term needs and expectations of our customers. We also considered our historic performance and projected future operational performance, as well as the opportunities we have available to create further environmental and social value through our work in line with Ofwat's Public Value Principles.

As a business, we face a series of long-term challenges including climate change, affordability pressures, and rising customer expectations around service delivery and environmental protection. Responding to these challenges requires us to take a long-term view to ensure we make decisions that maximise the value we create for current and future customers, society, and the wider environment.

The Board has challenged and satisfied itself that the Long-Term Delivery Strategy:

- reflects a long-term vision and ambition that is shared by the Board and Company management
- is high quality, and represents our best overall strategy to efficiently deliver the stated long-term objectives, given future uncertainties
- will enable the Company to meet its statutory and licence obligations, now and in the future
- is based on adaptive planning principles.

The Long-Term Delivery Strategy has been informed by customer engagement and the Board has taken steps to secure long-term affordability and fairness between current and future customers. Customer engagement is an integral part of day-to-day activity here at Yorkshire Water – understanding, assessing, shaping, and supporting decisions continuously. Through our ongoing engagement activity, alongside external research undertaken by Ofwat and CCWater, we have learned what is important to our customers and have formed our overall ambition and vision for the business plan and long-term delivery strategy based on this.

Customer engagement on the Long-Term Delivery Strategy maps back to all our other engagement research around delivering long-term, high quality, resilient water supplies and looking after our wastewater and keeping that in the pipes. However, we are also aware of the challenges in securing long-term affordability and fairness between current and future customers, especially with the uplift seen with storm overflow investment in the future. Our research shows that our customers want to spread the cost between current and future customers and we have taken this onboard within the plan.

The Board has challenged and satisfied itself that the 2025-2030 business plan implements the first five years of the Long-Term Delivery Strategy.

The Board is confident in the statements being made in this Board Assurance Statement as it has been a key party involved in the development of both the 10-year corporate strategy and the longer 25-year delivery strategy. The Board has challenged management on

the development of both these strategies, including the scale of the future investment and the Board requested the inclusion of a statutory-only pathway. Development of the long-term strategy has required careful balance of the needs of our customers' and other stakeholders' interests now and in the future alongside the affordability of our ambitions.

To make sure our Long-Term Delivery Strategy is robust in the face of future uncertainties, we have used a series of plausible future scenarios to inform and challenge our planning. Each pathway contains a decision point, which indicates when a decision needs to be taken about the right option to efficiently deliver long-term outcomes, and a trigger point, which indicates the circumstances in which an alternative adaptive pathway would need to be followed.

It should be noted that we are yet to conclude our Water Resource Management Plan (WRMP) process for WRMP24. As required by Ofwat, we have included our best view of our WRMP24 within our business plan. This is based on our draft WRMP with revised demand reduction components included.

The Board has given careful consideration to Defra's request to rephase our AMP8 investment into AMP9 and recognise that any rephasing of activity into later AMP periods would inevitably increase the requirements in later AMPs and impact affordability in the future.

For more information on the Long-Term Delivery Strategy see Chapter 5

10.6.2 Affordability

The Board has challenged and satisfied itself that the full implication of the 2025-2030 business plan for customers was considered and that the plan achieves value for money.

The Board has challenged and satisfied itself the Long-Term Delivery Strategy protects customers' ability to pay their water bills over the long-term and delivers fairness between what existing customers will pay and what is paid for by future customers.

We know that affordability is a key concern for Yorkshire Water customers. Therefore, we have sought to ensure that bills remain affordable now and, in the future, while at the same time continuing to accelerate performance improvements, improve resilience and respond to external considerations including climate change and other statutory obligations. Our investment plan for 2025-2030 represents a step change in our level of investment. Affordability and value for money has been a key consideration in this plan, both in the 2025-2030 period and in future planning periods to 2050. To ensure we deliver our plans efficiently and effectively, we look to adopt innovative or modernised approaches to deliver more for our customers. This includes consideration of the delivery pathways to include use of markets, Direct Procurement for Customers (DPC) and delivery through partnership. We have given careful consideration to the affordability of our plan, and we have sought to protect those customers that are most impacted by increases in bills.

The Board noted that customers in other regions were prepared to pay more to help vulnerable customers and asked for further research in this area, following which it was clear that customers in Yorkshire were also prepared to support larger sums being used to help vulnerable customers through the cost-of-living crisis.

The Board has considered how to help customers through a range of support measures. The Board has agreed a customer bill profile for AMP8 that is the preference of customers and has agreed an increased voluntary Company contribution of £12.5m to support customers in vulnerable circumstances. The plan seeks to implement the largest financial support package we've ever delivered – 180,000 customers with financial support each year by 2030, helping our most financially vulnerable customers with the challenge of our rising bill.

For more information on affordability, see Chapter 2 and Chapter 8

10.6.3 Costs and outcomes

The Board has challenged and satisfied itself that:

- the performance commitment levels in the plan are stretching but achievable and reflect performance improvements expected from both base and enhancement expenditure
- the expenditure forecasts included in the Company's business plan are robust and efficient
- the needs for enhancement investment are not influenced by non-compliance or non-delivery of programmes of work (both base and enhancement) that customers have already funded
- the options proposed within the business plan are the best option for customers and a proper appraisal of options has taken place.

Overall, we have set ambitious targets that are stretching, while remaining deliverable. However, it is

recognised that, in some cases, performance commitment levels are below the targets originally set at AMP7. The Board has challenged to ensure that customers will continue to see and feel improvements in the service they receive and in areas that customers tell us are their priorities. The Board has provided challenge over costs and outcomes and added further stretch to the plan. In so doing, the Board understands that performance commitments and outcome delivery incentives are a package of service incentives as opposed to formal regulatory outputs.

The Board is able to provide assurance that the plan is appropriately costed and efficient. Yorkshire Water has well embedded processes in place to build the plan and the Board has challenged various iterations of the plan. The plan costs include those set out in the cost adjustment claims and targeted allowances. We expect to discuss the price control deliverables with Ofwat ahead of its draft determinations, given their significance to our overall plan.

We have robust costing processes, which are based on actual historic delivery costs for Yorkshire Water. Our processes and the data we use to build our plan allow us to identify the expected service impacts of failure events through time. As a result, we can estimate current and future service levels with and without investment. We review risks and run optimisation, producing optimised investment scenarios.

In our approach to options development, we start with a wide range of options and narrow these down to a set of feasible options. On the feasible options, we undertake a benefit assessment and promote those options in the programme that deliver best value to customers in the long term.

The Board has carried out a specific deep dive into costs, outcomes and efficiency. This workshop was facilitated by external specialists and looked into the investment and service proposals underpinning the forecast performance commitment levels for AMP8. This built confidence in the plan and identified areas of focus aligned with those areas of greatest importance to our customers.

The Board makes this assurance statement on the basis that the plan is intrinsically linked as a whole. The submitted cost adjustment claims and targeted allowances put forward by Yorkshire Water are core to this assessment.

For more information on costs and outcomes, see Chapter 7 and Chapter 8

Deliverability

The Board has challenged and satisfied itself that the PR24 plans and the expenditure proposals within them are deliverable and that the Company has put in place measures to ensure that they can be delivered.

Yorkshire Water participated in a Water UK study focused on AMP8 deliverability, which concluded that there was good potential for the supply chain to respond to the needs of AMP8, providing that programmes were well planned and communicated and that the profile of delivery was appropriately phased. An independent review of Yorkshire Water's plans for AMP8 concluded that 'for new frameworks, Yorkshire Water has attracted capacity in its selection of contractors at the pre-qualification questionnaire stage. A selection of contractors from the available list should be able to deliver Yorkshire Water's construction programmes. Care may need to be taken if appointing the same contractors to multiple frameworks'.

Our position on the deliverability of the AMP8 programme is one of qualified confidence. Whilst we are confident that we are putting forward an ambitious yet deliverable plan, we also recognise that large infrastructure programmes of this nature bring risks, some of which will be outside our control. We have taken a number of steps to manage these risks and to underpin the successful delivery of the programme and we will continue to do so as we move towards the beginning of the AMP8 period.

Our confidence is based on the following four factors:

- We have a mature and continuously improving programme management capability covering people, process and technology, enabling us to more effectively deliver and assure an increasing volume of work. One of Yorkshire Water's behaviours is that 'we're always learning'. Significant effort is invested in the capture and sharing of lessons across the capital programme with key areas for improvement primarily related to systemising project specific lessons and validation of planned benefits after project completion.
- We are already ramping-up delivery run-rates to near AMP8 levels. Whilst AMP8 will represent a significant step-up in expenditure from AMP7, we have profiled the delivery of our AMP7 programme in a way that will support a steady ramp-up of spend over the last two years of AMP7 thereby enabling a smoother transition into AMP8.
- The expenditure profile across the five years of AMP8 is smoother and represents a relatively balanced proportion of overall spend across each of the five years.
- We are putting in place delivery vehicles with the capability and capacity to deliver the proposed plan. This includes using Direct Procurement for Customers for applicable projects, self-delivery of

small-scale capital interventions, using our external partnership arrangements, extending our existing infrastructure framework, renewal of our non-infrastructure framework and creation of a new alliance with additional partners to deliver our storm overflow reduction programme. The design of these delivery vehicles has been informed by feedback from a market engagement programme including surveys and partner interviews to ensure we secure sufficient capacity to deliver the programme. We are also assessing the financial capacity of partners to deliver the required volume of work as part of our procurement process.

The work that we have already done and are continuing to develop across these four areas provides us with the confidence that our AMP8 plan will be deliverable. This confidence will continue to grow as our preparations for execution of our AMP8 plan are developed in greater detail. Qualifications to our confidence relate primarily to external factors, namely the availability of resources from third parties required to support the programme, in particular local government resources required to secure planning permissions and support network access or land acquisition. We have identified key local authorities, which we will engage with in AMP8 and are working with them to ensure visibility of our emerging requirements.

Due to the scale of the national roll-out and the amount of equipment that will be required, there is a risk to the delivery of obligations around river water quality monitoring.

We are taking learnings from the programme we have initiated during the second half of AMP7 to reduce our discharges from storm overflows. We have confirmed our desire to go beyond the requirements set out in the Storm Overflow Discharge Reduction Plan (SODRP). However, the insight gained from this demonstrates the challenge the sector faces to deliver a higher proportion of these programmes using nature based or blue green infrastructure solutions. The risk is driven by the high volumes of activity challenging the capacity of the supply chain, but also by external factors such as environmental permitting, planning consents, land purchase and other preconstruction work.

Deliverability of the storm overflows programme will see an increasing requirement for sewer modelling to underpin storm overflow investigations, storm overflow interventions, and the development of Drainage and Wastewater Management Plans (DWMPs). We have been proactively involved in trying to expand and upskill the supply chain through our involvement through CIWEM's Urban Drainage Group to mitigate these risks.

While we remain optimistic in relation to Yorkshire Water and our supply chain's ability to scale up delivery into AMP8, this cannot be considered in isolation to other companies' plans. We are aware that some companies are planning a much more significant scale up of delivery which we are concerned may be unsustainable, not only for the companies themselves, but which may also have a significant impact on the ability of the UK supply chain to deliver the AMP8 programme nationally.

The Board has reviewed and challenged our procurement strategy for AMP8 capital partner frameworks including key risks and mitigations. The Board has also undertaken a deep dive on AMP7 capital delivery capability and processes.

The Board has sought improvements and additional controls on our project management performance management processes, leading to implementation of new key performance indicators during AMP7.

The Board has reviewed the approach to project lessons learned to ensure the right steps are being taken to review and improve based on past performance.

For more information on deliverability see Chapter 8

Price control deliverables

The Board has challenged and satisfied itself that the plan includes price control deliverables covering the benefits of material enhancement expenditure (not covered by performance commitments), and specifically provides customer protection on water capital maintenance investment as set out in our targeted allowance claim.

The Board has received information on the approach to select the price control deliverables within the plan and has approved the price control deliverables included within and excluded from the final plan.

One example of challenge from the Board is around cyber security. Additional investment is required due to the rapidly evolving cyber threat environment and an evolving regulatory environment, underpinned by the need to address the Networks & Information Systems (NIS) regulations. Yorkshire Water has included a price control deliverable to safeguard customers from non-delivery of our proposed programme, whereby we must upgrade a specified number of sites with additional security equipment and replace a specified number of obsolete and insecure devices (programmable logic controllers – PLCs) with modern and secure alternatives.

For more information on price control deliverables see Chapter 8

Affordability

The Board has challenged and satisfied itself that the expenditure proposals are affordable to most customers and do not raise bills higher than necessary; and that the expenditure proposals reflect customer views, and where appropriate are supported by customers.

The Board has reviewed the bill profiles in AMP8 and beyond to take into account affordability.

As we have mentioned in 10.6.2, we know that affordability is a key concern for our customers, especially those who are financially vulnerable, as demonstrated in the low affordability scores we received when testing our plan following Ofwat prescribed guidance. Steps are in place to balance the rising bills with our largest ever financial support package to help our most financially vulnerable customers – these proposals are supported and endorsed by our customers who are also prepared to contribute more to our social tariffs.

The Board has provided challenge on the scope and scale of AMP8 investment required. It is noted that the enhancement investment required in AMP8 is substantially associated with meeting statutory obligations. Any additional investment over the statutory requirements has been given extra consideration and challenge and support for this additional investment has been tested with customers.

The Board has reviewed the bill profiles in AMP8 and beyond to take into account affordability. We are implementing a natural bill profile within AMP8 as this was the most favoured by our customers.

The Board has challenged the efficiency within the plan and challenged the plan so that it is stretching and ambitious yet also achievable and realistic. This provides confidence that bills are not being raised higher than necessary, and that we can provide best value for our customers.

For more information on affordability, see Chapter 2

10.6.4 Risk and return

Financeability and financial resilience

The Board can provide assurance that the business plan is financeable on the basis of the notional capital structure. This assurance takes into account all of the components of the business plan, is consistent with Ofwat's early view on the allowed return on capital for PR24 (updated for market data to July 2023) and is consistent with maintaining target credit ratings at least two notches above minimum investment grade.

In addition, the Board can provide assurance that the actual Company is financially resilient over the 2025-2030 period and beyond under its business plan.

To ensure that the Company is financeable on a notional basis and financially resilient over the period 2025-2030 and beyond on an actual company basis, we have undertaken a thorough assessment to ensure financeability at an overall Company level, while also ensuring each price control is financeable on a stand-alone basis. Our financial resilience assessment targets the maintenance of appropriate credit ratings and investor returns to enable us to finance our activities.

We have tested financeability and financial resilience with target credit rating at least two notches above minimum investment grade (Baa1/BBB+) for the notional capital structure and against our finance structure covenants and credit rating metrics for the actual capital structure. Full details and evidence for our assessment are set out in Chapter 9 of the business plan and its associated appendices.

For more details see Chapter 9

In order to support our assessment, in line with Ofwat's guidance, we have considered potential financeability constraints which may exist and have included strong shareholder support in our plan to mitigate these:

1) £440 million capital contribution from our shareholders, by way of repayment of intercompany loans, during AMP8; and
2) A reduced dividend yield of 3% during AMP8.

We have considered the use of financial levers, such as pay as you go (PAYG) and run-off rates and have aligned to Ofwat's guidance on both of these elements of our plan, balancing the need for fairness across different generations of customer, both current and future.

We have considered Ofwat's early view of the allowed return on capital and have used this in our plan, which, in line with Ofwat's guidance, we have updated with latest market data.

We have assessed financial resilience to the end of 2035 (i.e. to the end of the next price review, PR29).

This is consistent with prior price reviews and our long-term viability process. For this extended period, we have used Totex in line with the Statutory Pathway in our Long-Term Delivery Strategy (LTDS) which ensures that we meet all current regulatory requirements. The Core Pathway in our LTDS highlights the extent of our ambition, however, we do not believe this is an appropriate basis for the financial resilience assessment as confirmation of that pathway from a price review perspective would be for PR29.

We have also conducted sensitivity analysis using the financial resilience sensitivities provided by Ofwat, and downside scenarios that we can envisage based on our long-term viability assessment work and compared the output of these to the target levels for a minimum investment grade rating of Baa3/BBB.

While we have tested the business plan against downside sensitivities in our assessment, there are clearly risks outside the near-term control of the business which could impact financeability. These include extreme weather affects, major supply chain disruption, changing environmental requirements and economic regulation risk (for example Ofwat not supporting our cost adjustment claims for asset health improvement, DPC programmes, or recognising the extent of our combined sewers impacting our ability to meet sewer flooding and storm overflow targets, or significantly increasing the downside risk on ODI performance relative to allowed WACC).

All of our analysis confirms that our plan, whilst challenging, is financeable and the business is financially resilient. The detail of our assessment and the relevant metrics we have used are set out in **Chapter 9** of our business plan and the associated appendices. Financing the significant increase in investment in AMP8 will be challenging, and the Board can only provide assurance over financeability on the plan that has been presented and proposed to Ofwat.

For more information on risk and return, see Chapter 9

10.6.5 Customer engagement

The Board provides assurance that the Company's customer engagement and research meets the standards for high-quality research and has been used to inform its business plan and Long-Term Delivery Strategy.

The Board has been presented with information on the measures for high quality engagement and the reasons why these measures have been met with Yorkshire Water's customer engagement plan. The Board has been able to review and challenge the extent and breadth of the engagement programme. The Board has also been able to observe customer focus groups as part of their assurance. The Board has been given assurance from the Yorkshire Forum for Water Customers that the engagement plan meets their high standards and expectations and that it has been delivered as proposed.

We are committed to ongoing and regular engagement with customers and stakeholders not just as part of the business planning process. Engagement is embedded in our business-as-usual activities – we constantly consult on our approach to services with the people we're here to provide for. For that reason, extensive day-to-day engagement with our customers, alongside research studies have been used to inform our next business plan.

Our customers tell us that their top three priority areas are: the provision of a continuous supply of water that is safe to drink, keeping bills affordable for all and preventing sewage from entering homes and businesses. We can see these similar themes when evaluating other pieces of our customer research, including the customer preferences research carried out on behalf of Ofwat and CCWater.

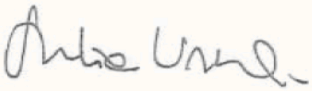
You will see the importance of our customers' priorities detailed throughout our plan, including clear line of sight on how we've responded to those customer views. A couple of examples include how customer feedback was one of the drivers in our decision to bring forward some of the storm overflow reduction investment from AMP9 into AMP8 to specifically address areas of particular importance to customers. We have also incorporated into the plan a small amount of additional enhancement expenditure to continue our efforts towards net zero. Flood resilience is important to customers and stakeholders, we have therefore maintained investment in this area to help tackle flood resilience in our region by expanding our partnership working approach as we build on the success of our Living with Water Programme in Hull.

For more information on our engagement programme, see Chapter 6

10.7 Board signatures

The PR24 Business Plan submission and this supporting Assurance Statement was approved collectively by the Board in September 2023.

Signed by Yorkshire Water Services Limited Board of Directors

 **Vanda Murray** **Independent Non-Executive Chair**	 **Nicola Shaw** **Chief Executive Officer**
 **Paul Inman** **Chief Financial Officer**	 **Andrew Wyllie** **Senior Independent Director**
 **Julia Unwin** **Independent Non-Executive Director**	 **Andrew Merrick** **Independent Non-Executive Director**
 **Wendy Barnes** **Independent Non-Executive Director**	 **Scott Auty** **Non-Executive Director**
 **Andrew Dench** **Non-Executive Director**	 **Russ Houlden** **Non-Executive Director**