PR24

Our Business Plan

2025–2030

Thames Water

It's everyone's water

Contents

Over the last 18 months, we've developed our AMP8 plan through extensive engagement with our customers, our communities, our Customer Challenge Group, our supply chain and the active involvement of our Board.

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Cathryn Ross
Interim Co-Chief Executive Officer

Alastair Cochran
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Dear customers

Our five-year business plan is ambitious

We are privileged to serve London, the Thames Valley and the Home Counties. We supply 2.6 billion litres of top quality tap water each day to over 10 million customers and take away 4.6 billion litres per day of wastewater from 16 million customers.

Every five years, we publish our plans for the next planning period. We set out here our plans for the 2025–2030 period.

Many of you have played a vital role in the development of these plans. We spoke with nearly 20,000 of you to gather your views. You helped us develop our thinking by feeding back on earlier drafts of our plans. At the same time, we have listened carefully to our communities and to the views of our stakeholders. We would like to thank everyone for the time that they gave. We are also grateful to our Customer Challenge Group. We established this group early in 2022 to act as a critical friend. It is independent and its members have expertise in communications, customer protection, community engagement, and inclusion. The Group has challenged us to have high-quality conversations with the customers and communities we serve and to develop a plan that aligns to their priorities.

We know our performance in some areas is not where it needs to be. That is why we are turning our business around.

We have set ourselves a tough challenge. We are committed to learn from the past and adapt for the future so that we improve our service for you, your community and the world around you.

You are impatient for us to make progress. We hear you and we are making progress toward delivering this ambition.

Between 2025 and 2030, we will deliver more than we have ever done before. We will invest £4.7bn in our network and services in response to our statutory obligations, the critical need to improve asset resilience, and to deliver environmental improvements. This is significantly more than the enhancement expenditure Ofwat allowed us for the period between 2020 and 2025.

Even with this level of ambition, we have had to make some tough choices. We simply cannot deliver everything people want at a pace and for a price that everyone would wish to see.

We will focus on things that you have told us matter most. We will reduce pollution. We will invest to replace ageing pipes. We will reduce leakage by a further 22% from our 2019/20 baseline. We are targeting a 30% reduction in pollution incidents. We will expand the number of customers who benefit from our social tariff to 530,000 households by 2030.

We are confident we can deliver on this because we will build on our recent achievements. We consistently deliver high-quality drinking water. We have reduced the number of customer complaints by almost two thirds in just two years. We are on track to commission the Thames Tideway Tunnel. Once in operation, working together with the upgrades we have made to five of our London sewage treatment works and the Lee tunnel commissioned in 2016, we will have reduced sewage spills into the tidal Thames by 95% in a typical year.

We will certainly continue to talk about our plans over the coming months. We expect to get and respond to feedback on some of the tough choices that are reflected here. As this dialogue continues, we would welcome your thoughts on what we plan to do.

Cathryn Ross and Alastair Cochran
Interim Co-Chief Executive Officers

Based on everything you told us, here's what we plan to do

INVESTMENT

A record level of investment

£18.7bn
Total spend across our business

£4.7bn
To improve the quality of our services

£1.59
Average daily water and wastewater bill

530k
Households getting help with their bills

FOR CUSTOMERS

A safe and reliable service for you

£12.1bn
To improve your service

17%
Reduction in the number of times sewage floods into properties

75%
Of eligible customers on the priority services register

500km
Of replaced water mains

FOR COMMUNITIES

Having a positive impact on your community

600
Apprentices, graduate scheme applicants and summer interns on placements

27
Wetlands and nature reserves open to the public

1
Key commitment to cut down disruption caused by our streetworks

FOR THE ENVIRONMENT

Improving the environment

£6.6bn
To improve the environment

£885m
Investment in reducing storm overflows

30%
Drop in pollution incidents

22%*
Reduction in leakage

*AMP8 reduction based on a 2019/20 baseline

All £ are in 2022/23 prices

Key messages

- We are working to turnaround our business to address our shortcomings, the increasing expectations from our customers, and long-term challenges such as climate change and population growth.
- We have worked very hard to develop the best possible plan, a plan that can balance the needs of our customers, our communities and the environment while being deliverable and financeable.
- Our shareholders are committed to supporting our efforts. However, equity support will depend on having the right regulatory framework for the Asset Management Plan 8 (AMP8) period.
- Despite equity support, our bills will need to rise as a consequence of the scale of the investment we need to make and external market/economic factors.
- We will therefore step-up our support for customers who struggle to pay their bills.
- We are open to further engagement. We expect to get and respond to feedback on some of the tough choices that we have made.

This section provides a summary of the main components of our AMP8 plan.

3.1 | While our performance is generally in line with industry average, we need to improve

Thames Water provides life's essential service and our customers do not have a choice of supplier, and so our performance is often under the spotlight. The focus is often on things that we could do better. However, there are a number of aspects of our business where we are performing well:

- **Providing high-quality water** – We have consistently delivered high-quality drinking water during this AMP period and have some of the lowest numbers of water quality complaints across the industry (relative to our size). We want to maintain this success, including by further improving treatment plants across our region.
- **Supporting our customers with the cost-of-living** – We increased our social tariff support to £50 million during a difficult year for many of our customers, supporting 306,000 households in 2022/23, a 45% increase from 2020/21. In addition, we are continuing to provide other support through our customer assistance fund and independent trust fund.
- **Reducing customer complaints** – We achieved a reduction of 28% in complaints across billing, water, wastewater and metering in 2022/23, following a previous reduction of 44% in 2021/22.
- **Reducing the impact of outages** – An unplanned outage is an unforeseen or unavoidable event that can affect part or all of one of our treatment works. Some outages are planned – they happen because we need to complete work on our assets. But, unplanned outages can also occur when something goes wrong. We have outperformed our target to reduce unplanned outages for the third year in a row. We have achieved this by implementing operational changes that have allowed us to respond quickly to events.
- **Fewer sewer collapses** – We have met our target for reducing sewer collapses for the third year in a row, thereby reducing the risk of sewer flooding and pollutions. This follows an increased programme of work to rehabilitate our sewers.
- **Faster reductions in water leaks** – Although our rate of leakage (per kilometre of potable main) is considerably higher than that of other companies and we missed our target last year, our performance is improving faster than that of the industry. So far in AMP7, we reported a 10.7% reduction (three-year average) against 2019/20, exceeding the industry average (6.6% reduction).
- **Thames Tideway Tunnel** – The Tideway Tunnel represents the largest and most significant wastewater project since the 1860s. Together with the upgrades we have made to five of our London sewage treatment works and the Lee tunnel commissioned in 2016, we will reduce sewage spills into the tidal Thames by 95% and create new public spaces.
- **Net Zero** – We have reduced our net emissions by 70% compared to our 1990 baseline level. In 2022/23, we generated 536GWh of renewable energy a year, amounting to 27% of our consumption. This compares to 272GWh by Severn Trent, 282GWh by Yorkshire Water and 196GW/h by United Utilities. Where we cannot self-generate, we only buy renewable electricity.

3.1 | While our performance is generally in line with industry average, we need to improve continued

- **Biodiversity** – In AMP7 we have already delivered 331 biodiversity units by creating over seven hectares of new wetlands on our operational sites and a new nature reserve on a decommissioned operational site, improving grassland management and developing nature recovery projects.
- **Innovation** – We are ranked 5th out of 17 companies in terms of the funding secured through Ofwat's Innovation Fund. For example, we developed the static pressure leakage indication tool (SPLIT) in early AMP7, which can accurately indicate the presence of leakage from customers own pipes without requiring access to the property.
- **Community Projects and Engagement** – During this AMP we worked with many organisations to provide recreational access to our sites. Further, we are working with the Mayor of London to offer drinking water fountains across the capital. Our drinking water fountain campaign is the biggest single-use plastic reduction initiative of any city across the UK. 110 fountains were delivered across public spaces in London during AMP7, dispensing on average 76 litres per day. The data collected from our smart meters shows that these are being well used and are having a positive impact.
- **Transparency** – We have taken steps to increase transparency to our customers and stakeholders. For example, we have now published an interactive map showing near-real time storm discharges activity, as indicated by our Event Duration Monitoring (EDM) monitors. We recently upgraded this data to show the investment we are making to address storm discharges, by location.

While we are proud of these successes, we know our performance in some areas is not where it needs to be:

- Although we have reduced the number of complaints we receive, this has not yet translated into better customer satisfaction, as measured by Ofwat's customer measure of experience (C-MeX). In part, this is because C-MeX measures the satisfaction of our customers relative to the level of satisfaction experienced by the customers of other water companies – despite our improvements, customer satisfaction across our peers has also improved.
- In 2022/23, we missed our target to reduce supply interruptions. This performance is largely driven by the dramatic range of temperatures our network was exposed to, with both a very hot summer and a very cold winter. We also have the highest property density in our region when compared to other water companies, which exposes more properties to interruption events when water mains do fail meaning that a single event can have a big impact on our performance.
- While we have improved our underlying performance on sewer flooding, we still missed our target. Our performance has been affected by extreme weather events, particularly in London where the built-up environment means heavy rainfall can result in widespread flooding.

In tandem with our performance challenges, we face a growing population, and the impact that climate change could have on our networks. We also need to invest more to replace ageing assets and turn our business around. We need to do all of this while delivering against the, understandably, rising expectations of our customers, communities and stakeholders. We say more about each of these below.

3.2 | We face rising expectations from our customers

We have a thorough understanding of what our customers, communities and other stakeholder expect of us. We have gained this understanding through our continuous programme of engaging with our customers, and through the targeted engagement activities we carried out to gather specific insights as we developed our plans.

Our job is becoming harder. A growing population means more kettles boiling, showers running and toilets flushing. Extreme weather is becoming more common. For example, the summer of 2022 was the joint hottest since records began, with the longest period of dry weather on record. The autumn of 2022 was wetter than average. In December 2022, we experienced one of the most significant cold spells since 2010.

Our plan is informed by our comprehensive customer engagement programme

Over the last 18 months, we've developed our AMP8 plan through extensive engagement with our customers, communities, our Customer Challenge Group and our supply chain, supported by the active involvement of our Executive and Board.

Our customer engagement included representatives of all users of our water and wastewater services. We have an ongoing programme of engagement and interact with over 200,000 customers each year through that programme. In addition, we engaged directly with almost 20,000 customers in targeted 2024 Price Review (PR24) research.

We took particular care so that our engagement activities were designed and delivered in a genuinely inclusive way – we wanted to ensure that diverse members of our customer base could access our engagement activities and make their contribution.

Our engagement also encompassed community and stakeholder groups representing the concerns of customers, such as groups with shared interests, those living near our works, elected representatives, advocacy organisations, charities and non-governmental organisations. And we engaged with other groups of customers, including business retailers, developers and new appointees.

In total, we have analysed 320 insight sources which we consolidated into our 'What Customers, Communities and Stakeholders Want' (WCCSW) document. The output is a clear and comprehensive view of the outcomes customers and stakeholders expect us to deliver, as summarised below.

Combined customer ranking of wants

We have assigned a relative priority ranking of the 10 priority customer wants by triangulating scores from several sources

	Want	Linked to our vision 2050 themes
High priority	I want safe, high-quality drinking water	For customers
	I want fair and affordable bills	For customers
	I want a reliable supply with minimal disruption	For customers
Medium priority	I want you to prevent sewer flooding and take waste away safely	For customers
	I want you to fix leaks and ensure there is enough water now and in the future	For the environment
	I want you to stop polluting rivers and to improve their quality	For the environment
	I want you to reduce your impact and restore the environment	For the environment
Lower priority	I want you to reduce emissions and reach net zero	For the environment
	I want an easy customer experience and tailored support	For customers
	I want you to have a positive impact on the community	For communities

Key: For customers; For communities; For the environment

Figure 3.1: What matters most to our customers[1]

1 Sources include PR24 foundation research, Ofwat collaborative research, Vision 2050 research and PR24 AAT research.

3.3 | We need to invest more than ever before

We know we need to increase the level of investment so that our assets are more resilient in the face of climate change and population growth. We also need to reduce the impact our activities have on the environment, and to support the UK in its ambition to improve the environment more broadly.

We also want to start reversing the decline in the health of our ageing infrastructure (our 'asset health deficit'). This decline in health has taken place over decades as we have stretched the life of our assets, repairing rather than replacing. The impact of climate change and population growth is putting more pressure on our already stretched asset base – maintaining our current level of capital maintenance will not deliver the long-term outcomes our customers and stakeholders expect.

Poor asset health is an important root cause of our performance challenges today. We use the term 'asset health deficit' to refer to the value of the investment needed to address asset health issues. Our asset health deficit acts as a drag on our performance, which in turn impacts our financial position through performance penalties, which subsequently results in less money to invest in improvement. The cost of managing our ageing assets and dealing with failures is increasing.

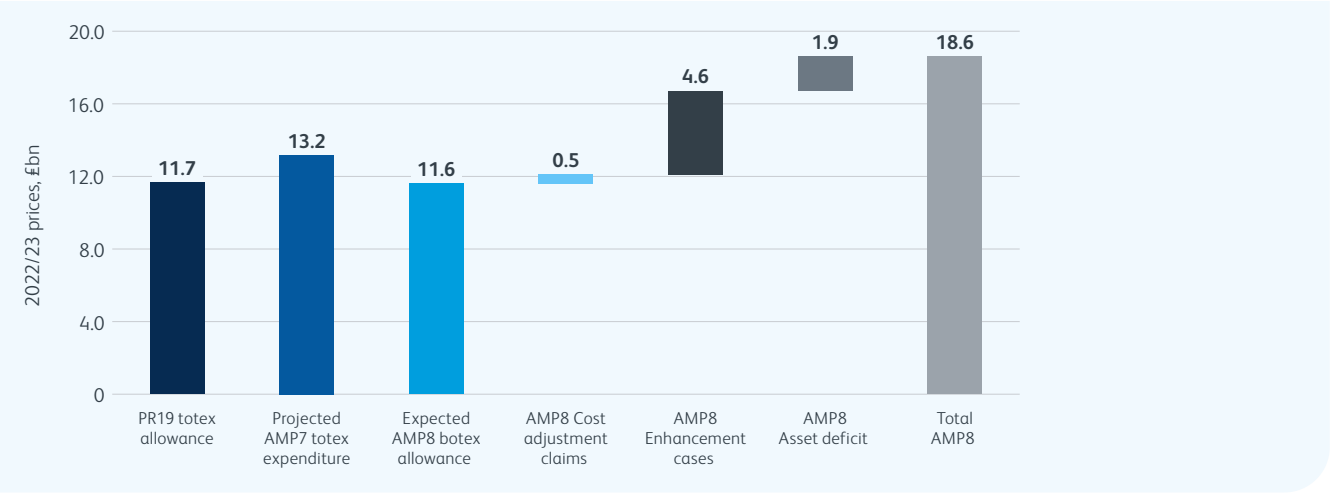


Figure 3.2: AMP7 vs AMP8 totex

At the end of AMP7, we estimate our asset base will have an asset health deficit of £19.3 billion. Questions may be asked as to why we have a substantial asset health deficit and about whether customers provided us with funds that we should have used to address the deficit in previous price control periods. We strongly believe this is not the case.

To maintain this asset health deficit at a stable level, we would need to make an investment of approximately £4.7 billion during AMP8. We are asking for funding to cover this investment from three sources: enhancement cases, cost adjustment claims and additional funding specifically to start to improve the health of our assets. The recovery of these costs will be spread over a number of years, which will mitigate the impact on our customers' bills at a time when they are facing a 'cost of living' challenge.

In combination, our investment to address population growth, the environmental improvement programme and our asset health deficit amounts to c.£6.6bn for AMP8.

We set out detail on these points in section 11.4 and in Appendix TMS15: Asset Deficit.

Read more

3.3 | We need to invest more than ever before continued

The level of expenditure and delivery we plan for AMP8 will outstrip anything we have invested before. While extremely challenging, we are confident that we can deliver this investment. We will build on our success in AMP7 at ramping up our capital delivery capacity. We delivered £110m in the first year of AMP7 and expect to deliver £800m in the fifth year, bringing us to a total capital delivery over AMP7 at £2.7bn. This success has been supported by our decision to introduce an 'Intelligent client' delivery model, through which we use our own resources to undertake early engineering of project solutions, programme and project management, construction and technical assurance. It provides us with stronger internal capabilities and control over the projects we deliver. We will retain this model in AMP8 and will continue to evolve and improve on an ongoing basis.

We will continue to ramp up our delivery capacity for AMP8. We will require approximately 200 new colleagues in our delivery office over the next seven years, having recruited just over 150 new colleagues in the past two years. We are introducing a plan to improve the capability of our teams. For example, we are piloting professional project management training through the Association for Project Management with our first cohort of colleagues completing their qualifications in early 2023. In terms of supply chain capacity, we have extended our existing frameworks and suppliers. We are also working closely with our existing contractors to ensure that the levels of activity are sustainable and efficient, and that future workloads can be delivered. Our capital delivery readiness has been positively assessed by Jacobs and further detail is presented in chapter 12.

3.4 | We also need to do things differently

Delivering AMP8 will need more than a record-breaking level of investment. We also need to do things differently – we need to enhance our operating model, our systems and our processes.

In March 2021, we embarked on an eight-year plan to turn around our business:

- Over the last 12 months, we have restructured the business in a way that has brought us closer to customers. We have moved to a regional operating model with two separate operational teams (covering London, and the Thames Valley/Home Counties).
- We onshored all customer-facing telephone teams back to our region creating over 200 jobs in Swindon, and insourced the repair and maintenance of our water network. Our insourcing focus has also included our sludge tanker drivers (which has led to improved compliance at sewage treatment works) and clean water tanker drivers (allowing us to respond more quickly to supply interruptions).

All of these changes bring us closer to customers and suppliers and will enable us to deliver improvements in our performance.

However, despite making significant improvements, our progress has not been as fast as we want. The combination of inflation, which caused major cost increases in energy and chemicals, and severe weather events have created considerable headwinds. That is why we are now refocusing our turnaround plan towards a smaller set of priorities over a shorter three-year timeframe. This will enable a sustainable improvement in performance more quickly in our focus areas and will build confidence in the deliverability of our PR24 plan.

We are transforming the way we do our retail business

Our retail business will focus on delivering customer benefits and greater efficiency. We will:

- **Resolve problems quickly** – We want to resolve more billing issues within 24 hours. For example, we will equip our agents with the right skills and information to allow them to fix a customer's issue on first contact.
- **Keep customers updated so that they only need to contact us once to resolve their issue** – We will make sure we have the right automated proactive customer updates and we will continue to develop our communication approach during incidents to share proactive updates quickly.

3.4 | We also need to do things differently continued

Our plan continues the task of addressing our ageing network and improving our readiness to meet the challenges of climate change and population growth. It will also reflect our focus on leakage and pollutions while maintaining our performance on water quality, improving supply interruptions and reducing complaints, to deliver strong results over the next three years, providing a platform for continued improvement in AMP8.

To deliver our plan we have to become a more agile, fast-paced and responsive organisation.

We will also do things differently by working smarter and by working together with our partners. For example, we will be increasing the use of sensors, drones, data and analytics; exploring less intrusive ways of replacing ageing pipes; and adopting green infrastructure at scale. We will be working with our community partners to co-create and co-deliver projects and to deliver water-saving messages. And we will be working much more closely in targeted catchment groups to protect all customers, communities and the environment from the risk of flooding, while improving river health.

3.5 | Our shareholders are committed to supporting our efforts

We have socially responsible and patient shareholders. For example, our largest external shareholders are the Ontario Municipal Employees Retirement System and the Universities Superannuation Scheme, both of whom want to support turnaround of a business that provides life's essential service. The continued support of our shareholders is critical to what we need to do next.

During AMP7 we expect to spend more than £1bn over our regulatory allowance. In line with the cost-sharing rates, in general, only 25% of this expenditure feeds through into higher bills, the rest is borne directly by our shareholders.

Our shareholders have conditionally agreed to provide a further £750m of equity contributions across AMP7. They have also acknowledged that the delivery of the refocused turnaround will likely require the provision of further equity support in AMP8 significantly in excess of the current AMP7 commitment. Indicatively, the AMP8 equity support is expected to be in the region of £2.5bn.

Despite this additional support, we have faced tough choices. We have worked very hard to develop the best possible plan, a plan that balances the needs of our customers, our communities and the environment while being deliverable and financeable.

We will not be able to deliver the full extent of the asset investment programmes or environmental obligations that we had originally aspired to in this period.

We have considered how best to allocate the capital and non-financial resources available to us, taking into account funding and deliverability constraints. We have done so in a way that protects the health and safety of our colleagues, customers and the public. We want to maximise performance in areas that matter to our customers and communities and align with the expectation of our regulators. In essence, our aim has been to secure the best possible plan for our customers and the environment.

When we have faced difficult decisions, we have taken into consideration a range of factors, including:

- The health and safety of our customers, the public, our colleagues and our suppliers.
- Potential public health risks and environmental impacts associated with certain programmes (particularly those with potentially high adverse customer impacts).
- Performance and resilience improvements which we understand are of greatest importance to customers, regulators, and other stakeholders.
- The need to meet our statutory, regulatory and licence obligations, and to deliver our commitments to customers. We take compliance with all of our legal obligations very seriously. These include obligations that are specific and proximate (such as environmental permits) and obligations that are more broad in nature. For example, our obligations under relevant Health and Safety legislation, our Water Industry Act Section 37 obligations (to maintain water supply systems), and our Section 94 obligations (to provide a sewage system).
- Our goal of achieving a sustained and sustainable turnaround of the business and promoting financial resilience.

We have also drawn on our extensive research into customers' priorities and have engaged with our stakeholders to understand their expectations of us, including: the Environment Agency (EA), the Drinking Water Inspectorate (DWI), Ofwat, Department for Environment, Food and Rural Affairs (DEFRA) and other water companies. We provide more information on the way we have prioritised activities and investment in section 7.7.

Read more

3.5 | Our shareholders are committed to supporting our efforts continued

It is crucial that the regulatory framework supports the scale of investment we need to make, to improve service for our customers and the environment. Ofwat's price review decisions will be key in enabling the financing of our business plan. Therefore, we have set out our views on the key aspects of Ofwat's decisions that will impact the financeability of our plan in Chapter 14.

Prior to the submission of this business plan, we have had constructive discussions with our regulators on the scope of both our plan and proposed regulatory arrangements. These discussions have included the scale of the log-up to our CPIH-real Regulatory Capital Value for totex overspend in AMP7, our allowed totex relative to actual spending in AMP8, the extent of funding required to manage our asset health deficit, and the maximum level of penalties that we can incur under Ofwat's Outcome Delivery Incentive regime in AMP7 and in AMP8.

We are looking forward to continuing these discussions – which could influence the scope of our plan, the bill impact and bill profile – and securing a price control that, in the round, allows us to both deliver record levels of investment for the benefit of the customers, communities and environment we serve, and offer investors an opportunity to earn the appropriate returns required to finance it.

Our ability to deliver our plan rests on the provision of additional equity into our business. This equity enables us to finance the scale of investment that we have set out in our plan, while smoothing the impact on customer bills.

3.6 | Bills will still need to rise

Despite the additional equity we anticipate from our investors, delivering the sustainable improvements our customers and stakeholders expect will necessitate a significant increase in average bills.

This increase is partly due to cost pressures and rising interest rates but is also a reflection of the step change in investment we will need to make.

Because we need to spend more in AMP8 than we recovered from our customers in AMP7, bills need to rise. On an illustrative basis, we are projecting average bill increases of 40% between AMP7 and AMP8.

Figure 3.3 shows the proposed bill increase through the period 2025–2030.

For the majority of our customers, our bills will represent 2% of their income but we know a proportion of our customers will find bills difficult to afford.

We have therefore considered the pace at which we should increase our charges, given the impact it would have on our customers. In the current version of our plan, we have opted for a, 'rise and flat bill profile'. This would see a 24% increase in our bills at the start of the period followed by a period when bills are kept stable. We think this profile has the advantage that the increase in bills would occur at the same time that interest rates are forecast to fall, which will reduce the impact on households. There is an argument that we could adopt a 'gradual increase profile', under which bills would rise every year in the AMP. Under this smoothed approach bills would be higher by 2030, and we would be able to support less customers with our social tariffs.

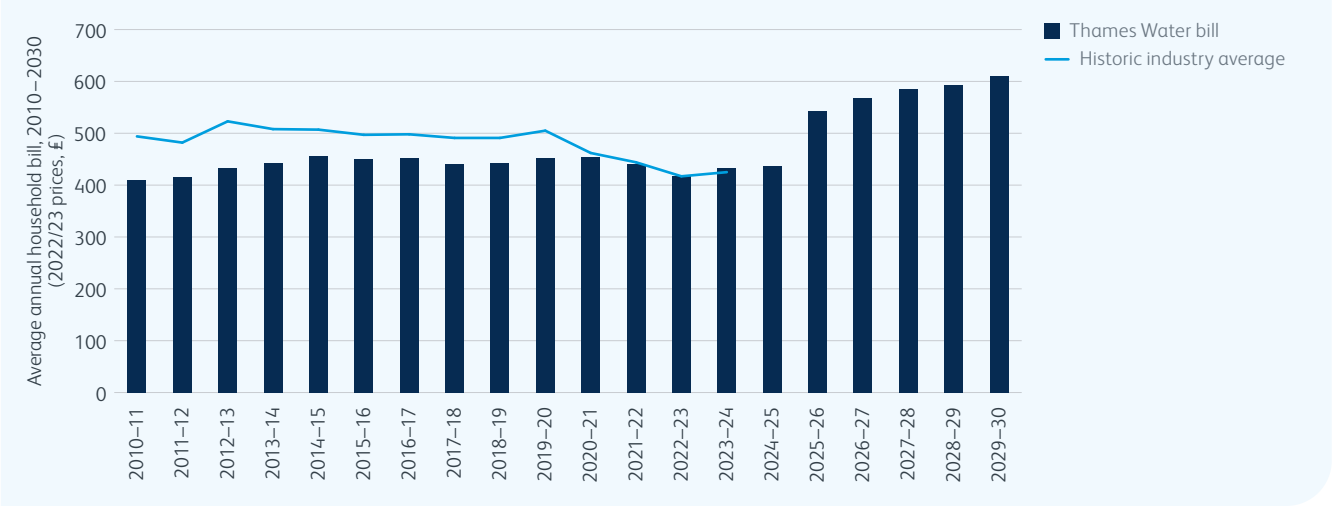


Figure 3.3: Bill profile, Thames Water vs industry average

Note: a forecast of industry average future bills is not currently available.

3.7 | Which is why we will support customers who struggle to pay

We have seen a noticeable increase in the number of vulnerable customers as a result of the 'cost of living' crisis. We estimate that 5.5% of households in our area are in water poverty, which amounts to around 200,000 customers.

We recognise that increases in our bills will be a big ask for some of our customers. Therefore, we are putting in place more help for those in financially vulnerable circumstances than ever before. We will increase our support for customers who struggle to pay their bills.

Ofwat considers the 'water affordability threshold' to be the point at which water bills represent more than 5% of a household's income. We will help prevent more than 290,000 (directly billed) customers from falling below Ofwat's threshold. We will do this through our new, targeted social tariff.

Subject to Ofwat's approval, we will conduct a trial to introduce a new 'rising block tariff' that will allow us to reach a larger proportion of people who need affordability support, while supporting water efficiency outcomes. We will set charges which are as fair as possible for efficient water use. For the first time, customers who use typical amounts of water would see savings on their bills, while those customers who use more would pay a premium. This 'rising block tariff' will reduce bills on average by 9% for three quarters of our households while creating incentives for all to be more efficient with water consumption. Protections will be in place for households with essential high consumption needs. Depending on the results of the trial, we will roll out the new tariff more widely.

This tariff structure will provide an additional £60m to fund an expansion of our social tariff, on top of our current funding ceiling of £95m. This will create an equivalent cross subsidy of £37 per household, up from the current level of £23 per household collected. This approach is endorsed by the Consumer Council for Water (CCW), and our research indicates that the majority of customers support this approach.

3.8 | During AMP8 we will focus on what matters most to our customers, our communities and the environment

As we have developed this plan, we have consulted with the Drinking Water Inspectorate, the Environment Agency and DEFRA. We have worked hard to develop what we consider the best possible plan for our customers, our communities and the environment. We acknowledge the need to strike the right balance between competing demands. Although our plan is the culmination of years of work, we recognise that we are at the beginning of a process. We are open to further engagement. We expect to get and respond to feedback on some of the tough choices that we have made.

The table below summarises the outcomes this plan will deliver for customers communities and the environment.

Outcome		What we will achieve by the end of AMP8	
For customers	**Easy customer experience and tailored support**	• An improvement in C-MeX rank from 17th to 15th. • An improvement in our developer services measure of experience (D-MeX) rank from 16th to 13th.	• An improvement in our business customer and retailer measure of experience (BR-MeX) rank from 13th to 11th. • An extension in the reach of our Priority Services Register (PSR) to 76% of our eligible population.
	Fair and affordable bills	• Of all our directly billed households that are below the water affordability threshold (spending 5% or more of their net equivalised household income on water), we will lift up to 290,000 of those customers above the threshold through growing our new, targeted, social tariff to more than 340,000 directly billed households.	• We will provide an average 59% discount for directly billed, income deprived customers by 2030, up from 27% in 2023, providing an average £358 of support per household.
	Safe, high-quality drinking water	• An improvement in our score against the compliance risk index from 1.75 to 1.00.	• Continuation of our currently strong performance in Customer Contacts About Water Quality (at 0.45 /contacts per 1,000 customers).
	Reliable supply with minimum disruption	• A reduction in water supply interruptions from an average of 10 minutes and 30 seconds to 9 minutes lost per customer for interruptions that lasted three hours or more.	• A reduction in Mains Repair from 281 to 238 per 1,000km. • A reduction in unplanned outages from 2.34 to 1.30 (as a percentage of peak week capacity).
	Preventing sewer flooding and taking waste away safely	• A reduction in internal sewer flooding by 17% compared to our forecast performance at the end of AMP7. • A reduction in external sewer flooding by 14% compared to our forecast performance at the end of AMP7.	• Continuation of our industry leading performance on sewer collapses.
For communities	**Having a positive impact on the community**	• A diverse, inclusive, local workforce that represents the customers we serve.	• A reduction in the disruption our activities can cause to our customers and communities through greater streetworks collaboration. • Greater site access and investment in biodiversity.
For the environment	**Fixing leaks and ensuring there is enough water in the future**	• A reduction in leakage of 22% compared to our 2019/20 baseline. • A reduction in per capita consumption of 5.5% compared to our 2019/20 baseline.	• A reduction in business demand of 10.1% compared to our 2019/20 baseline.
	Stopping polluting rivers and improving their quality	• A reduction in total pollution incidents from 53.2 to 37.0 – a 30% reduction compared to our AMP7 exit position. • A reduction in serious pollution incidents from 8 to 4. • A reduction in storm overflows from 23.8 to 17.2 – a 28% reduction compared to our AMP7 exit position.	• Full compliance with our discharge permits. • Addressing river bathing waters with a 'poor' classification in our region. • 20% reduction in phosphorus discharged to rivers compared to our 2020/21 baseline.
	Reducing emissions and reaching net zero	• Reduce our operational carbon emissions during AMP8.	• A bid for £71.5m to deliver further carbon emissions reduction through Ofwat's Net Zero challenge fund.

Table 3.1: AMP8 outcomes, for customers, communities and the environment

3.8 | During AMP8 we will focus on what matters most to our customers, our communities and the environment continued

Our plan delivers in line with the London Mayor's Plan for London

Our plan will support a number of priorities set out by the London Mayor for the water infrastructure in his London Plan 2021:

- **Water resources** – The Mayor's Plan states that *"water supplies and resources should be protected and conserved in a sustainable manner"*. We are investing £410m to develop new water resources, with our preferred options being the Teddington Direct River Abstraction Scheme and the South East Strategic Reservoir Option.
- **Water usage** – The Mayor's Plan outlines the requirements that *"development proposals should … minimise the use of mains water, achieving mains water consumption of 105 litres or less per head per day and … incorporate measures such as smart metering, water savings and recycling measures to help to achieve lower water consumption rates"*. We are planning to deliver a 22% reduction in leakage in AMP8 compared to our 2019/20 baseline, and we are investing £328m to implement our demand reduction plan, as set out in our WRMP, which includes the deployment of over a million smart meters as well as tailored water efficiency advice for our customers, across our region.[2]
- **Water supply** – The Mayor's Plan states that *"development plans should promote improvements to water supply infrastructure to contribute to security of supply"*. We have submitted a request for investing £465m to address single points of failure at Coppermills and Hampton which could result in a prolonged water supply interruption to over 500,000 customers.
- **Wastewater** – The Mayor's Plan stresses the need to *"support wastewater treatment infrastructure investment to accommodate London's growth and climate change impacts"*. The delivery of the Thames Tideway Tunnel in 2025, the final element of a multifaceted programme of improvement, will considerably increase the capacity of our wastewater network and will help contribute to reducing the total volume of storm discharges into the tidal River Thames by 95% in a typical year.
- **Resilience** – We are working with London boroughs to deliver sustainable urban drainage to slow the rate at which rainwater enters sewers, reducing the risk of flooding.

Overall, this is an ambitious but credible plan. We will reach new levels of operating performance, customer service and capital delivery. With support from our customers, collaboration from our stakeholders, further equity from our shareholders, and the right regulatory framework, AMP8 will see us making significant progress towards our vision.

2 We have asked Ofwat to consider adjusting the Green Economic Recovery funding conditions in light of the affect that the summer drought of 2022 and subsequent freeze-thaw event has had on the achievability of our end of AMP leakage target. The outcome of these discussions will determine if we can proceed with the Green Economic Recovery programme.

3.9 | Our ambitious 2050 vision

Our purpose is to deliver life's essential service, so our customers, communities and the environment can thrive.

As the world around us changes, we can only deliver our purpose if we change too. Our ambitious vision imagines a world where we have learnt from the past and adapted to the future, so our customers, communities and the environment can thrive. It starts with tackling the issues that matter to our customers right now: providing better customer service, finding and fixing leaks more quickly and reducing pollution. And it goes beyond our core services to help us become a force for good: equipping local communities with new skills, restoring rivers and producing more green energy than ever before.

> Our ambitious vision imagines a world where we've learnt from the past and adapted to the future so our customers, communities and the environment can thrive.

Figure 3.4: Our vision for 2050 outcomes

Our Vision 2050

FOR CUSTOMERS

Making sure everyone always has access to top-quality water and a reliable waste system

Providing outstanding service and value for all our customers

Motivating customers to save water and protect the environment

We provide safe, clean drinking water
- Tackling any challenges that could affect the high quality of our water, including speeding up our work to replace lead pipes.

We offer customers value for money and send them affordable, accessible bills
- Providing an inclusive service with built-in support for vulnerable customers.

We always maintain a reliable supply
- Investing in innovation so that no-one is let down by our network.

We protect customers from sewer flooding
- Making sure no home, workplace or public space is at risk of sewer flooding by changing how we manage water from source to surface.

We provide a proactive, personal service
- Fixing service issues the same day.
- Creating a customer experience that constantly evolves to reflect the most recent digital innovations, consumer trends and market opportunities.
- Partnering with other businesses, like water retailers and property developers, to make sure every customer gets the information they need and the service they deserve.

We help customers understand how to protect the planet
- Inspiring as many people as possible to make choices that save water and keep pipes flowing.

FOR COMMUNITIES

Using our land to benefit surrounding communities

Equipping local communities with the skills they need to thrive

Championing our people to deliver our purpose

We enrich community life for current and future generations
- Taking every opportunity to create social and public value.
- Putting sustainability at the heart of our plans.
- Using our land to bring the right mix of investment, local jobs, thriving wildlife spaces and more opportunities to spend time in nature.

We champion what we do and create opportunities for everyone to be part of it
- Creating jobs that attract the diverse range of talent we need to lead change in our region and beyond.
- Providing opportunities for local communities to develop skills for a successful future.

We trust each other to do the job
- Providing a safe, inclusive and purpose-driven working environment where our people and our trusted partners can perform at their best
- Leading our industry by equipping our people with the right skills to give customers the service they expect.

FOR THE ENVIRONMENT

Investing in our network to prevent leaks and keep water flowing.

Preventing all wastewater pollution and leading wider efforts to restore river health and increase biodiversity

Producing all the green energy we can to power what we do

We meet the changing needs of our customers and the world around us
- Making sure less than one in every ten drops of water leaves our network through leaks.
- Supporting our customers to reduce their water use by a quarter.
- Securing enough water to meet future demand while protecting our most environmentally sensitive sources.

We collaborate with others to improve the health of our rivers
- Keeping all untreated sewage out of our rivers.
- Taking the lead in improving our region's environment, helping our rivers become some of the healthiest in the UK.

We make every watt count
- Sourcing more of our energy from renewables.
- Using technology to become a major producer of green energy as well as data to help make our energy go further.

We leave a net zero carbon legacy
- Achieving net zero carbon emissions across all parts of our business.

4.0
We have a robust approach to assurance

In this section

Key messages

- We have designed and implemented a robust, risk-based assurance and governance process.
- The Board owns the plan and was able to hold management to account throughout its development.
- The Board had the opportunity to challenge the quality of the plan.
- We have identified risks in delivering a high-quality plan, and developed mitigation plans.
- We have provided the Board with the findings from our assurance work, together with an account of the way we have acted on assurance findings to improve our plan.

We summarise below how we have assured our Plan. Further detail can be found in Appendix TMS48: Our Assurance Framework.

4.1 | We have designed and implemented a robust assurance and governance process

It is important that customers and stakeholders, including Ofwat, have confidence in our business plan.

We have developed a high-quality plan, that reflects the expectations of our customers, will improve the core services we deliver, will create greater environmental and social value, and sets a clear delivery strategy for long-term improvement.

To guide our decisions, we have designed an assurance approach that is aligned with best practice, regulatory expectations and the direction provided by our Board. In summary, this approach:

- Ensured Board ownership of the plan and held management to account for the development of our submission.
- Supported the Board's inquiries into the quality of the plan, thereby providing them with the confidence to sign the Board Assurance Statement.
- Provided an indication of the risks and their mitigations, and opportunities around delivering a high-quality plan, so that we could build in evidence to improve the final plan submitted to Ofwat.

Note, as stated in the Board assurance statement, assurance of the business plan is ongoing at the point of submission. We will complete the balance of our planned, risk-based programme assurance as agreed with the Board of Thames Water Utilities Limited during October 2023 under the Board's governance and will address any findings.

We have followed our External Reporting Policy which sets out our information principles and our proportionate assurance approach.

Our information principles describe the standards we expect of our published data. This data must be:

- **Customer led** – Delivers understandable information that matters to our customers and stakeholders.
- **Accurate** – Information that fully reflects the underlying data for its intended use.
- **Reliable** – Information that is consistent and trustworthy.
- **Transparent** – Information that is not misleading or biased, is understandable and clear to enable our customers and stakeholders to make informed decisions.
- **Accessible** – Information is easy to find and navigate for all our customers and stakeholders.
- **Timely** – Our customers and stakeholders get the right information at the right time.
- **Complete** – Information that provides the full story for its intended use and context.

4.1 | We have designed and implemented a robust assurance and governance process continued

Our proportionate assurance approach is the process by which we prepare, review, approve and release information. This approach is aligned with Ofwat's Information and Assurance Guidance and also draws on best practice including Ofgem's Data Assurance Guidance and the Chartered Institute of Internal Auditors 'three lines' model.

The 'three lines' model is a framework that outlines management and internal audit's role in assuring the effective management of risk within a corporate governance structure. The framework is summarised in Figure 4.1 to demonstrate how all functions and activities within an organisation can be appropriately controlled and subject to sufficient oversight and scrutiny to ensure risks of error are minimised.

Assurance is obtained by the Board from all aspects of the programme, including through the application of first line checks (programme reporting) as well as second and third line review (assurance reporting).

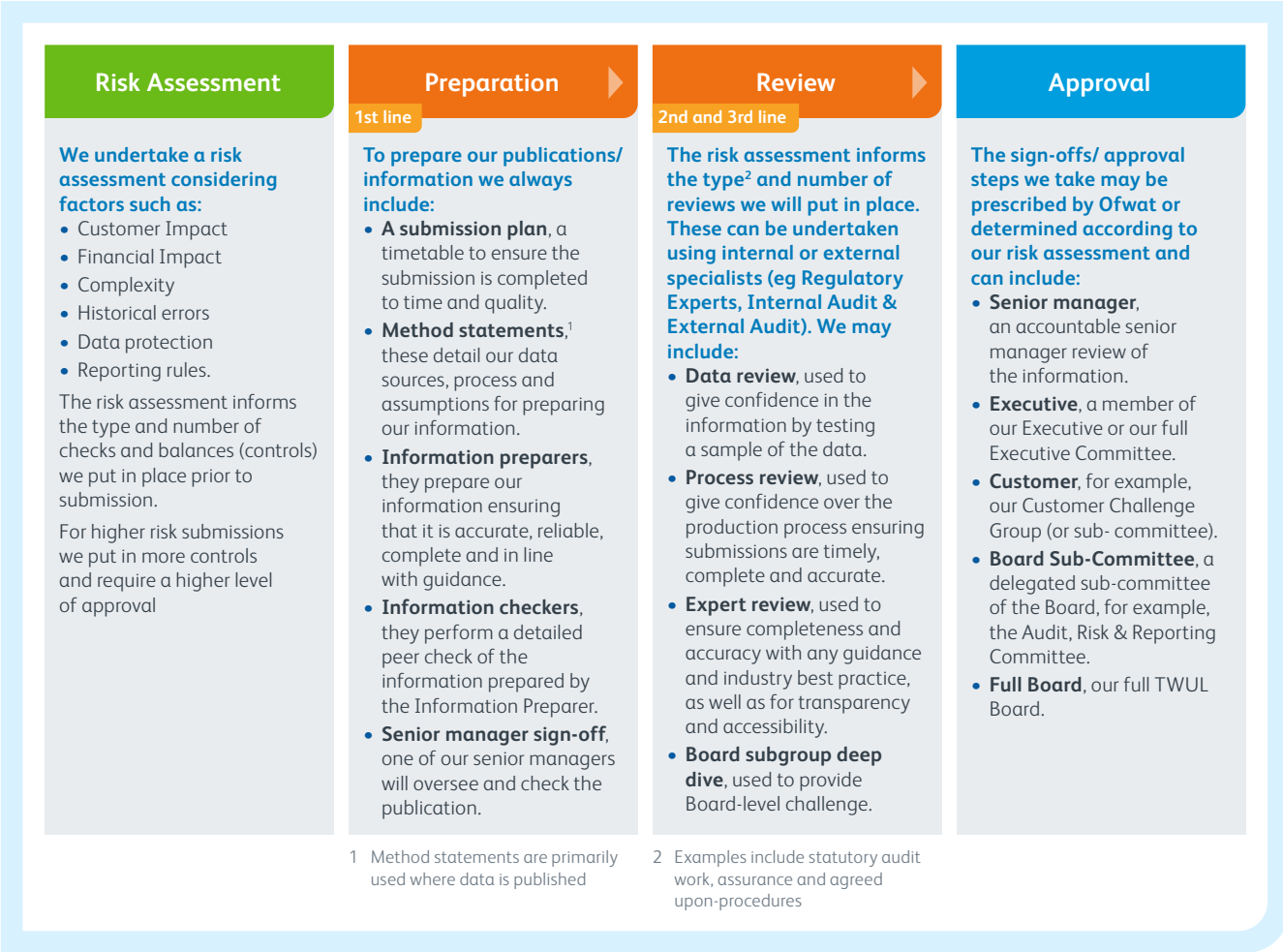


Figure 4.1: Overview of Thames Water external reporting assurance framework

Source: Thames Water External Reporting Policy

4.1 | We have designed and implemented a robust assurance and governance process continued

We have adopted a risk-based approach to assurance, based on Ofwat's quality and ambition criteria. We designed our programme to provide assurance through a combination of preparation controls (eg policy procedures, senior management review), assurance reviews (internal review, external review, peer reviews, the views of expert consultants, etc) and independent assurance reviews (both internal and external). Our approach explicitly recognises that the extent of assurance will depend on the level of risk. This is summarised in the table below.

Risk level	Preparation control (first line)	Assurance review (second line)	Independent assurance review (third line)	Sign-off
High	Yes	Yes	Yes	Board/Executive
Medium	Yes	Yes		Executive
Low	Yes			Director/Head of

Table 4.1: Risk based application of assurance

Source: Thames Water PR24 Programme

The table below explains how we have applied this framework in practice.

Line	Functions	Role	Relevant business activities
1st	Business Operations	Own and manage production of submission	The completion of processes to assure the quality and completeness of the data, consisting of information integrity declarations and sign-off checklists, which are prepared by a minimum of three separate people: • An information preparer • An information checker • A senior accountable manager
2nd	Oversight Functions	Oversight over production separate to production	• External reporting assurance • Regulation • Legal • Data protection • Expert technical challenge
3rd	Independent Assurers	Independent assurance over the submission and/or quality/ delivery of 2nd line	• Internal audit • External audit • Challenge from the customer challenge group • Other third-party assurance providers

Table 4.2: How we have applied our risk-based assurance in practice

The development and production of our business plan has been led, as far as possible, by the responsible part of the business, supported by specialists with the relevant subject matter expertise. First line assurance has therefore used our existing reporting lines through management and into our Executive Committee.

Second line assurance was typically delivered by an independent peer review.

Third line assurance was delivered by our Internal Audit and Assurance team or by independent assurance specialists. This was completed against medium risk areas and requirements identified through our risk assessment process detailed above.

For high-risk areas, we utilised third parties to challenge and review our business plan. This happened in tandem with our internal assurance.

Our Customer Challenge Group (CCG) challenged our emerging thinking as we developed our plan. They provided valued insight, challenge and feedback. The CCG Chair has attended our full board and relevant subcommittees. We have submitted the CCG's report with our business plan (see Appendix TMS05: CCG report).

To provide our Executive and Programme Board with an additional layer of strategic challenge, we contracted Flint Global who have provided feedback throughout the development of our plan.

The outputs of our assurance work are summarised in Appendix TMS48: Our Assurance Framework.

4.2 | Our Board has been involved in all aspects of our plan

Over the last two years, the development of our plan has run in parallel with oversight and challenge from the Board, relevant sub-committees and individual Board members. This has allowed the Board to provide strategic leadership and direction to the preparation of the company's PR24 business plan from the outset.

The Board, and its sub-committees, have used a combination of methods to direct and challenge the quality of our plan, with a particular focus on topics such as customer engagement, deliverability, affordability and financeability. We have involved Board members through deep dives, workshops, engagement with our Customer Challenge Group, our board Regulatory Strategy Committee and Customer Services Committee, and ongoing engagement with regulators and stakeholders. We have also provided the Board with the results of assurance activities.

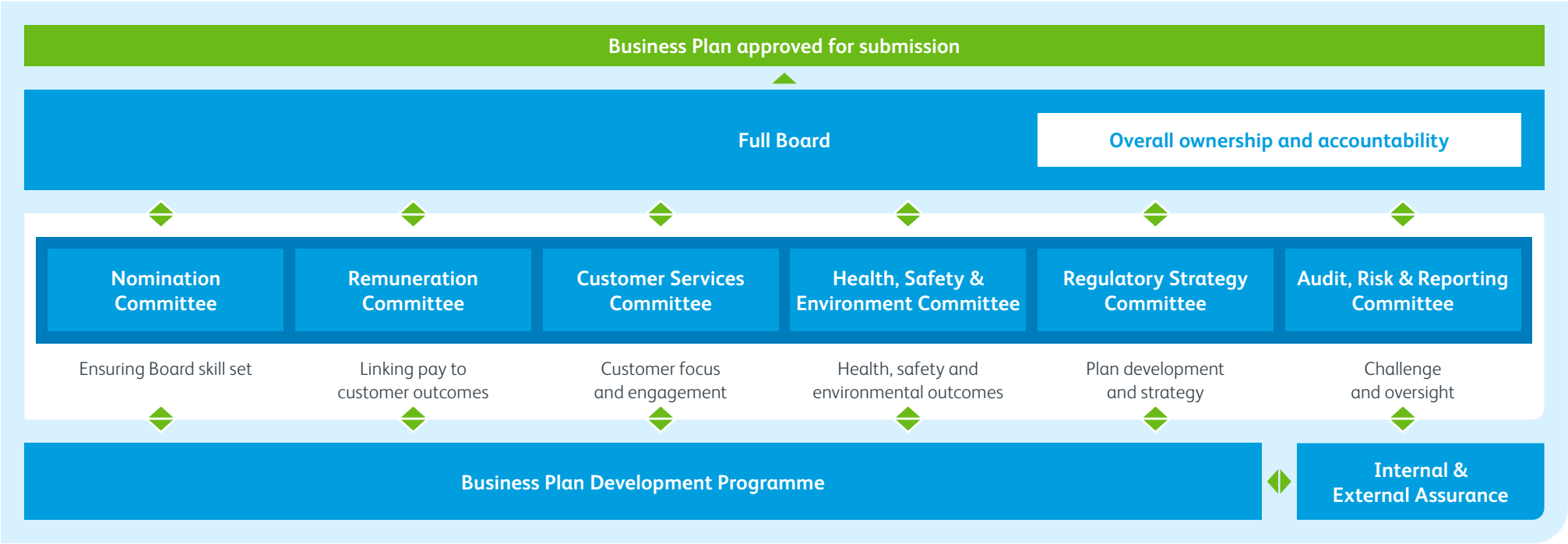


Figure 4.2: Board governance overview

4.3 | We have provided assurance to the Board in line with Ofwat's expectations

Ofwat provided guidance on their assurance expectations and requirements for the business plan. Based on this, we took full ownership of developing a plan for the method and extent to which assurance was undertaken. The table below summarises the assurance we have provided to support the Board.

Ofwat quality test	Relevant Board assurance area(s)	1st line	2nd line	3rd line
Data, information and assurance	Data and information Deliverability	All PR24 deliverables	All PR24 deliverables	Deloitte: high risk data tables Flint Global: the core narrative Deloitte: deliverability
Long-term Delivery Strategy	Long-term Delivery Strategy	All PR24 deliverables	All PR24 deliverables	Flint Global: our Long-term Delivery Strategy
Customer engagement, affordability and acceptability	Affordability Customer engagement	All PR24 deliverables	All PR24 deliverables	Savanta: customer engagement Deloitte: bill impact, affordability and vulnerability (to be completed in October 2023)
Costs	Costs and outcomes	All PR24 deliverables	All PR24 deliverables	Deloitte: enhancement cases, base cost efficiency, cost adjustment claims, deliverability Turner & Townsend: approach to direct procurement for customers (DPC) Internal audit: consistency with our Water Resources Management Plan
Outcomes	Costs and outcomes	All PR24 deliverables	All PR24 deliverables	Deloitte: assurance over deliverability
Risk and return	Risk and return	All PR24 deliverables	All PR24 deliverables	Grant Thornton: Thames Water corporate model (partially completed prior to submission, will be completed in October 2023)

Table 4.3: Summary of the assurance with have provided to support the Board

We have provided the Board with evidence of assurance by sharing assurance findings and information on how we have acted on these findings to improve our plan. Assurance reports, records of previous Board governance over the plan and evidence from CCG challenge were made available to the Board in an accessible format.

4.4 | Our Board assurance statements

Throughout all aspects of our assurance approach, from technical challenge over business plan deliverability to data integrity reviews, we (the Board of Thames Water Utilities Limited) have consistently challenged ourselves against the following core principles that:

- Customers' wants and needs are properly captured through customer engagement and reflected in the performance outcomes and priorities of the plan.
- The plan provides a safe and reliable service to customers.
- Efficiency and value for money are at the centre of the proposals.
- Any trade-offs have been made without compromising the overall integrity of the plan.
- The plan adequately addresses deliverability risks.
- The plan has evolved to challenges made throughout the assurance processes.

The sources of assurance and evidence provided for each point on the Board Assurance Statement are detailed in the Appendix TMS48 Assurance Framework.

4.4.1 | Board assurance statements

The PR24 business plan has been created against a backdrop of rising expectations and an increasingly challenging environment. During AMP8 we will focus on what matters most to our customers and the environment. We will need to balance with significant upward pressures on investment with customer affordability, deliverability, financeability and a financially resilient plan. We have also needed to balance delivery of improvements on performance, resilience and compliance risk with the imperative of achieving a sustained and sustainable turnaround of the company. We have had constructive discussions with our regulators prior to the submission and expect to continue this dialogue.

We (the Board of Thames Water Utilities Limited) have taken steps throughout the development of the plan to challenge that it is ambitious while also being deliverable and based on appropriate assumptions that fully reflect our current circumstances. Our principal challenges have included:

- Challenging and shaping Thames Water's approach to PR24, review and challenge over the core narrative and plan.
- Challenge over Thames Water's vision and strategy including relevance to customers, to stakeholders, having regard to Thames Water's specific circumstances.
- Challenge over turnaround activities required to make the vision a reality, and development of Thames Water's roadmap to delivering the strategy.
- Shaping the deliverable scope of the business plan in terms of specific decisions on the scope to be included (including through governance over the Water Industry National Environment Programme (WINEP), Industrial Emissions Directive (IED), Water Resources Management Plan (WRMP) and Drainage Water Management Plan (DWMP)), supply chain capacity, cost efficiency, value for money and financing the plan.
- Challenge over affordability support and intergenerational fairness.
- Governance over customer, community and stakeholder engagement and the outcomes of customer challenge.
- Governance over the arrangements for business plan assurance.

This statement is made on the basis that, while we have provided governance over the contents of the plan, at the time of signing, some of the planned assurance is ongoing. Topics still being assured include external third line assurance over some of the risk and return data, external financial model assurance, assurance over Thames Water's approach to addressing bill affordability and ongoing internal checks over the plan.

We are satisfied that the PR24 business plan reflects Thames Water's best plan at the point of submission. Thames Water has reserved the option to provide revisions to the plan to reflect the outcomes of ongoing discussions with regulators, and following further work on our refocused turnaround plan. Revisions will be prepared under the governance of the Board of Thames Water Utilities Limited and will be assured in line with Ofwat and our requirements using our risk based approach.

4.4.1 | Board assurance statements continued

Following our in-depth involvement in the planning process, finalisation of the business plan and successful delivery of the assurance programme, the full Board confirm that, insofar as we are aware, having made reasonable inquiries, we have challenged and satisfied ourselves to confirm the statements below:

Long-term Delivery Strategy

- The Long-term Delivery Strategy reflects a long-term vision and ambition that is shared by the Board and company management.
- It is high-quality, and represents the best possible strategy to efficiently deliver its stated long-term objectives, given future uncertainties.
- Thames Water has prioritised the business plan to include the maximum scope that is both deliverable and financeable within an efficient totex proposal. The company continues to engage with regulators in relation to its statutory and licence obligations in 2025–2030, in the context of our turnaround plan, and will continue making improvements in an effort to satisfy statutory and licence obligations now and in subsequent regulatory period(s). We expect that we can meet our AMP8 statutory and licence obligations, based upon the plan put forward and including the assumptions made within this regarding successful regulatory engagement.
- As Thames Water's Long-term Delivery Strategy can only give an adaptive planning picture based on current obligations, and we do not know what future policy changes for the sector will require of the company and the scope of business plans and determinations beyond PR24, it is not possible for us to submit that the company can meet its statutory and licence obligations beyond 2030. We can confirm that we will continue to invest in our business on a 'no regrets' basis to enable compliance with current licence and legal obligations over the long term and maintain flexibility to accommodate future changes.
- The Long-term Delivery Strategy is based on adaptive planning principles.
- It has been informed by customer engagement.
- Thames Water has taken steps to secure long-term affordability and fairness between current and future customers.
- The 2025–30 business plan implements the first five years of the Long-term Delivery Strategy.

Affordability

- The full implication of the 2025–30 business plan for customers was considered and the plan achieves value for money.
- The Long-term Delivery Strategy protects customers' ability to pay their water bill over the long term and delivers fairness between what existing customers will pay and what is paid for by future customers.

Costs and outcomes

- The performance commitment levels we have chosen to include in our plan are stretching but achievable based on our AMP8 plan and our turnaround plan. We have prioritised areas of the business plan to include the maximum scope that is both deliverable and financeable within an efficient totex proposal, which includes stretching and deliverable performance commitment levels. We have also allocated performance improvements between base and enhancement costs in a way that we consider to be stretching, realistic and deliverable based on our current situation. As we have not used the levels specified by Ofwat, we cannot submit that the performance commitment levels included in our plan will fully meet Ofwat's expectations.
- The expenditure forecasts included in the company's business plan are robust. The expenditure forecasts are also, efficient considering Thames Water's specific circumstances, including population transience, and our asset deficit.
- 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.
- PR24 plans and the expenditure proposals within them are deliverable and the company has put in place measures to ensure that they can be delivered.
- The plan includes price control deliverables covering the benefits of material enhancement expenditure (not covered by performance commitments).
- The expenditure proposals are affordable by customers and do not raise bills higher than necessary.
- The expenditure proposals reflect customer views, and where appropriate are supported by customers.

4.4.1 | Board assurance statements continued

Risk and return

- Based on the cost of capital and other financing assumptions used by Thames Water within our business plan, including appropriate regulatory arrangements, Thames Water has prepared a business plan that is financeable on the basis of the notional capital structure. Thames Water has used different underlying assumptions for the cost of capital than Ofwat used when it set out its early view cost of capital – it is these cost of capital and other financing assumptions (based on robust market evidence) used in our plan which together with appropriate regulatory arrangements allow us to meet Ofwat's expectations for financeability and financial resilience. We have had constructive discussions prior to submission with our regulators on the scope of both our plan and proposed regulatory arrangements, which include the scale of log-up to CPIH-real RCV for totex overspend in AMP7, allowed totex relative to actual spending in AMP8, and the maximum level of penalties that we can incur under Ofwat's Outcome Delivery Incentive regime. We are looking forward to continuing these discussions – which could influence the scope of our plan, the bill impact and bill profile – and securing a price control that, in the round, allows us to both deliver record levels of investment for the benefit of the customers, communities and environment we serve, and offer investors an opportunity to earn the returns required to finance it.
- The actual company can maintain its current level of financial resilience over the 2025–30 period based on the deliverable plan we are submitting. To help inform this statement, we have obtained independent financial advice. With regard to the period beyond 2030, we have limited visibility over future financeability because we have limited visibility over future investment requirements and Ofwat's future decisions on price controls. Our Long-term Delivery Strategy can only give an adaptive planning picture based on current obligations and to enable potential future outcomes. Similarly, our long-term viability statement assessment finds that uncertainty increases over the longer term.

Customer engagement

We have provided assurance that:

- Thames Water's customer engagement and research meets the standards for high-quality research and any other relevant statements of best practice and has been used to inform our business plan and Long-term Delivery Strategy.

4.4.2 | Material issues and circumstances

Through the Board's enquiries, they noted the following material issues and circumstances that may materially affect Thames Water's ability to carry out its regulated activities in 2025–30. These are reflected in the Board assurance statement and in the business plan.

Issue or circumstance 1

The company has put together an AMP8 business plan which it believes it can deliver while being affordable and financeable within an efficient totex proposal. However, it does not cover all areas of investment and requirements proposed by Ofwat for 2025–2030. We have prioritised those activities which we consider can realistically be delivered in 2025–30.

Issue or circumstance 2

We have prioritised the business plan to include the maximum scope that is both deliverable and financeable within an efficient totex proposal. As we have not used the performance commitment levels specified by Ofwat, we cannot submit that the levels included in our plan will fully meet Ofwat's expectations.

4.4.2 | Material issues and circumstances continued

Issue or circumstance 3

Based on the cost of capital and other financing assumptions used by Thames Water within our business plan, including appropriate regulatory arrangements, Thames Water has prepared a business plan that is financeable on the basis of the notional capital structure. Thames Water has used different underlying assumptions for the cost of capital than Ofwat used when it set out its early view cost of capital. It is these cost of capital and other financing assumptions (based on robust market evidence) used in our plan which together with appropriate regulatory arrangements, allow us to meet Ofwat's expectations for financeability and financial resilience. We have had constructive discussions prior to submission with our regulators on the scope of both our plan and proposed regulatory arrangements, which include the scale of log-up to CPIH-real RCV for totex overspend in AMP7, allowed totex relative to actual spending in AMP8, and the maximum level of penalties that we can incur under Ofwat's Outcome Delivery Incentive regime. We are looking forward to continuing these discussions – which could influence the scope of our plan, the bill impact and bill profile – and securing a price control. This, in the round, allows us to both deliver record levels of investment for the benefit of the customers, communities and environment we serve, and offer investors an opportunity to earn the returns required to finance it.

4.4.3 | Board approval

The Directors of Thames Water Utilities Limited have resolved, that in their opinion, and with specific regard to the material issues and circumstances disclosed, to unanimously approve this Board Assurance statement.

Sir Adrian Montague
Chairman

Alastair Cochran
Co-Chief Executive Officer and Chief Financial Officer

Catherine Lynn
Independent Non-Executive Director

Nick Land
Deputy Chairman and
Senior Independent Non-Executive Director

Ian Pearson
Independent Non-Executive Director

Hannah Nixon
Independent Non-Executive Director

Jill Sheddon
Independent Non-Executive Director

John Holland-Kaye
Non-Executive Director

Michael McNicholas
Non-Executive Director

Guy Lambert
Non-Executive Director

5.0
Who we are

In this section

Our purpose is to deliver life's essential service, so our customers, communities and the environment can thrive.

Every day, we supply clean and safe drinking water to 10 million customers and take away 4.7 billion litres per day of wastewater from 16 million customers.

5.1 | Our geographic area

Our patch follows the River Thames and stretches from Gloucestershire to Essex. It covers countryside, villages, towns and our capital city.

After moving to a regional model on 1 April 2023, we have separate operational teams dedicated to serving customers in London and in the Thames Valley/Home Counties.

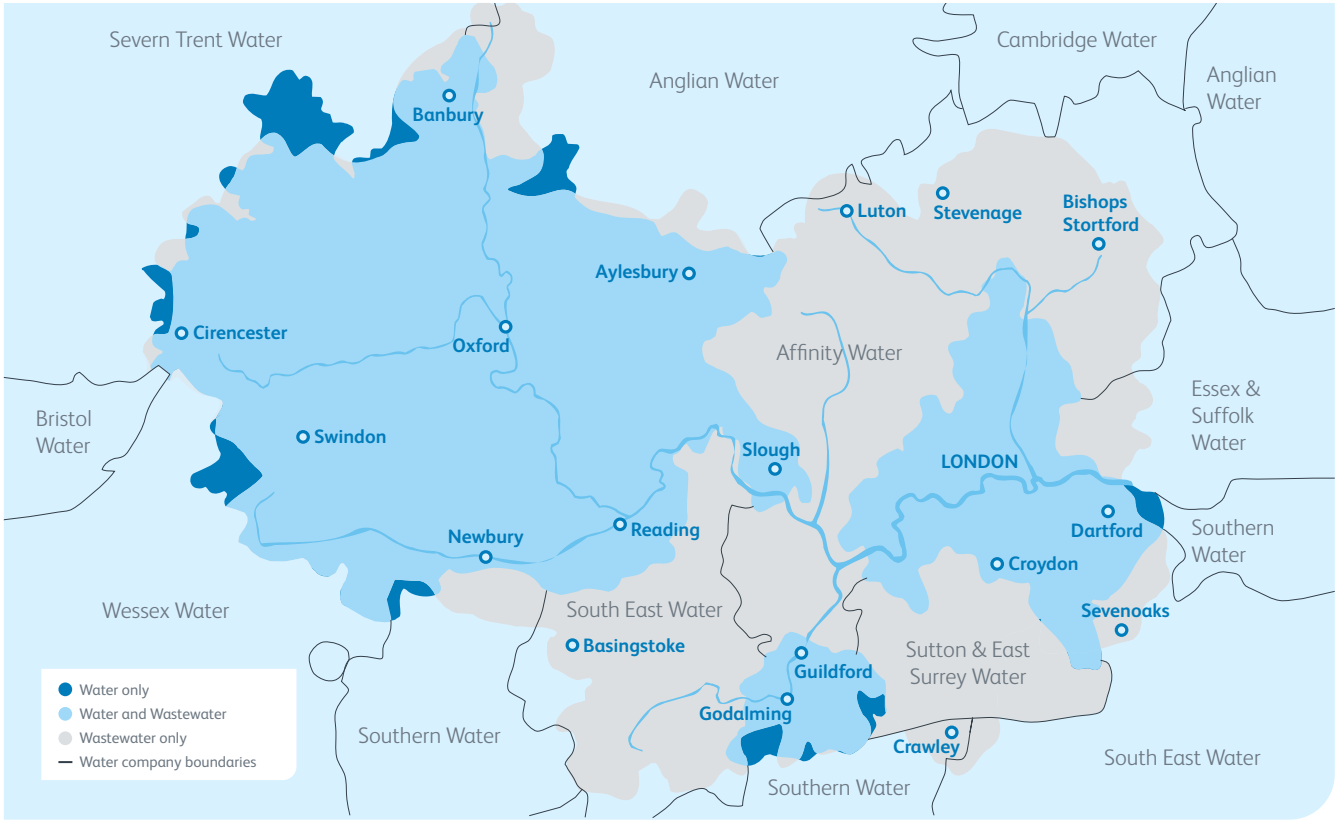


Figure 5.1: Our operational area

5.2 | Thames Water in numbers

Operational metrics	Customer numbers	Network length (km)	Treatment sites	Volume (bn litres/day)	Employees
Water	10m	c.32,000	97	2.6	Over 7,000
Wastewater	16m	c.109,000	353	4.7	

Table 5.1: Thames Water in numbers

6.0
We have listened to our customers and communities

In this section

Key messages

- We engage with over 200,000 customers each year through our ongoing engagement and nearly 20,000 customers engaged in deep dive research for PR24. We have analysed 320 insight sources as we developed our plan.
- The ten outcomes we want to deliver in AMP8 are based on what our customers, communities and stakeholders want, and the performance commitments will be used to measure our delivery of these outcomes.
- We tested a near-final version of our plan with customers and most found our plan acceptable, but nearly half said they would find the proposed bills difficult to afford. It is therefore essential that we provide an ambitious and progressive package of affordability support for our customers.

This chapter explains how we engaged with our customers and communities, and summarises the results of this engagement. Appendix TMS03: Customer engagement, provides further detail on the way we have engaged with our customers, communities and other stakeholders, including the role played by our Customer Challenge Group (CCG).

6.1 | We engage with customers to improve our performance and to develop our plans

6.1.1 | We have drawn on multi-layered engagement activities

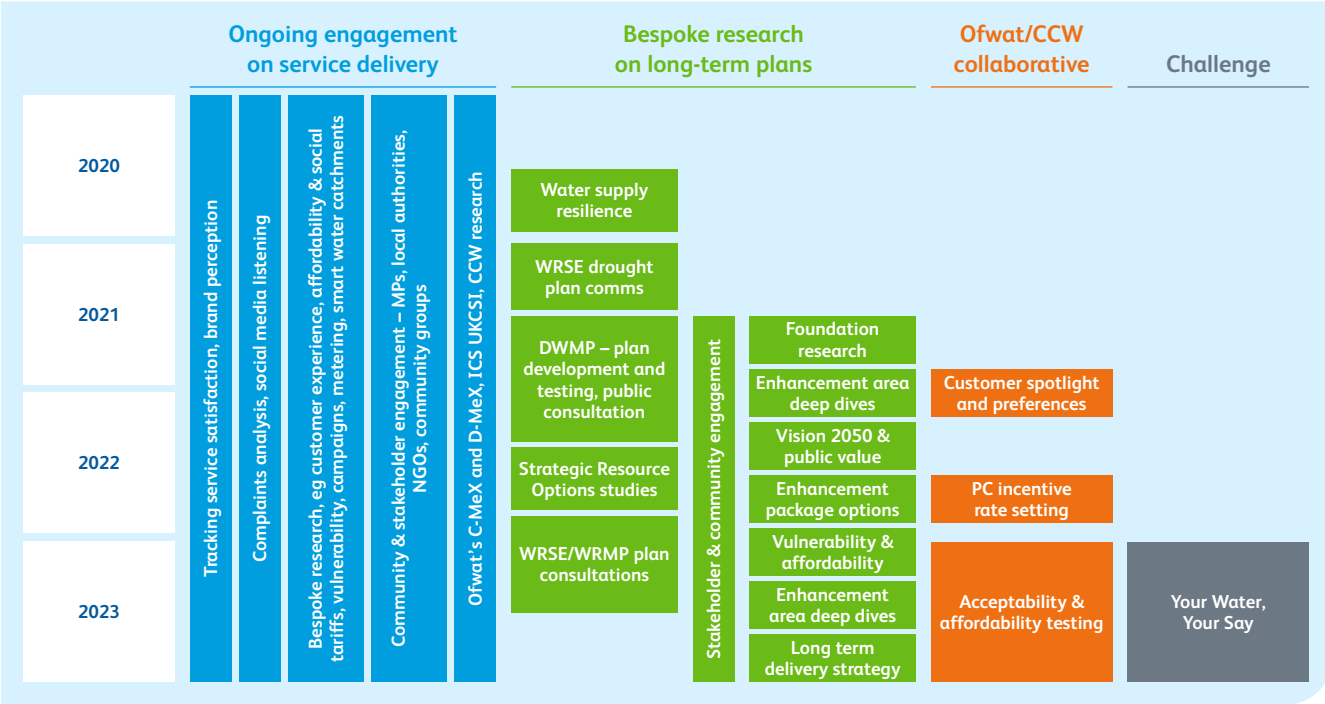
Our customer engagement includes all of the end users of our water and wastewater services.

We take particular care to ensure our engagement activities include customers in vulnerable circumstances, for example, those who are living with disabilities or chronic illness, the elderly, and those on low incomes or struggling to pay bills. We also engage with other kinds of customers, including business retailers, developers and new appointees.

Our engagement encompasses community and stakeholder groups who represent the concerns of customers, such as groups with shared interests, those living near our works, elected representatives, advocacy organisations, charities and non-governmental organisations.

Figure 6.1: Our research and engagement programme

Source: Thames Water



6.1.1 | We have drawn on multi-layered engagement activities continued

We engage with over 200,000 customers each year through our ongoing engagement and nearly 20,000 customers were engaged in deep dive research for PR24. We have analysed 320 insight sources, which we have consolidated into our 'What customers, communities and stakeholders want' document. Our plan has drawn on four sources of insight:

- **Ongoing engagement**
  - Our service delivery teams use the insights we gain from ongoing engagement to improve delivery for customers. These ongoing exercises include our Thames Water Customer Voices insight community, service satisfaction and brand perception trackers, social media and insights from expert organisations like Consumer Council for Water (CCW) and the Institute of Customer Service.
  - Insights also come from bespoke research. It is essential that we deliver an inclusive service, so we conducted research with customers from a range of communities and backgrounds with health, situational or financial vulnerabilities, focusing on groups that were under-represented in previous research, such as specific minority ethnic communities and non-English speakers. This research helped to inform the way we deliver services to these customers as well as influencing our PR24 vulnerability strategy.
  - Teams from across our business build and maintain relationships with our diverse communities and their representatives. Our local engagement teams seek to understand and respond to views on the operation of water and wastewater networks, and our capital delivery teams engage and seek feedback on new projects.
- **Bespoke research to inform our long-term plans** – To supplement our ongoing engagement, and in line with CCW's framework for the type and volume of research carried out across a typical five-year period, we have commissioned targeted research to inform our business plan and long-term delivery strategies, including our Drainage and Wastewater Management Plan and Water Resources Management Plan. We have also organised specific stakeholder engagement sessions to understand their objectives and expectations of us over the short, medium and longer term. Our PR24-specific research is focused on areas where customers can have a meaningful influence on our business plan: our Long-term Delivery Strategy, our vision for 2050, our AMP8 strategies and performance commitment levels, our choices around potential enhancement spend and its phasing, and the acceptability and affordability of our overall business plan, including for those who struggle, or are at risk of struggling, to pay their bills.
- **Ofwat and CCW-led collaborative research** – Our engagement has complemented the central customer research, and has examined locally important priorities. In building our PR24 proposals we have taken account of the results of the research on common areas of company business plans, performance commitments and outcome delivery incentive rates.
- **Challenge** – We invited challenge from customers and stakeholders in our first 'Your Water, Your Say' open challenge session and considered their feedback alongside the findings from our other engagement activities and ongoing challenge from our CCG.

We engage with over

200,000

customers each year through our ongoing engagement

and nearly

20,000

customers engaged in deep dive research for PR24.

6.1.2 | Our engagement meets Ofwat's standards and is in line with best practice

Our research and engagement programme observes Ofwat's standards for high-quality research and also considers guidance from CCW on best practice for engaging with customers. We keep up to date on research and engagement best practice, both within and outside our industry.

Ongoing challenge from our CCG has helped improve the quality of our customer engagement. A particular focus has been around inclusivity and ensuring we understand and respond to the diverse needs of our customers, particularly those who are in vulnerable circumstances. For example, as a result of CCG feedback, we now conduct non-household discussions separately to household ones, to avoid the tendency for individuals to answer questions as a householder rather than on behalf of their business. We also chose to target specific minority ethnic communities in recent vulnerability deep dive research, rather than setting an overall quota for minority ethnic groups, so we could generate more tangible and meaningful insights.

We have made our research reports available to the other water companies in South East England and across the wider water sector. We take the opportunity to learn and adopt best practice methods from other companies, CCW and Ofwat, and we compare others' research findings with our own to further develop our understanding of customer views, preferences and experiences.

6.1.3 | We have developed a robust approach to Triangulation and Line of Sight

To ensure we reflect what customers want, we designed a Triangulation and Line of Sight approach, through which we consider customers' views in our decision-making for our PR24 business plans and long-term delivery strategies. We have devised and implemented a triangulation approach that not only follows CCW's guidance but also additional elements used by other water companies at the 2019 Price Review (PR19) and energy networks during the RIIO-2 price control.

We make use of a wide range of inputs, that go beyond engagement insights. We have evaluated 320 insight sources, including PR24-specific research, research from PR19, ongoing insight gathering and insight from relevant external sources.

To demonstrate how customer, community and stakeholder insights lead to action, we will create supporting documents detailing how engagement has shaped key proposals in our PR24 business plan. WCCSW is the first step in this process.

Insights

What customers, communities and stakeholders want (WCCSW)	Engagement summary (ES)	Line of sight (LOS)	Internal and external validation
WCCSW document synthesises insight from a range of sources and breaks these down into key insights by segment and regions (where possible).	**ES** details the engagement per area (where insights have been drawn from) and how different sources have been triangulated to develop key insights.	**LOS** explains how key insights have informed our proposals. This includes demonstrating how insights have informed our base plan, enhancement areas and performance commitments.[1]	LOS submitted to regular **CCG** scrutiny and challenge. Transparent and iterative process to refine proposals and inform further engagement.

PR24 Plan

We expect each team working on the PR24 submissions to compare their plans to the list of customer needs in this document and set out how their plan either meets these needs or does not meet them, and why.

Figure 6.2: Triangulation and Line of Sight framework

Source: PR24 Insight triangulation and line of sight methodology, Sia Partners, August 2023

1 In addition to demonstrating how insights have informed proposals, the LOS will document where key triangulation decisions and trade-offs have been made based on customer, community and stakeholder insights versus other factors. Other factors include: long term strategy, regulation, performance, risk, deliverability and affordability.

6.1.4 | We have developed a comprehensive understanding of what customers want

The output of our triangulation is a clear and comprehensive view of the outcomes customers and stakeholders expect us to deliver on their behalf.

We have summarised the outputs in Appendix TMS04: What customers, communities and stakeholders want. Figure 6.3 shows our most recent summary of what customers, communities and stakeholders want from us.

The framework consists of 'customer wants', which are further broken down into topics and sub-topics underpinned by more detailed insight messages within each area. Figure 6.3 summarises these 'wants' and Figure 6.4 lists the 'wants' in order of decreasing priority.

What customers, communities and stakeholders want

The current view of what customers, communities and stakeholders want can be broken down into 10 wants.

For customers	For communities	For the environment
CS1. I want an easy customer experience and tailored support	CI1. I want you to have a positive impact on the community	ENV1. I want you to reduce your impact and restore the environment
AF1. I want fair and affordable bills		WT3. I want you to fix leaks and ensure there is enough water now and in the future
WT1. I want safe, high-quality drinking water		WS2. I want you to stop polluting rivers and to improve their quality
WT2. I want a reliable supply with minimal disruption		WS3. I want you to reduce emissions and reach net zero
WS1. I want you to prevent sewer flooding and take waste away safely		

Figure 6.3: Insight framework from 'What customers, communities and stakeholders want'

Source: What Customers, Communities and Stakeholders Want v18.3, Sia Partners, September 2023

Combined customer ranking of wants

We have assigned a relative priority ranking of the 10 customer wants by triangulating scores from several sources where customers ranked priorities.

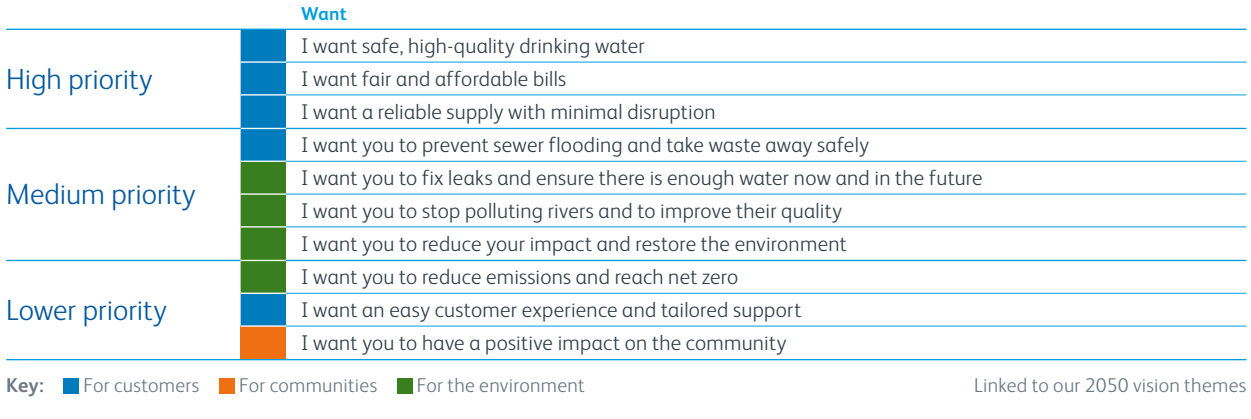


Figure 6.4: What matters most to our customers[2]

Source: What Customers, Communities and Stakeholders Want v18.3, September 2023

2 Sources include PR24 foundation research, Ofwat collaborative research, V2050 research and PR24 AAT research.

6.1.5 | Our customer engagement has informed our plans

In Figure 6.5 we summarise the outcomes we aim to deliver in AMP8, which are based on what our customers, communities and stakeholders want, and the performance commitments we will use to measure our delivery of these outcomes.

In subsequent chapters, we demonstrate the line of sight from what our customers want to our plan proposals. Appendix TMS03: Customer Engagement, provides further detail on our 'line of sight' framework and how customer engagement findings have been used to inform our decisions, with reference to the other technical appendices across our plan where we demonstrate 'line of sight'.

It is worth noting that we have reflected in our decisions the different expectations of our customers who live in Thames Valley and those who live in London, based on the issues facing them. One example of this is our decision to invest to protect at-risk basement properties from flooding. Most customers do not have basements and therefore place a low priority on reducing flooding, however, this is a high priority for customers in London. We are proposing to deliver our trunk mains replacement enhancement programme, despite the relatively low support from customers outside of London, as this is considered an important safety risk and an absolute legal obligation under Section 3 of the Health & Safety at Work Act 1974.

Customer wants and performance commitments

The outcomes we aim to deliver in AMP8 have been developed based on what our customers, communities and stakeholders want. We measure our delivery of these outcomes using performance commitments targets.

For customers

Want	I want an easy customer experience and tailored support
Performance Commitments	• C-MeX; D-MeX; BR-MeX
Want	I want fair and affordable bills
Want	I want safe, high-quality drinking water
Performance Commitments	• Compliance risk index (CRI) • Customer contacts about water quality
Want	I want a reliable supply with minimal disruption
Performance Commitments	• Water supply interruptions • Mains repairs • Unplanned outage
Want	I want you to prevent sewer flooding and take waste away safely
Performance Commitments	• Sewer collapses • Internal sewer flooding • External sewer flooding

For communities

Want	I want you to have a positive impact on the community
Performance Commitments	• Biodiversity • Streetworks collaboration (bespoke)

For the environment

Want	I want you to reduce your impact and restore the environment
Want	I want you to fix leaks and ensure there is enough water in the future
Performance Commitments	• Leakage • Per capita consumption (PCC) • Business demand
Want	I want you to stop polluting rivers and to improve their quality
Performance Commitments	• Total pollution incidents • Bathing water quality • River water quality (phosphorous) • Discharge permit compliance • Serious pollution incidents • Storm overflows
Want	I want you to reduce emissions and reach net zero
Performance Commitments	• Operational greenhouse gases (water) • Operational greenhouse gases (wastewater)

Figure 6.5: Our outcomes and performance commitments

Source: What Customers, Communities and Stakeholders Want v18.3, September 2023

6.1.6 | Customers and their representatives have challenged our plans

Our CCG was formed in January 2022. It is independent and acts as a critical friend to us. Its members have expertise in communications, behaviour change, customer protection, community engagement, and inclusion. They constructively challenge us on:

- The quality of our engagement with the customers and communities we serve.
- The extent to which customer priorities are reflected in what we do.
- The company's delivery against those priorities.

Although the formation of this type of group is no longer mandated by Ofwat, it remains an important source of challenge and scrutiny for us and our stakeholders.

> Our CCG was formed in January 2022. It is independent and acts as a critical friend to us.

We have had extensive challenge from our CCG on material aspects of our business plan and what it means for customers. Four delegates from the CCG formed a Focus Group to scrutinise the proposed business plan, focusing on:

- Establishing a line of sight between expressed customer preferences and proposals for the business plan.
- Testing the customer engagement approaches against Ofwat principles of Customer Engagement and Standards for High-Quality Research.
- Ensuring we had full access to the challenge provided by the whole CCG.

The CCG were generally positive in their assessment of our overall performance against the Ofwat Principles of Customer Engagement. They noted that we seek out multiple sources of customer data, and that our framework for the triangulation of this data is robust. The CCG praised our generally good quality engagement across our work, including on our AMP8 strategies, long-term delivery strategies and affordability testing. They highlight our continuous improvement in engaging with different groups, especially minority ethnic communities.

6.1.6 | Customers and their representatives have challenged our plans continued

The CCG rated us highly in their assessment of our research against the Ofwat Standards for High-Quality Research. They were satisfied that we employ agencies that are leaders in the industry to undertake our research, resulting in good sampling and methodologies. They highlighted that our research programmes are continuous and enable day-to-day insight gathering, as well as specific and relevant research. They were also satisfied that our research is independently assured and conducted in an ethical way.

Challenge from the CCG has helped make our research more inclusive, notably for customers in vulnerable circumstances, minority ethnic communities and non-English speakers, future customers and non-household customers.

Crucially, the CCG have also provided feedback to improve our approach to demonstrating a clear line of sight from customer research to decisions in the plan, including how different sources of information have been weighted and how conflicts have been resolved, with the clear inclusion of customer feedback in decision-making.

The CCG have continuously challenged us on our approach to prioritisation and the trade-offs we need to make as a part of key strategic decisions for AMP8, especially looking for evidence of the magnitude of benefits and potential risk of harm associated with different choices, customer preferences and how we deal with tensions and divergence of views. We have developed and refined our use of prioritisation criteria in response to CCG comments and challenges.

Further details of the trade-offs we need to make between activities we can undertake in AMP8 and those we need to defer to AMP9 are set out in Chapter 7 of this document.

Read more

A full account of the CCG's activities and how it helps us to meet Ofwat's minimum standards for customer challenge can be found in Appendix TMS05: CCG Report, which has been independently authored by the CCG, and in Appendix TMS03: Customer engagement.

6.1.7 | Our Board has overseen and assured our engagement work

The Board's Regulatory Strategy Committee and Customer Service Committee oversaw our customer engagement. The full Thames Water Board has provided assurance of the quality of our customer engagement and that customers' views have been taken account of.

To support the Board's work, independent experts began to review our engagement programme in March 2023 and reported to the Customer Service Committee, Regulatory Strategy Committee and main Board, as well as to the CCG.

In addition, the scope and outcomes from all independent assurance work have been shared with the Audit, Risk and Reporting Committee, which has provided independent oversight and challenge on the development and quality of the business plan on behalf of the Board.

> The CCG praised our generally good quality engagement across our work, including on our AMP8 strategies, long-term delivery strategies and affordability testing. They highlight our continuous improvement in engaging with different groups, especially minority ethnic communities.

6.2 | We tested our plan with customers

6.2.1 | We have followed Ofwat's guidance for testing customers' views of the affordability and acceptability of our proposals

To test customers' views of the acceptability and affordability of our business plans and long-term delivery strategies, we implemented the approach set out in guidance from Ofwat and CCW. Evidence of our compliance with Ofwat's guidance can be found in Appendix TMS03: Customer Engagement.

We undertook two rounds of testing: the first in April-May 2023 ahead of finalising our proposals, with a second round in August-September 2023 ahead of submitting our proposals to Ofwat.

- The first round included deliberative research to explore participants' views on the acceptability and affordability of our proposals, including their views on the phasing of outcome delivery over the longer term.
- The second round used a quantitative survey to provide a statistically robust measure of customers' views of the affordability of our proposals.

First round of research

In our first round of testing, to give customers a meaningful choice, we contrasted a 'must do' plan with a 'proposed' plan and an 'alternative' option. The proposed plan and must do plan were defined by Ofwat. The alternative plan was our creation, and reflects the impact of our deliverability and financeability constraints.

Overall, most customers wanted us to maximise investment for the benefit of customers and the environment, but a sizeable minority said they would find bills difficult to afford.

We summarise below the definitions of the three plans we tested, their bill impact, and the headline acceptability and affordability findings for each. The bill amounts shown in the table are averages for household customers in 2022/23 prices. In the research customers were shown bills tailored to them, both with and without inflation.

Plan tested	Description	Bill impact by 2030	Bill impact by 2050	Acceptability headline	Affordability headline
'Must do' plan	The 'must do' plan was designed to allow us to carry out the work we are required to do to meet our legal and regulatory obligations, including the full WINEP programme in AMP8.	Least expensive plan. A bill of £515 by 2030 (up £98 or 24% from average 2022/23 bill).	Least expensive plan. A bill of £565 by 2050 (up £148 or 35% from average 2022/23 bill).	Just over half of our customers found the plan acceptable.	Half of our customers found this plan affordable. 2 in 10 of our customers said it was difficult to afford.
'Proposed' plan	The 'proposed' plan included investment to meet our statutory obligations (like the 'must do' plan) and additional improvements in asset health and resilience.	Most expensive plan. A bill of £528 by 2030 (up £111, or 27% from average 2022/23 bill).	Second most expensive plan (by a small margin). A bill of £696 by 2050 (up £279 or 67% from average 2022/23 bill).	Three quarters of our customers found this plan acceptable.	Just under half of our customers found this plan affordable. Around 3 in 10 said the plan was difficult to afford.
'Alternative' Plan	The 'alternative plan' phased some aspects of WINEP into AMP9 (ie slower reduction of phosphorus in rivers) and included enhancements to improve asset health and resilience.	Second most expensive plan (by a small margin). A bill of of £518 by 2030 (up £101, 24% from average 2022/23 bill).	Most expensive plan. A bill of £697 by 2050 (up £280 or 67% from average 2022/23 bill).	Almost 3 in 5 of our customers found this plan acceptable.	Around half of our customers found this plan affordable. Around 3 in 10 said the plan was difficult to afford.

Table 6.1: Summary of first round acceptability and affordability testing qualitative results

6.2.1 | We have followed Ofwat's guidance for testing customers' views of the affordability and acceptability of our proposals continued

Combining the acceptability and affordability testing together, we concluded that:

- The level of water bills did not appear to be a driving concern for most customers, largely because water bills seem low compared to energy bills or council tax. Customers want to be reassured that there are schemes in place to protect the most financially vulnerable from unaffordable bill increases.
- Our customers preferred the 'proposed plan' but it was also the most expensive one.
- While our 'must do' plan was the least expensive one both in the short and long term, it had the lowest level of acceptability.
- The 'alternative plan' had a similar package of activities as the 'proposed plan' in the longer term, but with different timescales. The bill impact was similar to that of the 'must do plan' by 2030, and the 'proposed plan' by 2050. More customers found the 'proposed plan' acceptable.

Second round of research

The quantitative stage of testing took place in late August and early September using an online survey. A random sample of 1,865 household and 355 non-household customers took part from across our supply area, including both dual service and wastewater only customers.

The plan tested was similar to the 'alternative plan' from the first round of testing, with some aspects of WINEP deferred into AMP9, a refined list of enhancements and improved performance levels for commitments where customers wanted to see more ambition (leakage and river pollution).

The estimated bill impact for this plan was an average household annual bill of £571 by 2030, excluding inflation (up £154 or 37% from the average 2022/23 bill). The average annual household bill for our final plan is £611 (up £194, 47%, from average 2022/23 bill). This is £40 (7%) higher than the bill tested with customers. We will continue to engage with customers and stakeholders on our plan, and note that the bill impact and bill profile will evolve as our plan evolves, and we expect this to form part of our ongoing engagement.

The results of the survey showed that:

- Overall, 20% of customers said the plan would be easy to afford, with 48% saying they would find it difficult to afford.
- 29% of customers said that the plan would be neither easy nor difficult to afford.
- 65% of customers found the plan acceptable and 20% found it unacceptable. The main reasons given for acceptability were that customers support what we are doing in the long term and that the plan seems to focus on the right areas. When our plan was viewed as unacceptable, customers did not trust us to make the improvements and perceived that our profits are too high and that we should pay for the improvements.

Due to the low level of customers saying the plan is easy to afford across all customer types, it is essential that we provide an ambitious and progressive package of affordability support for our customers. Our specific proposals for addressing the overall affordability of our plans and the provision of support to customers who are struggling to pay can be found in Appendix TMS07: Bill impact, affordability and vulnerability.

6.2.2 | We have gathered views from the 'Your Water, Your Say' open challenge session

Alongside the first round of acceptability and affordability testing, we also conducted our first 'Your Water, Your Say' open challenge session on 19 May 2023.

Members of our Executive team and Board took questions directly in an open forum. Customers and stakeholders were invited to ask questions on the topics of:

- Safe, clean, and reliable water.
- Good customer service and supporting communities.
- Healthy rivers and a thriving environment.
- Investment and governance.

Appendix TMS03: Customer Engagement, provides a full written record of the session and an account of how we have addressed the points raised in our AMP8 submission. Evidence of our full compliance with Ofwat's guidance can be found in the same document. We will continue to engage with customers and stakeholders on our plan, and note that the bill impact and bill profile will evolve as our plan evolves, and we expect this to form the part of our ongoing engagement.

In line with Ofwat's requirements, we expect to hold a second 'Your Water, Your Say' session in November 2023 following the submission of our AMP8 proposals to Ofwat. The purpose will be to allow customers and stakeholders to question us on whether and how the issues previously raised are addressed and pose new questions.

7.0
We are turning around our business for the long term

In this section

Key messages

- We have produced a Long-term Delivery Strategy, defining a long-term plan to set us on the trajectory to achieving our vision for 2050. The strategy identifies a performance trajectory across our key outcomes up to 2050, along with the service improvements and investment that will be needed to deliver them.
- In the short term, in AMP8, we need to focus on turning our business around. Our refocused turnaround plan will build a water company that better delivers targeted outcomes for customers and the environment in a way that enables the continued support of our investors.
- We are also facing deliverability and financeability constraints in AMP8 which mean we have had to make tough choices for AMP8. We have prioritised some schemes in AMP8 and deferred some to AMP9, including aspects of the Water Industry Environment Programme (WINEP) (chemicals and nutrients programme), to comply with the Security and Emergency Measures Direction (SEMD) and some resilience-related investments.

This chapter sets out our long-term ambition, explains our Long-term Delivery Strategy, and summarises what we expect to achieve and when. Further detail is provided in Appendix TMS40: Accounting for past delivery and deliverability and Appendix TMS06: Our Long-term delivery strategy.

7.1 | We have an ambitious long-term vision

Our purpose is to deliver life's essential service so our customers, communities and the environment can thrive.

Our job is becoming harder. From scorching summers to wetter winters, extreme weather is more common than ever. A growing population means more kettles boiling, showers running and toilets flushing. And expectations from our customers are rising.

As the world around us changes, we can only deliver our purpose if we change too. Our ambitious vision imagines a world where we've learnt from the past and adapted to the future so our customers, communities and the environment can thrive.

Our vision starts with tackling the issues that matter most to our customers right now: providing better customer service, finding and fixing leaks more quickly and reducing pollution. And it goes beyond our core services to help us become a force for good: equipping local communities with new skills, restoring rivers and producing more green energy than ever before.

To achieve our vision, we're radically changing how we think and act. We're working smarter and working together because the challenge we're facing affects the entire sector. Whether it's the government making long-term policy decisions, regulators enabling investment, or customers helping to make the most of every drop, we can all help take care of everyone's water.

The future of water is everyone's challenge, but the work begins with us. We're changing the way we're working so that we can deliver life's essential service for years to come. With the right partnerships, skills and policies in place, we'll be a stronger company – one that's closer to our customers, better connected to our communities and ready to create the best conditions for our environment to thrive.

We created our vision for 2050 based on feedback from our customers and stakeholders. We tested our vision for 2050 with stakeholders at our Annual Stakeholder Review meeting in July 2021.

For customers	For communities	For the environment
Making sure everyone always has access to top-quality water and a reliable waste system	Using our land to benefit surrounding communities	Investing in our network to prevent leaks and keep water flowing
Providing outstanding service and value for all our customers	Equipping local communities with the skills they need to thrive	Preventing all wastewater pollution and leading wider efforts to restore river health and increase biodiversity
Motivating customers to save water and protect the environment	Championing our people to deliver our purpose	Producing all the green energy we can to power what we do

Figure 7.1: Here's the path we're on to 2050

7.1 | We have an ambitious long-term vision continued

We then tested our updated vision in April 2022 with customers to understand whether they supported our level of ambition and to obtain feedback on the outcomes and goals to establish those that matter most to them, both in terms of importance and urgency.

Our vision for 2050 combines the key requirements that have been set as a result of government and regulatory policy, with a further set of ambitions determined through our engagement process. Our vision for 2050 serves as a key input to our Long-term Delivery Strategy. The figure below explains where we'll be in 2050.

In Spring 2023 we re-framed our vision outcomes around our three themes, customers, communities and the environment, and tested how we communicate our vision and strategy with employees, customers and key stakeholders.

Figure 7.2: Our vision for 2050 outcomes

Our Vision 2050

FOR CUSTOMERS

Making sure everyone always has access to top-quality water and a reliable waste system

Providing outstanding service and value for all our customers

Motivating customers to save water and protect the environment

We provide safe, clean drinking water
- Tackling any challenges that could affect the high quality of our water, including speeding up our work to replace lead pipes.

We offer customers value for money and send them affordable, accessible bills
- Providing an inclusive service with built-in support for vulnerable customers.

We always maintain a reliable supply
- Investing in innovation so that no-one is let down by our network.

We protect customers from sewer flooding
- Making sure no home, workplace or public space is at risk of sewer flooding by changing how we manage water from source to surface.

We provide a proactive, personal service
- Fixing service issues the same day.
- Creating a customer experience that constantly evolves to reflect the most recent digital innovations, consumer trends and market opportunities.
- Partnering with other businesses, like water retailers and property developers, to make sure every customer gets the information they need and the service they deserve.

We help customers understand how to protect the planet
- Inspiring as many people as possible to make choices that save water and keep pipes flowing.

FOR COMMUNITIES

Using our land to benefit surrounding communities

Equipping local communities with the skills they need to thrive

Championing our people to deliver our purpose

We enrich community life for current and future generations
- Taking every opportunity to create social and public value.
- Putting sustainability at the heart of our plans.
- Using our land to bring the right mix of investment, local jobs, thriving wildlife spaces and more opportunities to spend time in nature.

We champion what we do and create opportunities for everyone to be part of it
- Creating jobs that attract the diverse range of talent we need to lead change in our region and beyond.
- Providing opportunities for local communities to develop skills for a successful future.

We trust each other to do the job
- Providing a safe, inclusive and purpose-driven working environment where our people and our trusted partners can perform at their best
- Leading our industry by equipping our people with the right skills to give customers the service they expect.

FOR THE ENVIRONMENT

Investing in our network to prevent leaks and keep water flowing

Preventing all wastewater pollution and leading wider efforts to restore river health and increase biodiversity

Producing all the green energy we can to power what we d.

We meet the changing needs of our customers and the world around us
- Making sure less than one in every ten drops of water leaves our network through leaks.
- Supporting our customers to reduce their water use by a quarter.
- Securing enough water to meet future demand while protecting our most environmentally sensitive sources.

We collaborate with others to improve the health of our rivers
- Keeping all untreated sewage out of our rivers.
- Taking the lead in improving our region's environment, helping our rivers become some of the healthiest in the UK.

We make every watt count
- Sourcing more of our energy from renewables.
- Using technology to become a major producer of green energy as well as data to help make our energy go further.

We leave a net zero carbon legacy
- Achieving net zero carbon emissions across all parts of our business.

7.2 | How we will achieve our vision for 2050

We will achieve our vision by working smarter and by working in collaboration with others.

Working Smarter

- **Building a culture of innovation, enhancing our skills and thinking 'customer and digital first'** – We're encouraging our people to put the customer first and make change happen in their area of expertise. This means innovating to create solutions to address our most urgent problems and thinking digital first to help us deliver better outcomes. For example, we are increasing the use of sensors, drones, data and analytics to help us find and fix leaks faster. We are also building new customer portals and using smart data to predict demand for water and plan maintenance work. In addition, we're exploring cost-effective, less intrusive ways to replace ageing pipes, adopting green infrastructure at scale, and using sustainable drainage systems to protect the environment.
- **Helping shape the future of the UK water industry** – We're engaging with as many people as possible across our industry to create the conditions we need for success. Alongside the government and our regulators, we're encouraging smarter long-term investments so we can move beyond short-term regulatory cycles and put sustainable water and waste management first. This will enable us all to look further ahead and work together to protect water supplies for future generations. A great example of this is the Thames Tideway Tunnel – a critical national project designed and delivered in partnership to future-proof London's network and contribute to cleaning up the tidal Thames.
- **Transforming how we work with local partners** – We are working smarter with our community partners to co-create and co-deliver exciting new projects. From devolved government to local businesses, environmental groups to customer collectives, everyone has a chance to shape plans that will benefit them in the future. We are working with our community partners to co-create and co-deliver exciting projects. For example, we are partnering with the Great London Authority (GLA), Transport for London, London Resilience, London boroughs and six local communities to tackle the risks associated with rainwater run-off.
- **Securing funds and investing our customers' money wisely in our assets and communities** – We are building a strong financial foundation that will support our transformation for the decades ahead. By working with other organisations to plan, fund and deliver projects in partnership, we can achieve more with pooled resources than any of us could on our own, stretching budgets further and targeting our efforts in the right places.

Working Together

- Putting the needs of our customers first means focusing on what's important to them, considering the unique water-related challenges where they live or work and building strong partnerships in their community to tackle these together.
- From customers and community groups to landowners and local government, we are beginning to nurture more of these relationships in the communities we serve. Here are just some examples of how we're building a better, more resilient water system together:
  - **Keeping taps flowing for the future** – We are engaging with local communities on the importance of building new reservoirs, such as the one we may build near Abingdon, to protect and improve water supplies for future generations.
  - **Inspiring customers to save water, save money and prevent blockages** – Partnering with local councils and businesses to deliver water-saving messages and help reduce sewer blockages in hotspot areas.
  - **Joining forces to prevent flooding across our region** – We are working much more closely in targeted catchment groups to protect all customers, communities and the environment from the risk of flooding.
  - **Restoring river health together** – Building strong, diverse relationships across each catchment. For example, in the River Chess, a chalk stream in Buckinghamshire, we are already seeing improvements to the river's health through our work with the Wilder Chess initiative, the Chesham Water Group and the Impress the Chess group.

7.3 | Our Long-term Delivery Strategy sets us on a trajectory to deliver our vision for 2050

To close the gap to our customers' and stakeholders' expectations will require fundamental transformation of our business. Much of the required service improvement can be delivered through our base cost allowances. However, there are instances where incremental enhancement expenditure will be required. Our key long-term enhancement areas are summarised in table 7.1, grouped by outcome area.

We have identified a 'best value pathway' which sets out a profile of expenditure across these enhancement areas over the long-term to set us on a trajectory to achieve our vision for 2050. This plan reflects the result of our extensive planning processes, including our Water Resource Management Plan and Drainage Water Management Plan, testing a wide range of scenarios, and ensuring sufficient resilience to a wide range of factors. We have put adaptive planning at the heart of the approach – we have considered low/least regret options, modular solutions, enabling investment and actions.

Our plan is modular and flexible, meaning that for many areas we can quickly ramp up or slow down investment to suit the changing operating environment. Our best value pathway is very similar to the 'core pathway', which is a low/least regrets course of action. As time passes, it may be appropriate to switch to alternative pathways. We have identified trigger points where we would likely need to change strategy, and a series of monitoring metrics to help inform whether a change in approach would be required.

Enhancement area	Benefit delivered
For customers	
Lead pipe replacement	Eradicate all lead communication pipes to the boundary of all primary schools and nurseries by 2035 and replace all lead pipes by 2050
Cryptosporidium risk reduction	Risk at our 4 large London process sites mitigated by 2035
Water supply resilience	No supply interruptions (>48 hours) by 2050
Reducing risk of basements flooding from trunk mains	Protect 37,545 London basement properties by 2050 (renewing over 340km of trunk mains)
Reducing the risk of sewer flooding	Protect c187,000 properties that will be at risk in the future, due to population growth and climate change from sewer flooding, by 2050
For communities	
We will spend very significant sums of money to improve the services we provide and to mitigate our impact on the environment. We will continue to look for opportunities to deliver public value through this expenditure.	
For the environment	
Develop new water resources	Secure resilient supplies to meet demand over 2025 to 2050
Reducing sewage spills to rivers and improving river health	We will deliver a step change in storm overflow performance, deliver our statutory improvements programmes, and maintain treatment works compliance despite the challenges that population growth and climate change will bring.
Phosphorus reduction in rivers	
Sewage treatment works growth	

Table 7.1: Our key long-term enhancement areas

7.3 | Our Long-term Delivery Strategy sets us on a trajectory to deliver our vision for 2050 continued

Our 'best value pathway' is summarised in the figure below.

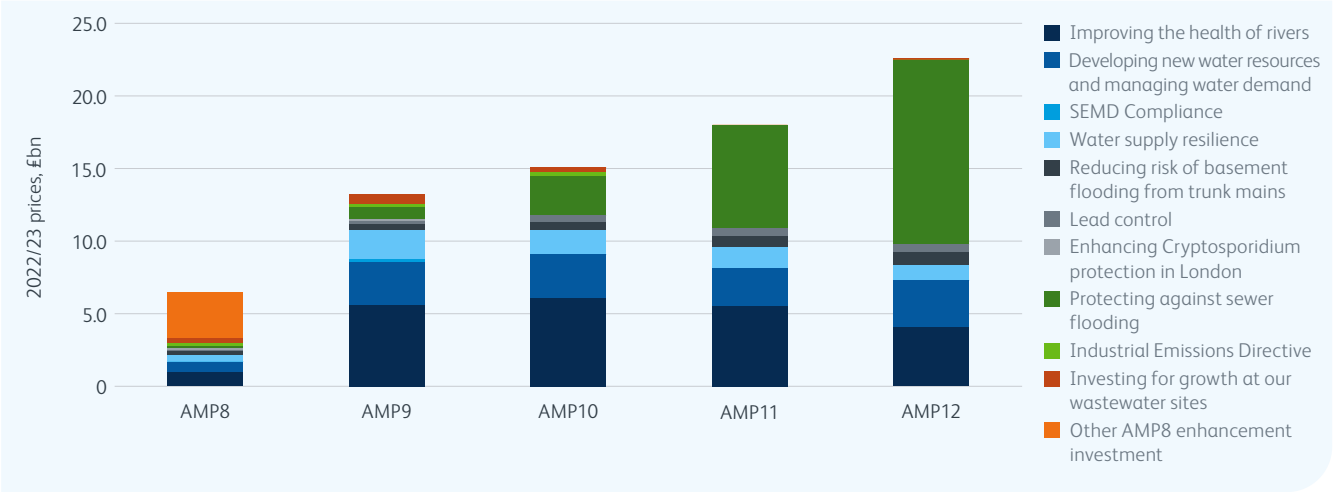


Figure 7.3: Enhancement expenditure – best value pathway, AMP8–AMP12

Our 'core pathway' is associated with the following bill impact.

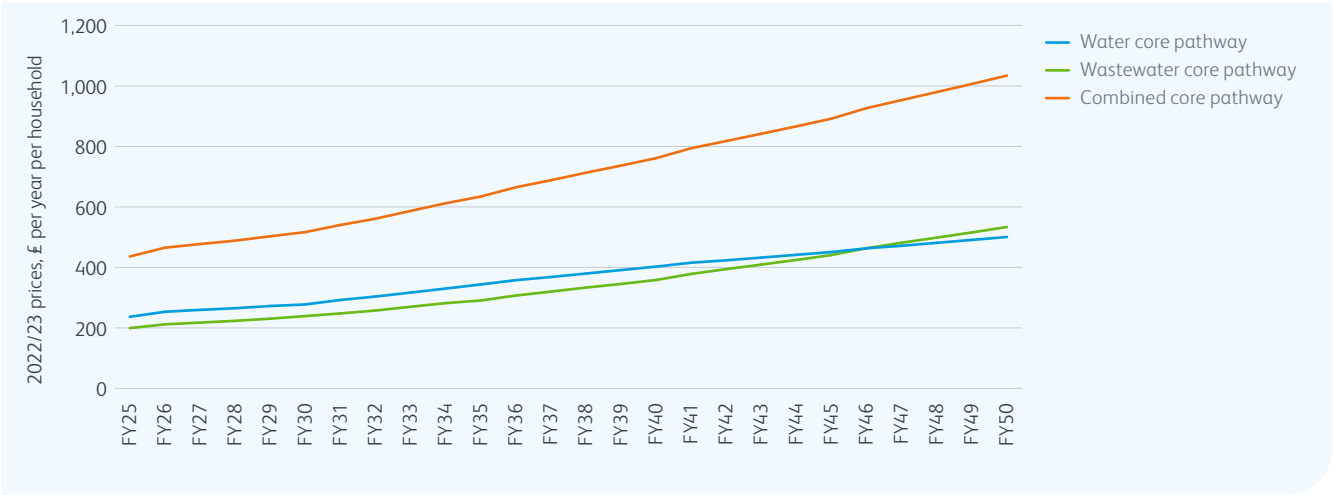


Figure 7.4: Average real bills (combined), with long term enhancement impact – core pathway

Our core pathway shows a major step up in investment both in AMP8 and beyond in order to meet statutory requirements, and the key priorities of our customers. Our Board has been engaged and involved throughout, in terms of setting the ambition, scrutinising our approach, and fully supports our Long-term Delivery Strategy.

These figures highlight the significant increase in investments needed from AMP8. It also makes clear the step change required in our delivery capacity, as well as the level of customers' bills. We have carefully assessed our deliverability, financeability and affordability constraints for AMP8 to ensure our plan is realistic given the short-term constraints we face.

As per Ofwat's guidance, we have focused on key areas of enhancement expenditure in our Long-term Delivery Strategy. However, a key enabler to achieving the longer-term outcomes will be receiving sufficient base cost allowances as part of future price reviews. We are targeting significant performance improvements derived from base allowances. As we explain in section 11.4, we have an 'asset health deficit' that will require a step change in maintenance and renewals activity over the next 25 years – this will require a long-term, sustained investment programme.

7.4 | Right now, we are performing in line with industry average in some areas, but we need to do more

There are a number of aspects of our business where we are performing well. Notable examples include:

- **Providing high-quality drinking water** – We have consistently delivered high-quality drinking water during this Asset Management Plan (AMP) period and have some of the lowest number of water quality complaints across the industry (relative to our size). We want to maintain this success, including by investing at our water treatment plants across our region, where raw water quality and climate change would otherwise cause water quality risks to life.
- **Supporting our customers with the cost-of-living** – We increased our social tariff support to £50 million during a difficult year for many of our customers, supporting 306,000 households in 2022/23, a 45% increase from 2020/21. In addition, we are continuing to provide other support through our customer assistance fund and independent trust fund.
- **Reducing customer complaints** – We achieved a reduction of 28% in complaints across billing, water, wastewater and metering in 2022/23, following a previous reduction of 44% in 2021/22.
- **Reducing the impact of outages** – An unplanned outage is an unforeseen or unavoidable event that can affect part or all of one of our treatment works. Some outages are planned – they happen because we need to complete work on our assets. But, unplanned outages can also occur when something goes wrong. We have outperformed our target on unplanned outages for the third year in a row. We have achieved this by implementing operational changes that have allowed us to respond quickly to events.
- **Fewer sewer collapses** – We have met our target for reducing sewer collapses for the third year in a row, thereby reducing the risk of sewer flooding and pollutions. This follows an increased programme of work to rehabilitate our sewers.
- **Faster reductions in water leaks** – Although our rate of leakage (per kilometre of potable main) is considerably higher than that for other companies, and we missed our target last year, our performance is improving faster than that of the industry. So far in AMP7, we reported a 10.7% reduction (three-year average) against 2019/20, exceeding the industry average (7.2% reduction).
- **Thames Tideway Tunnel** – The Tideway Tunnel represents the largest and most significant wastewater project since the 1860s. This third and final phase, when added to the upgrades we have made at five sewage Treatment Works and the completion of the Lee Tunnel, will reduce the total volume of storm discharges by 95% in a typical year and will create new public spaces.
- **Net Zero** – We have reduced our net emissions by 70% compared to our 1990 baseline level. In 2022/23, we generated 536GWh of renewable energy a year, amounting to 27% of our consumption. This compares to 272GWh by Severn Trent, 282GWh by Yorkshire and 196GWh by United Utilities. Where we cannot self-generate, we only buy renewable electricity.
- **Biodiversity** – In AMP7 we have already delivered 331 biodiversity units by creating over seven hectares of new wetlands on our operational sites and a new nature reserve on a decommissioned operational site, reducing grassland management and developing nature recovery projects.
- **Innovation** – We are ranked 5th out of 17 companies in terms of the of funding secured through Ofwat's Innovation Fund. For example, we developed the static pressure leakage indication tool (SPLIT) in early AMP7, which can accurately indicate the presence of customer-side leakage without requiring access to the property.
- **Community Projects and Engagement** – During this AMP period we worked with many organisations to provide community recreational access to our sites. Further, we are working with the Mayor of London to offer drinking fountains across the capital. Our drinking water fountain campaign is the biggest single-use plastic reduction initiative of any city across the UK. 110 fountains were delivered across public spaces in London during AMP7, dispensing on average 76 litres per day. The data collected from our smart meters shows that these are being well used and are having a positive impact across the capital.
- **Transparency** – We have taken steps to increase transparency to our customers and stakeholders. For example, we have now published an interactive map showing near-real time storm discharges activity, as indicated by our Event Duration Monitoring (EDM) monitors. We recently upgraded this data to show the investment we are making to address storm discharges, location by location.

Despite recent successes, we know our performance overall is not where it needs to be. We are still falling short of the expectations in some key areas, such as water supply interruptions, total and serious pollution incidents, and measures of customer satisfaction.

In a number of cases, our current performance commitment targets have been set using the sector-wide upper quartile performance. This means that, even where we perform in line with the industry average, we incur substantial performance penalties. In this regulatory period, we have incurred significant penalties for underperformance. For example, in 2022/23, while we received rewards of £3.6m for five performance commitments, we also incurred a penalty of £20m for water supply interruptions and a penalty of £9.3m in pollution incidents, despite our performance being at or above industry average.

7.5 | We understand the root cause of our poor performance

Our analysis of the root causes of our historical poor performance is provided in Appendix TMS40: Accounting for Past Delivery and Deliverability.

A key driver of our performance is the decline in the health of our ageing infrastructure (our 'asset health deficit'), which has taken place over decades due to insufficient capital maintenance and asset replacement.

The decline in our asset health is becoming increasingly evident, with the impact of climate change and population growth piling more pressure on our already stretched assets.

We now require a step-up in base expenditure, both to recover the costs associated with managing our ageing assets, and to begin to address the position by undertaking more maintenance and replacement. We provide further information on our 'asset health deficit' in Section 11.4 and in Appendix TMS15: Asset health deficit.

Compliance with our statutory obligations is very important to us. We are subject to a wide range of obligations, from the need to provide a safe and reliable supply of wholesome drinking water, to the provision of effective drainage, compliance with specific directions and directives, and compliance with site-specific environmental permits.

In AMP8, we plan to deliver an unprecedented level of investment to meet our statutory obligations, reduce our impact on the environment, and increase the resilience of our network to protect customers and the environment from unacceptable risks. In part, the level of this expenditure reflects the increasingly tough environment within which we operate. Some of the challenges we face are common across the industry, some are unique to us.

In common with the rest of the industry:

- Climate change is creating uncertainty over how and when water resources will be replenished and will challenge the resilience of our system as extreme events happen with increasing frequency. Without action, and taking account of population increases, 20% less summer rainfall and the need to shift away from environmentally-sensitive water sources means we are likely to have a supply that is roughly 30% below water demand by 2050. At the same time, winter rainfall intensity could increase by 11% in London with increased risk of property (including basement) flooding. We also know that climate change is likely to bring increased instances of intense convective rainfall during warmer months, making events like the July 2021 flooding in London more frequent.
- Moreover, changing climate conditions are already having a significant impact on the resilience of our operations. For example, the drought we experienced in 2022 was one of the most severe on record, with just 63% of average rainfall over the summer. It was the driest July in England since 1935. The persistent hot weather led to excessively dry ground, and the resulting movement in water pipes caused more leaks and bursts. Climate change can also create new water quality risks as some of our treatment processes, such as the slow sand filters on which we rely for London's drinking water, are less effective when temperatures are low (eg below 8 degrees).
- Digitalisation is changing the way we deliver water services to meet our customers changing expectations and needs. More than ever, our customers expect a smooth, personalised and instantaneous access to our services, through an increasing range of channels. We are also digitalising our services and systems to benefit from the opportunities new data and technologies offer. However, we need to take care. We are subject to an increasing range of cyber threats and need to continuously update our systems, to ensure they and therefore our customers are well protected.
- We are experiencing increasing water demand due to the growth of data centres which use water to cool servers. Not all datacentres use water for cooling, but of those that do, a large facility might use anywhere between four and 19 million litres of water per day. For comparison, this is the equivalent of supplying over 50,000 households' daily water demand. This can create additional tensions on water demand, as well as on leakage performance (due to the higher pressures we need to pump water at to meet the demand).
- Alongside this, we have noted a clear evolution in our customers' expectations. Customers no longer judge us purely on the quality of our service, but also on how we are led and governed, and our ethical and social commitment. 77%[1] of our customers think it is important that companies act as a force for good. An overwhelming majority of our customers (94%) agree that we should work to reduce our impact on the environment. We are also experiencing widespread expectation that our rivers will meet bathing water quality standards; a much higher standard than is legally required today. This is reflected by the fact that 64%[1] of our customers support the total elimination of river spills by 2030.

1 Source: What Customers, Communities and Stakeholders Want

7.5 | We understand the root cause of our poor performance continued

These pressures are already being reflected in a changing policy and regulatory environment. The UK government's 25-year Environment Plan has a strong focus on sustainable land management, nature recovery, and on connecting people with the environment to improve health and wellbeing.

- The Environment Act 2021 requires water companies to make *"progressive reduction in the adverse impacts of discharges from storm overflows"* so that no storm overflows operate outside of unusually heavy rainfall or cause any adverse ecological harm by 2050, with significant progress required by 2035.
- More recently, in April 2023, DEFRA published its integrated Plan for Water which aims to support and accelerate investment to secure long-term water resources and reduce pollution, has a strong focus on catchment approaches, and increases penalties for companies which pollute.
- Ofwat is encouraging a longer-term focus on environmental improvements, which is expressed through its desire that water companies focus on 'delivering greater environmental and social value'.
- The industry has been asked to respond to the extensive requirements and expectations that have been set with the recent Water Industry National Environment Programme and the Water Industry Strategic Environmental Requirements.
- During AMP8, we expect the Environment Agency to update its sludge strategy and review the requirements associated with biosolids recycling to agricultural land. We expect the Environment Agency to introduce enhanced controls, allowing the Agency to enforce its interpretation of nitrogen and phosphorous management. This could have a significant impact on our ability to recycle treated biosolids. It would also reduce the availability of land where we can recycle biosolids. We have proposed an uncertainty mechanism to address the potential additional costs in this area (see section 14.5.3).
- Finally, the Environment Agency informed the water industry at a meeting of the Water UK Strategic Steering Group on 4th February 2019, of its intent to require permits for the biological treatment of sewage sludge above the Industrial Emissions Directive (IED) thresholds. The basic principles of the IED are to reduce the impact of industrial emissions on the environment, whether these be to air, land or water, from defined installations and activities. We have accepted the Environment Agency's position, although it should be noted that the scope and scale of the improvements required to comply with permit conditions has been changing up to 2022. There remains considerable uncertainty over the capital expenditure needed to comply with the IED requirements. We have therefore proposed an uncertainty mechanism in AMP8. Further detail on our approach to respond the IED requirements are presented in Section 11.2.7.

7.5 | We understand the root cause of our poor performance continued

We also face challenges which are particular to our business:

- **Our customer base has unique characteristics**
  - We have the highest population density of all companies in England and Wales – over two-thirds of the household properties we serve are located in London. According to the 2021 Census results, whilst the average population density in England was 434 residents per square km (and 150 residents per square km in Wales) the population density in London was 5,598 residents per square km.[2] The higher the population density, the higher the average number of customers impacted when an individual asset fails.
  - Our region has a high proportion of occupied basements. In inner London, over 17% of properties in our area has a basement. Only South and West Yorkshire have a proportion greater than 5%.[3] A 2017 survey found that 75% of the UK's total applications for basement extensions were in London. This means we have to step up our efforts to protect basement properties from the risk of flooding, reflecting the risk it poses to public safety in this type of property.
  - London has the highest levels of poverty in the UK, with 29% of households in poverty, compared with 18% across the rest of South England and a rate of around 24% in the North.[4] We have a responsibility to provide adequate support to customers who struggle to pay their bills, while remaining within the level of cross subsidy that our customers are willing to provide to those in financially vulnerable circumstances.
  - We experience a high level of population transience (customers moving between addresses) – with a total migration rate of 18% against a 12% UK average.[5] This increases our retail costs related to account management (eg to open, close and modify customer accounts) and metering (eg if customers leave existing properties and submit their own meter readings, thereby reducing the need for our operatives to read meters). It also influences our levels of bad debt, as it can be harder to recover debt when people move houses. We have requested a cost adjustment claim to recover these additional costs, which is summarised in Section 11.3.
- **Around 60% of our mains are made of cast iron,** as it was the material predominantly used in the 19th century. Failures are strongly correlated with age and material type, which exposes our network to a relatively higher risk of failures such as bursts. For example, between 2004 and 2020, we undertook just below 0.4 repairs per km per year on cast iron distribution mains, which is more than double the average failure rate of other distribution main materials during the same period. We have also observed that the failure rate of cast iron pipes increases with age, and those pipes over 100 years are much more likely to fail. We also know that there is a link between discolouration and the use of cast iron pipes and their corrosion.[6]
- **We have the oldest assets** – The average age of our assets is 79 years, compared to the industry average of 56 years. In London, 50% of the pipes are over 100 years old – the highest proportion in the industry. 3,700km of our London network, including 485km of our largest trunk mains, will be over 150 years old by 2030. Across the industry the company with the second oldest assets (68 years old) are owned by Southern Water. We are the only water company in the industry where almost 40% of our mains date before the 1920s. Southern, Bristol and Anglian also have an old mains network, but less than 30% of their mains dates before 1920. Across the rest of the industry, less than 10% of the mains were laid before the 1920s.[7]
- **We maintain and operate one of the biggest water treatment works and one of the biggest sewage treatment works in Europe** – Ashford Common water treatment works averages 615Ml/d all year round. Beckon sewage treatment works handles sewage for over four million customers. While there are some economies of scale with large assets, maintenance tends to be more costly and complex than for smaller works. The consequences of failure are also magnified.
- **The geology and density in London create specific risks and challenges**
  - London has a high proportion of non-permeable surfaces, thereby increasing the risk of flooding. By 2015, London also had the biggest decrease in plant cover in front gardens in the UK, with five times as many front gardens with no plants compared to the preceding ten years.[8] This increases the burden on our sewers and the risk of pollution – once capacity in our sewer network is exhausted. The potential flooding is not limited to extreme events, such as those we saw in the July 2021 flooding event. Our modelling as part of our Drainage and Wastewater Strategic Planning Framework demonstrates that over 187,000 properties could be at risk of sewer flooding by 2050 (in a 1 in 50 year return period storm) if we do not act to account for climate change and growth.
  - London Clay is the predominant geology in our London-operating region. This results in two problems: it is susceptible to shrink-swell behaviour (a volume change that occurs as a result of changes in moisture content) which can result in leaks, and it is also highly corrosive for iron-based pipes.

2 Population and household estimates, England and Wales: Census 2021.
3 ONS 2001 Census Data.
4 Creating new poverty measures for the UK – UK Data Service.
5 Economic Insight.
6 This is explained by the DWI here Discoloured water – Drinking Water Inspectorate (dwi.gov.uk).
7 Thames Water analysis.
8 Royal Horticultural Society, Why we all need greening grey Britain.

7.5 | We understand the root cause of our poor performance continued

- **In London, the congestion and the concentration of other critical infrastructure makes it difficult to access our assets** – Often, our operational teams need more time to get to the site of an incident as a result of traffic congestion or road restrictions. London is consistently rated the most congested city in the UK. Analysis by Inrix shows drivers in London losing 156 hours each year sitting in congestion, with the next two congested cities being Bristol (91 hours) and Manchester (84 hours).
- **The top five most congested UK corridors were all found in the capital** – There is also a unique concentration of other critical infrastructure in our region. This includes railways (eight of the top ten busiest stations are in London), the London underground network, and gas mains serving major urban conurbations. As our infrastructure is often laid alongside or over other infrastructure, this means we can have difficulty accessing our assets, both in terms of time to get to the site of an incident, and access difficulties due to restrictions placed on us by other infrastructure owners or local authorities. Both factors adversely impact our productive efficiency and time taken to restore service to customers.
- **We have high pumping costs because of where we draw our water from** – Over 70% of our surface water supplies are from banked storage reservoirs. We have no reservoirs formed through the construction of a dam across a natural watercourse. Virtually all of these reservoirs are filled by pumping water from rivers.

7.6 | We are refocusing our turnaround to deliver faster improvements

We need to enhance our organisation model, our systems, and our processes to deliver our AMP8 Plan. We need to be a more agile, fast-paced and responsive organisation that delivers a more reliable service and better outcomes at lower cost. In short, better enabling and equipping our committed employees and professional partners to deliver for our customers, our communities, and the environment.

In March 2021, we embarked on an eight-year plan to turn around our business. Over the last 12 months, we have restructured the business in a way that has brought us closer to customers. We have moved to a regional operating model with two separate operational teams (covering London and the Thames Valley/Home Counties). We onshored all customer-facing telephone teams back to our region, creating local jobs, and insourced the repair and maintenance of our water network. Our insourcing focus has also included our sludge tanker drivers (which has led to improved compliance at sewage treatment works) and clean water tanker drivers (allowing us to respond to supply interruptions more quickly). We have also moved to a new intelligent client and capital delivery model, enabling us to specify our requirements to external suppliers, and better manage the delivery of outcomes). All of these changes bring us closer to customers and will help deliver improvements in our performance.

However, despite making significant improvements, driven largely by a record investment in our assets and in our frontline and delivery capability, our progress has not been as fast as we want. The combination of input price inflation, which saw major cost increases for energy and chemicals, and severe weather events have created considerable headwinds. So that we are better able to continue to deliver improvement in the face of such headwinds, we are now refocusing our turnaround plan towards a smaller set of priorities over a shorter three-year timeframe. Together, this will enable a sustainable improvement in performance more quickly in our focus areas, and will build confidence in the deliverability of our AMP8 plan. Our plan continues the task of addressing the historically under-funded investment in our ageing network. It will improve our readiness to meet the twin challenges of climate change and population growth, while continuing to deliver life's essential service. Through it, we will strengthen our focus on leakage and river pollutions, and deliver stronger results over the next three years, providing a platform for continued improvement in AMP8.

Further information on our turnaround is provided in Chapter 12.

Read more

7.7 | We have carefully prioritised our activities in AMP8

7.7.1 | Our approach to prioritisation

In the coming years the infrastructure sector as a whole faces challenges around supply chain capacity, and access to labour and materials. The water industry is being asked to deliver a significant increase in investment over the next control period, at a time when other major infrastructure projects are also in full flight (such as the upgrade of electricity and gas transmission and distribution networks,) and work to deliver a generational shift in our energy mix.

We have taken multiple steps to improve our delivery capacity as part of our turnaround, for example expanding the number of main capital delivery contractors from 6 to 10. We are building direct delivery capacity for lower-value simple work, and we will be better able to contract early before AMP8 starts. Nonetheless, like any business, there is still a finite amount we will be able to deliver physically. Our plan is ambitious but it also must be credible. We are also acutely aware that our plan lands at a time when many people are facing chronic financial pressures. We have considered carefully how we prioritise our plan within the constraints of affordability, alongside considerations around what we can deliver and finance. We have faced tough choices.

Our shareholders continue to support our business. They committed £500m of funding during the last financial year. They have now agreed to provide a further £750m of funding, subject to certain conditions, to drive our turnaround over the remainder of the current regulatory period and establish a solid foundation for our long-term growth. Indicatively, the AMP8 equity investment is expected to be in the region of £2.5bn, although the nature and amount of such medium-term support will depend on finalisation of the new focused turnaround plan, and necessary changes to the regulatory framework that will apply to the AMP8 period. We set out our view on these changes in Chapter 14.

Read more

However, despite the considerable equity injection our investors are contemplating, financeability will still constrain what we can achieve in AMP8. There is also, as noted above, a practical limit on the size of the capital expenditure programme that we can deliver in AMP8.

We will not be able to deliver the full extent of the asset investment programmes, or environmental obligations and outcomes, that we had originally aspired to in this period. However, over the longer-term, our Long-term Delivery Strategy (LTDS) puts us on a trajectory towards delivering our vision for 2050, which we describe in more detail below.

We have sought to strike a balance between the need to deliver on our obligations, the need to deliver performance improvements in areas that matter most to our customers, communities and other stakeholders, and the critical task of continuing our turnaround and transforming our business.

In doing this, we have also drawn on our extensive research into customers' priorities and have engaged with our stakeholders to understand their expectations of us, including: the EA, the Drinking Water Inspectorate, Ofwat, DEFRA and other water companies. We have undertaken a thorough analysis of our operations and asset base, to determine the level of investment that we require now and into the future:

- We have considered each section of the value chain to determine the optimal interventions required to provide the best performance for our customers.
- We have sought to identify the most efficient way to operate our networks.
- Our retail team have analysed the customer journey to ensure that our customers can have the best experience possible when they contact us.
- We have sought challenge from our Customer Challenge Group on our approach to prioritisation.

Drawing on all of those sources of information, we have considered how best to allocate the capital available to us (taking into account funding and deliverability constraints) in a way that provides the highest possible protection of the health and safety of our colleagues and customers, maximises performance in areas that matter most to our customers and communities, and takes on board the expectation of regulators.

7.7.1 | Our approach to prioritisation continued

Our aims have been to secure maximum value from every pound spent for our customers and the environment, and to run our business in a way that supports the achievement of broader environmental outcomes and policy commitments. When we have faced difficult decisions, we have taken into account a range of factors, including:

- The health and safety of our colleagues, customers and our suppliers.
- Potential public health risks and environmental impacts associated with certain programmes (particularly those with potentially high adverse customer impacts).
- Performance and critical resilience improvements which we understand are of greatest importance to customers, regulators, and other stakeholders.
- The need to meet our statutory and licence obligations, and to deliver our commitments to customers. We take compliance with all of our legal obligations very seriously. These include obligations that are specific and proximate (such as environmental permits) and obligations that are more broad in nature. For example, our obligations under relevant Health and Safety legislation, our Water Industry Act Section 37 obligations (to maintain water supply systems), and our Section 94 obligations (to provide a sewage system).
- Our goal of achieving a sustained and sustainable turnaround of the business and promoting financial resilience.

7.7.2 | What we will deliver in AMP8

We have worked hard to develop the best possible plan for our customers, our communities and for the environment. We have developed this plan taking on board inputs from regulators, including the Drinking Water Inspectorate, the Environment Agency and DEFRA. We acknowledge the need to strike the right balance between competing demands. Although our plan is the culmination of many months of work, we recognise that we are at the beginning of a process. We are open to further engagement. We expect to get and respond to feedback on some of the tough choices that we have made.

We summarise below the key investments we will deliver in AMP8 and our rationale for prioritising them across our key business areas. Overall, our plan strikes a balance between our ambition, our obligations and our short-term delivery, financeability and affordability constraints.

Water

- **Water resources** – Through our Water Resources Management Plan and our joint-working with Water Resources South East, we have identified preferred new water supply options, which we are developing as Strategic Resource Options. These options include building a new storage reservoir in the Upper Thames catchment, South West of Abingdon in Oxfordshire (called South East Strategic Reservoir or SESRO), and a new abstraction site on the River Thames close to Teddington weir (called Teddington Direct River Abstraction or Teddington DRA). This investment is necessary for us to comply with statutory planning guidelines under the Water Industry Act (Section 37A and 37D). It is also in line with our customer expectations, as water resource management ranks fourth in their priorities for AMP8 enhancements.
- **Demand management** – We will progress the demand management plan set out in our Water Resource Management Plan. This aligns to the statutory framework and the national demand management/reduction targets of achieving 110 litres per person per day by 2050. A long-term reduction in demand will be facilitated by the roll-out of smart meters. If we do not prioritise this now, we can expect more frequent water shortages, an adverse impact on the environment, and a more urgent need for much larger infrastructure projects.
- **Water quality** – We will implement works to install ultraviolet treatment at two of the four sites where we have a cryptosporidium risk. The remaining two sites will be addressed after 2030. Cryptosporidium poses a public health risk, and our ability to abstract water can be limited by the presence of cryptosporidium in river water. There have been 43 detections of cryptosporidium in the final water of our London Process Plants since July 2018. We have managed this situation so that it does not pose undue risk to our customers in London, given 85% of London's water comes from these plants. But the risk of cryptosporidium is increasing due to climate change and deteriorating raw water quality, and the DWI agrees that we need to act in AMP8 to reduce risk.
- **Water quality** – Removing lead from the water supply is a particular focus for certain stakeholders. We will continue with our lead reduction programme, replacing 54,000 communications pipes (the pipes that carry water between the water mains and the boundary of a private property).

7.7.2 | What we will deliver in AMP8 continued

- **Water supply resilience** – We will continue works to address single points of failure identified at our Coppermills and Hampton water treatment works – two of our most strategically important sites. Failure at either site would significantly impact a large number of customers (over 500,000), who would potentially be without a water supply for a significant period of time. This significant impact on customers could also undermine our statutory obligation to maintain an efficient and economical system of water supply, and related licence obligations.
- **Water supply resilience** – In order to reduce the risk of supply interruptions and remain consistent with our long-term plan of a 50% reduction in leakage by 2050, we need to start increasing our mains replacement activity. In AMP8, we will re-commence a proactive programme to replace 500km of mains. This is the first step, and we envisage another step-up in activity in the next regulatory period, when we aim to replace 1,000km of mains.
- **Basement flooding resilience** – We will replace 13km of trunk mains to reduce the risk of basement flooding, which is caused by a catastrophic failure near properties. This will protect approximately 4,000 basements at risk of flooding, thereby reducing the risk of harm to people and property. We propose to deliver this programme of work, despite the relative low support from customers outside of London. This is a health and safety obligation for us under the Health and Safety Water at Work Act 1974.

Wastewater

- More extensive monitoring, and better data in AMP7, resulted in us prioritising 157 sewage treatment sites for improvement. Our intention is to continue our investment in these sites, to help reduce compliance risk and reduce the risk of unpermitted spills. This will ensure legal compliance at these sites, but it also complements our turnaround focus on pollutions and underlines our focus on reducing potential environmental impacts.
- **Water Industry National Environment Programme 7 (WINEP 7)** – We take our environmental compliance obligations very seriously, and whilst we are disappointed that we have been unable to deliver all of this work during the originally envisaged timeline, we are prioritising completion of the remaining 105 AMP7 schemes during AMP8, in recognition of the need to meet our statutory and regulatory obligations and to deliver environmental improvements.
- **WINEP 8** – In line with our customers' priorities, we propose that our AMP8 WINEP will focus on our storm overflow reduction plan, reduced abstraction at sites that impact chalk streams, and address investment at the newly designated bathing water at Wolvercote Mill Stream, which is currently designated as 'poor'. The storm overflow reduction works are key to minimising the risk of harm to the environment, as well as improving river health, which is an area of high stakeholder focus. The investment at Wolvercote Mill Stream, which is now a designated bathing water for the public, will help minimise the risk of harm to public health. We are committed to delivering all of the AMP9 WINEP, but propose to defer delivery of some aspects to AMP9. The main areas we are re-phasing over AMP9 and the early part of AMP10, include the phosphorous reduction and chemicals reduction programmes. Regarding the phosphorous reduction programme, we have recognised that there has been an extensive programme over the last two decades, and levels of phosphorous are 70% lower than before investment commenced. Our AMP7 investment will deliver a 20% reduction when compared to the government's long-term aim of an 80% reduction by 2038 (from a 2020 baseline). With regard to the chemicals reduction programme, the treatment processes have not been tested at scale, and it is unclear how effective the technology will be. We therefore have proposed time to undertake further trials, sampling, and to allow for greater innovation.
- **Sewage Treatment Growth** – We will invest in additional sewage treatment capacity to meet population growth. This investment will provide treatment capacity for a population equivalent to 97,223 people, or 40,341 new homes. It will allow us to remain compliant with our discharge permits.
- **Resilience** – We will undertake tactical and targeted interventions in areas at high risk of flooding. Following the extensive flooding in July 2021 across London, we are working in collaboration with the Greater London Authority and the boroughs to improve the management of surface water, and reduce the inundation of our sewer network. We will be concentrating on both collaborative work, such as sustainable urban drainage, while also protecting a number of the highest-risk properties. We have prioritised these interventions to mitigate potential public health risks, as well as to realise critical resilience improvements. Sewer flooding is one of the worst service failures and is our customers' number one priority for enhancement spend in AMP8.
- **Resilience** – We will spend money to replace our pumping stations and rising mains to reduce the risk of sewage pollution, and in particular serious pollutions (problems with rising mains are a key driver of serious pollutions). This will reduce pollution risk and deliver a better outcome for the environment. It will also ensure we meet our statutory and licence obligations to ensure our area is properly drained via an adequate sewerage system.

Overarching

- **Net Zero** – We have embraced the government's target of net zero carbon by 2050. We have decided that rather than invest in carbon neutral projects that have no other drivers than reduced CO_2 emissions, we will start a phased programme of replacement that aligns with assets coming to the end of their useful life. Where assets (including our vehicle fleet, building stock, and fixed assets) come to the end of their useful life, we will replace them with more carbon neutral alternatives. Our energy strategy will also increase our self-generation, while considering gas to grid from our digestion sites.
- **Cyber security** – We will work on our cyber resilience, in compliance with the current and enhanced Drinking Water Inspectorate framework requirements. All operators of essential services are expected to comply with the enhanced Cyber Assessment Framework (CAF) by March 2028. Again, this is aimed at supporting our statutory compliance and licence obligations.

7.7.3 | What we need to defer until AMP9

The table below summarises the activities that we have needed to defer until AMP9.

Area	What we are proposing to defer to AMP9	Why are we proposing to defer
Water	**Water resilience** – Work on the London water resilience scheme (for example, Honor Oak pumping and mains) to address our highest water supply resilience risks, and reduce the risk of customers experiencing interruptions longer than two days. However, reflecting the fact that customers support investment in this area, we will undertake short-term, tactical interventions over AMP8 to balance risk and performance.	Though important in their own right, this programme was deferred given the lower risk profile of these assets compared to other programmes and assets (for example, Coppermills), and given physical constraints (number of other on-site schemes). In the interim, we will undertake some mitigation works at the Honor Oak Pump Out Shaft to improve resilience.
	Water quality – Implementation of works to complete the installation of install UV treatment at two of the remaining four sites where we have identified a cryptosporidium risk.	Due to deliverability constraints in AMP8, including the need to avoid outages across our London Process Plants (LPPs), we will phase the installation of the UV treatment across two AMPs. The two sites to be completed in AMP9 are: • Kempton Park water treatment works – this site can be isolated fully from our London system with alternative supplies from other sites. • Asford Common water treatment works – the flows from Ashford Common discharge into the London rising main, with no direct supplies to customers, thereby minimising the risk in the short term. We will have undertaken the design work necessary for these works ahead of AMP9 and as part of our prioritisation of the other two higher risk sites.
Wastewater	Those parts of our chemicals and nutrients programme originally contemplated for delivery during WINEP 8.	We have requested that some areas of the WINEP for AMP8 are completed in AMP9. Our main areas of deferral beyond AMP8 are phosphorous reduction and removal of complex chemicals, such as antibiotics from treated sewage discharges. The reasons for this are: • There has been an extensive programme of phosphorous reduction over the last 2 decades, and levels are 70% lower than before investment commenced. Our AMP7 investment will deliver a 20% reduction, when compared to the government's long term aim of an 80% reduction from a 2020 baseline, by 2038. The levels that we now need to reduce down to result in expensive forms of treatment, and we have prioritised investment in storm overflows, given historic investment on phosphorous reduction to date. • In terms of chemicals, the treatment processes have not been tested at scale, and it's unclear how effective the technology will be. We therefore have proposed time to undertake further trials, undertake further sampling, and allow time for greater innovation – to ensure customer's money is spent wisely and delivers the benefits expected reliably.
	Further assessment of the compliance status of our 197 wastewater treatment works, which were not identified as being 'of concern' as part of the comprehensive process we adopted during our review in the context of the ongoing Ofwat/EA investigation. We will keep this under review as part of the Wastewater Asset Assurance Programme.	We are prioritising our efforts to focus on the 157 sites we have identified as being 'of concern'. In terms of the remaining 197 wastewater treatment works, where we do identify solutions for compliance issues, we will then aim to roll those out in future and as appropriate, thereby seeking to ensure a prioritised and efficient approach to addressing compliance risk. During AMP7, we will have surveyed all 197 sites identifying the investment and improvement needed. Where practicable and funding allows, we will reduce the risk of non-compliance. Where this is not possible the work will be phased into AMP9. To the extent that our ongoing work in AMP7 and AMP8 identifies any further emerging risks, we will consider how we can address these by re-optimising our expenditure plan. We will also continue to implement, across all our sites, our business-as-usual systems and processes to identify permit breaches.

Table 7.2: Activities deferred to AMP9 and rationale

7.7.3 | What we need to defer until AMP9 continued

Area	What we are proposing to defer to AMP9	Why are we proposing to defer
Industrial Emissions Directive (IED)	Implementation of a modified approach to identify and manage the risks of emissions programme, to contain and cover sludge treatment centres (STC). We will deliver operational measures in AMP8 and delay capital investment to AMP9 and AMP10.	There is considerable uncertainty associated with securing compliance with IED requirements. In addition, the costs associated with securing compliance with IED requirements would be very site specific, and depend to a large extent on the risk assessments currently underway. There is currently an end-2024 deadline for implementation of the IED. We will endeavour to comply with site-specific permits that reflect the requirements of the IED. We note more broadly that there will be ongoing discussions with the Environment Agency regarding future requirements of the IED and timing of any investment (subject to conclusion of the risk assessments).
[redacted]	[redacted]	[redacted]
Net Zero	Investment in our commitment to reduce operational greenhouse gas emissions to Net Zero by 2030, as part of the public interest commitment that we made in 2022, as part of Water UK's 2030 Net Zero Routemap.	In 2019, we made our original Net Zero pledge to reduce our operational emissions to Net Zero by 2030. Since then, there have been some materially significant changes to the original assumptions used by the water sector, that have a direct impact on the size and deliverability of the net zero challenge. These include: • Changes to our understanding of the levels of Nitrous Oxide emitted from the wastewater treatment process, a significant operational emission. • An increase in estimates of operational emissions, following publication of new Ofwat methodology. • Increases in treatment standards linked to WINEP and associated emissions. • Ministerial guidance on investment timing of Net Zero options.[9]

Table 7.2: Activities deferred to AMP9 and rationale (continued)

9 The EA's Information Letter EA/16/2023 (dated 05 July 23) stated that 'Companies are expected to explore opportunities to phase non-statutory commitments, including net zero to future price review periods'.

7.8 | Our AMP8 plan is aligned with our Vision 2050

Our vision for 2050 forms the basis of our 25-year plan, where we set out how we intend to meet our long-term ambitions. Achieving our ambitious 2050 outcomes will require significant improvement across the majority of Ofwat's common performance measures.

For our AMP8 plan, we have defined ten customer outcomes we want to deliver based on what our customers have told us. We summarise the key aspects of our plan below and articulate how they map to customer wants, our key customer outcomes, and our vision for 2050.

Vision 2050 Theme	What customers want	Customer outcome	Relevant performance commitments	AMP8 forecast exit position (Forecast AMP7 exit position)	Vision 2050 ambition
For customers	I want easy customer experience and tailored support	Easy customer experience and tailored support	C-MeX	15th (17th)	6th
			D-MeX	13th (16th)	6th
			BR-MeX	11th (N/A)	6th
	I want fair and affordable bills	Fair and affordable bills	N/A		N/A
	I want safe, high-quality drinking water	Safe, high-quality drinking water	Compliance Risk Index (CRI)	1.00 (1.75)	0.5
			Customer contacts about water quality (contacts per 1,000 population)	0.45 (0.45)	0.30
	I want a reliable supply with minimum disruption	Reliable supply with minimum disruption	Water supply interruptions (minutes per property per year)	9 (10.5)	<5
			Mains repairs (number per 1,000km of mains)	238 (281)	116
			Unplanned outage	1.30% (2.34%)	1.10%
	I want you to prevent sewer flooding and take waste away safely	Preventing sewer flooding and taking waste away safely	Sewer collapses (number per 1,000km of sewer network)	3.89 (3.89)	3.88
			Internal sewer flooding (number per 10,000 sewer connections)	1.52 (1.83)	0.40
			External sewer flooding (number per 10,000 sewer connections)	23.4 (27.2)	5
For communities	I want you to have a positive impact on the community	Having a positive impact on the community	Biodiversity (biodiversity units per 100km^2 for which the company provides monopoly services)	0.44 (N/A)	0.56
For the environment	I want you to reduce your impact and restore the environment	Thriving environment			
	I want you to stop polluting rivers and to improve their quality	Stopping polluting rivers and improving their quality	Total pollution incidents (number per 10,000km of wastewater network)	37.0 (53.2)	11
			Bathing water quality	66.5% (50%)	100%
			River water quality (Reduction in kgs of phosphorus per head of population)	-20% (-4%)	-80%
			Discharge permit compliance	100% (99.7%)	100%
			Serious pollution incidents (number per 10,000km of wastewater network)	4 (8)	0
			Storm overflows (average number of spills per overflow)	17.2 (23.9)	5
	I want you to fix leaks and ensure there is enough water in the future	Fixing leaks and ensuring there is enough water in the future	Leakage (reduction in Ml/d for a three year average from 2019/20)	-37% (-15%)	-50%
			PCC (reduction in litres per person per day for a three-year average from 2019/20)	-5.5 (-3.4%)	-25%
			Business demand (reduction in Ml/d for a three year average from 2019/20)	-10.1% (N/A)	-15%
	I want you to reduce emissions and reach net zero	Reducing emissions and reaching net zero	Operational greenhouse gases – water (tonnes CO_2e per)	152,556 (N/A)	0[10]
			Operational greenhouse gases – wastewater (tonnes CO_2e per)	359,507 (N/A)	0[10]

Table 7.3: What we will deliver in AMP8, for customers, communities and the environment

Note: N/A is indicated for AMP7 exit position, where this performance commitment is new for PR25 and we therefore do not have a PR19 track record to show.

10 Although we aspire to achieve net zero, we are currently reviewing our net zero roadmap given all of the recent changes detailed in the table on page 52. We will publish an updated overview of our net zero plans once this review is completed.

8.0
Our plan delivers for our customers

Key messages

We expect to spend £12.2bn in base expenditure, including £950m in enhancement expenditure, and deliver five key outcomes.

The key outputs we will deliver include:

Easy customer experience and support
- We have planned a range of operational measures designed to improve customer experience.
- Our Priority Services Register will grow to 75% of the eligible population, amounting to over 1 million households.

Fair and affordable bills
- Up to 530,000 customers will benefit from our social tariffs.
- We will provide an average 59% discount for directly billed, income deprived customers by 2030.

Safe, high-quality drinking water
- We will improve water quality as measured by the compliance risk index.

Reliable supply with minimum disruption
- We will deliver a 14% reduction in the level of supply interruptions (in excess of three hours).

Preventing sewer flooding and taking waste away safely
- We will deliver a 17% reduction in internal sewer flooding.

We summarise below what our customers expect for each outcome, and how we will be held to account through the relevant performance commitment. We then comment on our track record in AMP7, our plan for AMP8, and our expected performance in AMP8 across each relevant measure.

8.1 | We will provide an easy customer experience and tailored support

We summarise below how our AMP8 plans deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS11: Our Customer strategy, and Appendix TMS07: Bill impact, affordability and vulnerability.

Customer outcome

Easy customer experience and tailored support

The outcome amounts to 5% of totex in our plan (£986m of total expenditure), and performance will be assessed through three performance commitments.

Our ambition

Compared to our forecast AMP7 exit position, we will achieve:

15th	13th	11th
C-MeX ranking	D-MeX ranking	BR-MeX ranking

8.1.1 | Customer need

How Ofwat measures customer service

Ofwat uses three key metrics to measure customer experience and incentivise companies to provide an excellent service:

- **C-MeX** was introduced in PR19 and measures the experience of residential customers, across both the retail and wholesale parts of the value chain.
- **D-MeX** was also introduced in PR19 and measures the experience of developer services customers, including small and large property developers, self-lay providers, and those with new appointments and variations.
- **BR-MeX** is new in PR24 and will measure the experience of business customers and retailers.

Put simply, companies receive a score based on the satisfaction ratings given by customers in monthly surveys (and additionally for D-MeX company performance against key performance metrics).

These metrics are financial and reputational incentives. Ofwat publishes league tables, and companies can earn a reward or a penalty based on how they score compared to other companies.

8.1.1 | Customer need continued

We are proud to serve a diverse customer and community base, from the dense urban environment of central London, through to the rural farming communities in the Cotswolds. We serve a wide range of different types of household and business customers, and we need to make sure we meet everyone's needs.

Our engagement with vulnerable customers, as well as their representatives, has highlighted to us how important it is that our services are inclusive and accessible to all. We recognise the multi-faceted and often transient nature of vulnerability. For example, we have heard how cultural attitudes, religion, language barriers, long-term physical and mental health conditions can all impact how vulnerable customers use and depend on the services we provide. Customers rightly expect us to design services and propositions that help those who could otherwise be disadvantaged.

We summarise below what we heard from our diverse customers base, and how we will hold ourselves to account in delivering their expectations. Further details of our planned AMP8 work are set out in Table 8.1.

What we heard		How customers can hold us to account
Customer experience	Customers want us to be easy to contact and have their issues and queries handled effectively by knowledgeable staff. Where resolution is not possible upon first contact, customers expect proactive communication and updates on progress and timescales.	Our delivery of these customer wants is measured against our performance commitment on C-MeX, which drives our work to reduce the number of customer issues, and to address them proactively and effectively when they do occur.
Vulnerable customer support	Our customers that need extra help, and their representatives, want us to ensure there are additional services and propositions in place tailored to their specific needs. This includes providing a range of accessible channels of communication and raising awareness of services available.	We will continue to provide inclusive, tailored support to our vulnerable customers. We're expanding our Priority Services Register through data sharing and community engagement, to make substantial steps in extending the representation of the eligible population.
Developer services	Developers want more proactive communications and updates from us, and provision of a single point of contact to deal with their queries. They want to see improvements in response times, and simplification of quotation and application processes.	Our work on improving the experience for developers in AMP8 will be driven by our delivery of the D-MeX performance commitment.
Business/non-household customers	Business customers are particularly concerned about supply interruptions, due to the potential impact on their operations. When things go wrong, they expect proactive contact, apologies, and higher levels of compensation.	We will improve our service for business and retail customers through stretching BR-MeX performance commitment targets.
Retail customers	Our non-household and domestic customer wants are similar, with some differences, particularly from a Retailer perspective. Retailer margins are tight, so they are keen to get support from Wholesalers to help them deliver efficient services. For example, their desire for increased smart metering and associated data services is to reduce their meter reading costs, and unlock the potential for reducing water consumption. They also want simplified and standardised processes, policies, and tariffs across the industry, to help them work efficiently across multiple regions.	

Table 8.1: Customer line of sight for easy customer experience and tailored support

Further information about what our customers expect from us is presented in Appendix TMS3: Customer Engagement.

8.1.2 | Our track record

We regret the fact that our customer service is not good enough. We are improving but there is still much more to do. For example:

- Improving household customer experience is a key element of our turnaround plan and we have seen encouraging signs in other customer service metrics, which suggest that the changes we are making are working. We delivered a 28% reduction in complaints last year and a 44% reduction in the previous year.
- We have stayed near the bottom of the D-MeX table during AMP7, as others have improved faster than us. However, with the further changes we are implementing to our supplier contracts, customer journeys and systems, we plan to steadily increase our D-MeX performance during the remaining years of AMP7 and into AMP8.
- Our R-MeX scores have increased significantly since the first survey for 2020/21, where we ranked bottom in the industry, with a score of 5.9/10. For 2022/23 our score has increased to 7.1/10 placing us 13th out of 15 companies. Since 2017, several improvements have been made to the service we provide to retailers. These include the adoption of MOSL's[1] central bilateral hub (a standardised mechanism for retailers and wholesalers to create work requests and share updates), the retirement of our legacy property and metering database, migration onto a new IT platform, and a range of changes to the market codes – aimed at improving services to customers and reducing market frictions. We have also introduced standardisation in several market processes and policies across the industry – making it easier for retailers to work with multiple wholesalers across regions.
- The reach of our Priority Services Register has grown from 3.5% to 6.2% of households served between 2020/21 and 2022/23, which equates to an increase from 15% to 26% of the eligible population.
- Customers who are on the Priority Services Register show increasing satisfaction with our services. Indeed, they now record slightly higher satisfaction with our services than other customers – their satisfaction scores are 88% compared to 86% for the wider population.

We have delivered improved performance in AMP7. For example, we have:

- Tightened our operational grip in our contact centres, resulting in a reduction of our call waiting times.
- Reshaped our high-volume online customer journeys (such as submitting a meter read, moving home, or reporting a blockage) in response to increased demand from our customers for our digital channels.
- Embedded a new incident management process. This has improved how we communicate, and the way we keep customers and stakeholders updated during incidents.
- Worked hard to improve our services to our New Appointment and Variation (NAV) customers, both in response to market initiatives and on the basis of feedback from our NAV customers.
- For our household, retailer and developer customers, we carried out a review of activities and identified new business partners who will carry out back-office activities, to deliver better resolution and drive efficiency.
- For our customers that need extra help, we increased the number of our support propositions from 11 to 23, therefore allowing us to respond to an increasing range of situations. Our service has been accredited with the British Standard for inclusive services, standard 18477, for three successive years.
- Also for those that need extra help, we improved our incident response with a significant increase in field resources, who can provide alternative water during a supply interruption. By the end of AMP7, we will have capacity to support Priority Service Register customers that need alternative water for 98% of incidents.

8.1.3 | Our plans for the remainder of AMP7

We have planned the following key activities for the remainder of AMP7:

- We will continue to improve customer journeys. Our smart meter journey will be of particular focus to ensure it is optimised prior to the large metering programme we are delivering in AMP8.
- We will concentrate on the core issues that matter to our customers, including pollutions and leakage. By focusing our efforts on improving our performance in these areas, we will build trust with our customers and reduce the volume of issues that customers experience. This will reduce pressure on our contact centres, and allow our employees to focus on a smaller number of incidents that do still occur.
- We recognise that as a result of the cost-of-living crisis, our customers will need more support than ever with paying their bill. We continue to increase the numbers of customers that we support through our social tariff, by encouraging agents to direct customers to it, through our work with third-party agencies, raising awareness through our communications campaigns, and by piloting greater methods to be more visible within underrepresented communities.
- We are also delivering a significant transformation in the way we collect revenue. This includes revised collection strategies with tailored treatment paths, increasing the number of customers on payment plans and improving the team's efficiency.
- We will continue to invest in services for those that need extra help –our Priority Services Register is forecast to reach over 8% of our customer base by the end of AMP7 (equivalent to 26% of the eligible population), and we will upgrade our external accreditation for service from the British Standard to the International Standards Organisation (ISO) standard.

1 MOSL is the market operator for the non-household water retail market in England.

8.1.4 | Our AMP8 plan

During AMP8, we will provide better customer service and ensure no-one is left behind as we improve our customer journeys.

> We will invest in developing skills and capabilities of recently insourced water repair and maintenance teams to increase ‘first time fix’ rates.

Customer objectives	Our plan to deliver
We will reduce the number of customer issues occurring in the first place (C-MeX)	• We are investing in our assets to build resilience and prevent failure. Appendices TMS08 and TMS09, as well as our AMP8 Water and Wastewater Outcome Delivery strategy provide more information. • We will use smart technology to monitor our water and wastewater networks, spotting issues before customers do, and proactively responding to prevent customer impact. • We will work with Local Authorities, the Greater London Authority, and other utilities to coordinate roadworks, minimising the impact in local communities. • We will continue to tighten our controls and processes in billing to ensure bill accuracy.
We will resolve more billing and operational issues within 24 hours (C-MeX)	• We will develop multiskilled agents with deeper process knowledge to resolve customer issues at first point of contact. This includes building on our new virtual technician capability, to resolve more issues first time over video. Previously, we had no ability to have an ‘eyes on’ view of a customer issue in the field, restricting our chances to resolve the issue at the point of contact. We now can route some clean water calls to a team of virtual technicians, who can resolve the issue over video. • We will invest in our customer and property data to ensure it’s up to date, accurate, and accessible, providing our teams with a single view of the customer. • We will re-design digital journeys and enhance self-service capabilities, to allow more customers to resolve their issues online. This will allow our contact centres to focus on complex queries and support customers who prefer to interact with us through traditional channels. • We will invest in developing skills and competencies of recently insourced water repair, and maintenance teams to increase ‘first time fix’ rates.
We will proactively keep customers updated so they will only need to contact us once to get their issue resolved (C-MeX)	• We will continue to develop our communication approach during incidents by enhancing our playbooks (which outline a set of processes for responding to and resolving an incident), implementing better technology that allows us to share proactive updates quickly (eg automated texts and emails which can keep customers updated on the progress of a fix, so that they don’t need to call us). Customer Incident Responders who are available to distribute bottled water and give advice and general support to customers will be a key part of this, and will support with communications ‘on the ground’. • For our vulnerable customers, we will send a SMS message to those who we hold a mobile number for and we will call those customers who only have a landline, based on our understanding of their needs, to keep them informed during an incident. We plan to develop the capability to send a SMS message to our customers who only have a landline, to allow us to reach a larger number of customers (the SMS is then read automatically on the phone). • We are reengineering our customer journeys to make sure we have the right automated proactive customer updates throughout. For example, we want to understand when in the process it would be most effective time to send a text or email about their issue. This includes implementing an online tracker so customers can view where they are in the process. • The reduction in contact volumes, as a result of proactive communication, will allow our contact centre agents to focus on complex queries and support customers who prefer to contact us through traditional channels. We will build on our platforms to ensure that channel updates are coordinated and consistent, including voice, video, interactive voice response, SMS, push notifications, email and bots. We will proactively identify poor service in ‘real time’ using voice analytics to take action and resolve issues based on negative sentiment.

Table 8.2: Our AMP8 plan for easy customer experience and tailored support

8.1.4 | Our AMP8 plan continued

Customer objectives	Our plan to deliver
We will expand the provision of inclusive, tailored support to our vulnerable customers (C-MeX)	• Our Priority Service Register will grow to 75% of the eligible population, at over 1 million households. • We will engage those who are under-represented through a combination of data sharing and community campaigns, to ensure our propositions reach those that need extra help and overcome barriers (such as language and culture).
We will continue to support developers, infrastructure providers, NAVs and Self lay providers (D-MeX)	• We will provide a simple and tailored experience for our developer customers, by delivering a transformation programme that will re-design and digitalise our customer journeys. This will allow customers to be able to use a portal to self-navigate through our processes, choose their preferred contact channels, access online forms and quotations, and track the status of their jobs. Our chosen platform will allow us to continuously improve our systems and processes, to continue to enhance customer experience. • We will continue to build on customer segmentation to provide a tailored experience to the variety of developer customers that we serve – from individual householders to major home builders. • We will continue to support the development of the competitive markets, aiming to increase market penetration of competitive providers to 50% by 2030.
We will make it simple and efficient for our non-household retailers to deal with us (BR-MeX)	• We will introduce self-service and automation opportunities, and standardisation of our tariffs, services, and processes, to reduce the effort required so retailers can engage with multiple wholesalers. • We will accelerate the rollout of smart meters, so that all meterable businesses are smart metered by the end of AMP8. This will fast-track the provision of consumption data to retailers and business customers to improve market viability, and it will enable greater water efficiency effort to achieve government business demand reduction targets. • We will develop a non-household digital toolkit with smart meter 'analytics engine' and an online portal. This will enable us to provide regular usage data and tailored water saving advice to customers regarding their water consumption.
We care deeply about our customers and the communities we serve	• We will set an expectation of customer-centric competency of our leaders, senior managers, and frontline when it comes to customers. • We will invest in Institute of Customer Services accredited training. • We will deliver our people strategy, which includes improving engagement and leadership capability, implementing our skills strategy, assuring technical competence, and modern ways of working. • We will continue to share how we are improving things for customers with our team, and embedding frontline continuous improvement opportunities to improve colleague engagement.

Table 8.2: Our AMP8 plan for easy customer experience and tailored support (continued)

We have submitted a £83m cost adjustment claim to fund our costs related to the higher than usual rate of population transience we experience in our area. This is covered in more detail in Section 11.3: Summary of our cost adjustment claims.

Read more

> We will set an expectation of customer-centric competency of our leaders, senior managers, and frontline when it comes to customers.

8.1.5 | Our projected performance

We expect to achieve meaningful improvements for all our relevant performance commitments:

- We are targeting an improvement in our C-MeX performance. As we complete the delivery of our AMP7 plan and progress our AMP8 plan, we expect C-MeX to remain flat until Year 3 of the AMP8 and then improve.
- On D-MeX, we are targeting to move from 16th place at the end of AMP7 to 13th by the end of AMP8. We will continue to support the competitive market and expect that more than 50% of properties will be connected by third parties by 2030.
- We are also committed to improving service for our non-household and retailer customers, through stretching BR-MeX targets. As the methodology for BR-MeX is still under development, we have assumed it will be reflective of both R-MeX, and the water and wastewater customer service survey element of C-MeX, to set the below targets.
- We will extend the reach of our Priority Services Register to 75% of eligible households, 18% of our base, and maintain external accreditation for our inclusive services to the enhanced BSI Kitemark for ISO standard 22458.
- We won't target a particular Customer Satisfaction or C-MeX score for priority services register (PSR) customers but, instead, we will monitor the scores for both segments, to ensure our customers requiring extra help are not suffering detriment.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
C-MeX (rank)	17th	17th	17th	16th	16th	15th
D-MeX (rank)	16th	15th	14th	14th	13th	13th
BR-MeX (rank)	N/A	13th	13th	13th	12th	11th
PSR, % eligible population reached	36%	41%	56%	65%	71%	75%

Performance commitment measurement: C-MeX, D-MeX and BR-MeX are a measure of quality of services delivered respectively to household customers, developers and other third parties, and business customers. Companies are ranked based on their score. PSR measures the number of households on our Priority Services Register as a proportion of all eligible households in our operating region.

Table 8.3: Projected performance, easy customer experience and tailored support

The challenge for us with these customer measures is that although we are making considerable progress in improving our performance, which we anticipate will translate in constantly improving customer satisfaction throughout AMP8, other companies are improving in a similar way. Since the measures are based on relative performance, we are chasing a target that is constantly moving away from us.

In order to make sure that performance penalties are used in the best interests of consumers, we propose creating a customer satisfaction fund, rather than returning the money to customers. The money in this fund can then be invested in improving customer satisfaction, eg by spending it on additional upgrades to our computer systems. We are happy to explore with Ofwat how this arrangement would work in practice.

Separately, we have responded to Ofwat's consultation on the changes to these performance commitments. We support many of Ofwat's proposals, including reducing the proportion of Customer Experience Survey (which captures brand perception) in C-MeX surveys (on the basis that this is less directly within company control), and rebalancing the D-MeX incentive to better reflect the proportion of work carried out for large developers and players in the competitive market. We are, however, concerned about Ofwat's proposals to calculate incentives based on return on regulated equity (RoRE). In principle, we believe that the size of the incentive should be proportional to the amount of activity that is being undertaken. RoRE is forecast to grow significantly over AMP8, as a result of the high investment in water and wastewater assets. In contrast, the size of the retail business will remain relatively flat and the developer services business may shrink, as the amount of activity undertaken by self-lay providers increases. In our view, the size of C-MeX and D-MeX incentives should remain linked to revenues that are proportional to the amount of activity that is undertaken. The incentive should be calculated as proportion of revenue, not RoRE.

8.2 | We will propose fair and affordable bills

Our bills are fair if they are appropriately distributed across our customers and generations, and if they are sufficiently transparent and accessible to our customers. Our customers should also see that our services represent value for money. We want our bills to be affordable to all our customers, and we have measures in place to support our customers who struggle to pay their bills.

We summarise below our track record in this area and our AMP8 plans to deliver this outcome. Further detail is presented in Appendix TMS11: Our Customer strategy and Appendix TMS07: Bill impact, affordability and vulnerability.

Customer outcome

Fair and affordable bills

Our performance will be assessed through three commitments which we will monitor ourselves

Our ambition

£60m additional funding for affordability support provided by our new rising block tariff

Households getting help with their bills **530,000**

Average discount for directly billed, income deprived customers by the end of AMP8 **59%**

8.2.1 | Customer need

Bill experience and value for money

Generally, customers trust us to treat them fairly when it comes to billing – they feel bills are transparent and easy to understand. They place the most importance on consistency in bill levels. Equally, they have said that any increase in bills must be clearly communicated for us to maintain trust.

There has been a significant decrease in perceptions of value for money and trust in water companies. Less than half of customers feel that our bills are good value for money and are satisfied with the prices they are charged. Satisfaction is particularly low amongst those who occasionally or consistently struggle to pay their bills.

Affordability

There is growing concern about affordability, notably due to the cost-of-living crisis and increases in utility bills, and we have an increasing proportion of customers who struggle to pay their bills.

However, average data on affordability masks significant variations across our region. Across London and the South East average disposable incomes after housing costs are over 25% higher than the rest of the UK. At the same time, over the last two decades, London has the highest poverty rate in the UK with 25% of households in poverty. In contrast, the South-East and South-West parts of our region have poverty rates below the England average at 20%, while still having pockets of deprivation such as in Swindon and Reading.

From our latest quarterly household customer experience survey, we have seen 5% of our customers report they always or frequently struggle to pay their water bill over AMP7, but in the first quarter of 2023/24 this has increased to 7%. Including those who sometimes struggle, we have seen this increase from 17% over AMP7 to 23% in 2023/24 driven by less affordability across all groups and for the first time this AMP impacting more affluent segments too. This means that the profile of customers having difficulty paying their bills is shifting and is starting to include those who would have previously been in a comfortable position.

It is considered that households paying over 5% of their net equivalised income on their water bill are below the 'Affordability Threshold' also known as the Water Poverty threshold. We estimate that there are 205,000 households below the Affordability Threshold in our billed region, representing 5.5% of our total households.[2] The volume of households below the Affordability Threshold has largely been flat in AMP7 but we anticipate an increase as mortgage rates and housing costs increase. This factor is not expected to continue through to the latter half of AMP8 as interest rates reduce.

In 2017 customer research showed that customers supported paying up to an additional £11 each year towards a discounted tariff for customers who struggle to pay their water bill (just over £12 in today's prices, for dual service customers).[3] More recent research (August 2022) has shown that 75% of customers accept a further cross subsidy of £10 on their annual bills to enable a discounted tariff to be offered to a larger number of customers, making a total of £22.[4]

2 Thames Water's model built by BRG based on CCW defined methodology, using ONS equivalised income after housing costs.

3 PR19-20 CR58b Vulnerability Customer Insight, Thames Water, March 2018, (from WCCSW v17).

4 CX82 Social Tariff Research, August 2022 (from WCCSW v17).

8.2.1 | Customer need continued

Expectations for AMP8

For AMP8, our customers have expressed the following expectations:

- That our services offer good value for money.
- That their bills will be transparent, accurate and easy to understand. Customers expect us to ensure our bills are accessible to all, including by providing different formats (eg Braille, large print). They expect their bills to be accurate, consistent (not higher than expected) and for any significant increases to be communicated to them in advance.
- That our services offer good value for money.
- That we should provide financial support to those who are struggle to pay, particularly in light of the cost of living crisis and the likelihood of future bill increases. Customers expect us to be more proactive in contacting them at an earlier stage and better at promoting available support. Customers generally accept the need to help those who are struggling to pay their bills, and expect us to provide discounted tariffs which they are generally wiling to contribute towards. They expect us to better promote all forms of financial support, including discounted tariffs to those who are eligible.

8.2.2 | Our track record

Bill experience and value for money

We have worked in AMP7 to deliver positive improvements for our customers. For example, we have:

- Insourced our voice contact centre and returned operations to the UK, recruiting over 200 new advisors to our billing customer service team, and outsourced low value back-office activity, to deliver better contact resolution and drive efficiency.
- Reversed our 2020 decision to read meters only once a year. We now read meters twice a year which has reduced contacts, complaints and dissatisfaction from the use of estimated meter reads.
- Made our online account management dashboard clearer for customers to understand balances, and past and upcoming payments.
- Delivered new and improved self-service tools on our website for submitting a meter read and managing direct debits or payment plans.

Affordability

We have implemented a three-staged approach to supporting customers who struggle to pay their bills, which is summarised in the figure below.

In summary, we:

- **Seek out customers first to increase their awareness of the support we can provide** – We do this because only a quarter of our customers are aware that we provide flexible payment plans and 13% that we provide discount tariffs.
- **Act before it is a problem** – Once customers engage with us, we can understand their needs and take steps to ensure they do not go into, or go further into, arrears. Our income and expenditure review plays a key role in this. We assess a customer's ability to pay and match that to a sustainable payment plan, which may include deferment of charges.
- **Provide sustainable support** – The income and expenditure review will identify if sustainable support is required. We have two main schemes to support our customers:
  - **WaterHelp**, which provides a 50% discount on their bill to eligible customers.
  - **WaterSure**, which caps a customer's bill at the average value of the bill of other customers if they are on means-tested benefits and additionally have a high dependency on water – from either having responsibility for three or more children or a water dependent medical need.

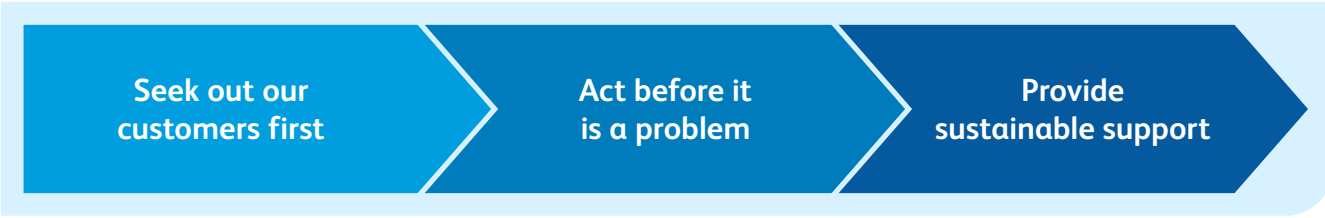


Figure 8.1: Our approach to support customers who struggle to pay their bills

8.2.2 | Our track record continued

We summarise our hierarchy of support proposals below.

Proposition	Description
Credit Risk data and collections treatment paths	We assess the characteristic and circumstances of our customers to take them through tailored processes when they fall into debt.
Payment plans	We provide flexibility over frequency of payments and methods of payment.
Tailored engagement	Our teams are trained to spot signs of vulnerability and proactively offer support, referring to specialist teams to provide in depth income and expenditure reviews if required.
Metering/Assessed Household Charge	A customer may have a lower bill by moving to a metered basis of charging. If meter installation is not possible an assessed household charge can be used, where charges are based on the water consumption that would be expected from a household (eg based on the number of bedrooms in the property).
Water efficiency	We deploy a range of measures to help our customers reduce their consumption and therefore their bills. This includes the deployment of meters, our online water efficiency calculator which helps our customers identify their water usage, and targeted water efficiency visits where our experts visit our customers and help them save water and energy.
Assessing needs	We perform an income and expenditure review to match the ability to pay to payment plans.
Affordable plans	For those who need time to restructure household finances, and through the income and expenditure review, affordable plans are set up to reflect what a household can afford and manages debt. Arrears can be paid off over five years.
Payment break	We can provide a pause of three months on a payment plan to reflect cash flow issues. This is accessed via an income and expenditure review.
Breathing space	This regulatory scheme gives the possibility to create a 60-day break from collections activity while a customer seeks formal debt advice to better structure their household finances.
Discount tariffs	We provide discounted or capped bills for those with long term affordability issues. WaterHelp provides a 50% discount to those with a low income for the past six months with two qualifying criteria: 1) Low income – indexed to the London Living Wage and the threshold for full child tax credits outside of London. 2) Affordability Threshold – where a water bill is greater than 5% of a household's net equivalised income. WaterSure caps a customer's bill at the average price other customers pay if they are on means tested benefits and additionally have a high dependency on water – from either having responsibility for three or more children or a water dependent medical need.
Customer Assistance Fund – Payment Matching for debt support	A payment plan where we will match a customer's contribution towards arrears over two years and then pay the balance if charges have continued to be paid. This is available for those who can now pay their charges but cannot afford to pay back their arrears within four years and are in receipt of a means-tested benefit. This can be accessed via the income and expenditure review.
Hardship Fund	Colleagues can refer customers to the Thames Water Trust's hardship fund which can provide a service to maximise income for a household by identifying any missed income opportunities and provide essential household goods such as beds and washing machines.
Debt advisor referral	We signpost customers to debt advice organisations and are currently embedding referral processes.

Table 8.4: Hierarchy of our support proposals

In addition, we have made significant investment during AMP7 to provide more holistic and targeted support for our customers struggling to pay their bills:

- We have brought in expertise from the financial sector, on-shored our collections teams and transformed our affordability teams to deliver our key 'struggling to pay journey' where customers who can't afford to pay their bill are provided support, rebuilt around an income and expenditure review.
- We led an initiative with other water companies in our region to an aligned social tariff eligibility criterion, where previously 2m households faced different eligibility criteria for their water and wastewater elements of their bill. This aligned and simplified criterion reduced barriers to access, and along with our external engagement has led to growth of our WaterHelp tariff from 150,000 in 2019/20 to 384,000 in the 2023/24 billing year. This increase was enabled by our engagement with 300,000 Local Authority and Housing Association customers as we transitioned them from being indirectly billed to directly billed by us. Additionally, we have led the way with the Department of Work and Pensions to create data sharing relationships that allow us to confirm if a customer is in receipt of a means tested benefit and therefore maintain their discount tariffs with no or reduced effort. 40% of customer renewals follow this route.
- We have not waited until the next price review process to continue innovating and responding to the cost-of-living crisis. For example, we implemented our new 'Extra Support' scheme that can provide £200 towards arrears for households with insufficient income to cover their household expenses (deficit budgets) but who were not eligible for a social tariff. With the support of the Consumer Council for Water we have implemented a new social tariff criteria to recognise the support required by customers below the water affordability threshold but not on a low income. This could pave the way for an operational single social tariff if funding arrangements can be unlocked.

8.2.3 | Our plans for the remainder of AMP7

We will continue to work hard in the remainder of AMP7 to deliver for customers by:

- Continuously improving our forbearance plans (eg debt repayment, deferred payments) and strategies to increase engagement with customers and maximise the number of sustainable payment plans set up.
- Developing a new debt support scheme for customers with long term indebtedness where we will pay down aged debt for customers where an income and expenditure review identifies they are unable to pay their charges in full, but they remain committed to an agreed payment plan.
- Laying the foundations to invest in our digital income and expenditure review to ensure we can engage with twice as many customers per year, up from the current 70,000 per year, through automation and integration to provide a self-service experience to set sustainable payment plans and access affordability support.
- Systemising our referrals process to make it easier for our customers to obtain debt advice and income maximisation services and for debt advisors to make referrals to gain support from us.
- Continuing to develop our social tariff using the Affordability Threshold as an eligibility criterion and sharing our learning on the ability to collect and process the customer data required, the demographics of customers supported by this criterion and the costs/benefits of administration to support the development of a potential industry-wide single social tariff with a consistent eligibility criteria. We will also continue analysis, modelling and outline design in preparation for a pilot of our rising block tariff, which we explain further below.

8.2.4 | Our AMP8 plan

We have defined the following key areas of focus for AMP8 to provide customers with transparent, affordable bills, and to provide additional support to vulnerable customers. These are derived from what we know our customers expect from us and our understanding of what drives customer satisfaction.

Customer objectives	Our plan to deliver
We will put customers in control of their bill by offering affordable payment plans, a range of payment methods and installing smart meters so customers only pay for what they use	• We will continue to roll out another million smart meters. Please see our WRMP demand enhancement case for further information. We will partner with meter suppliers to develop solutions where we are currently unable to install a meter and offer incentives for non-household customers to alter pipework to enable metering. • We are currently investing in our customer and property data to ensure it is up to date, accurate and accessible. This will enable us to better segment our customer base, which will allow us to offer targeted and personalised offerings based on unique customer needs. We will also use this to optimise our payment plan offerings based on our customers' circumstances. By dividing customers into groups based on their preferences and behaviours we would be able to tailor our marketing and payment plan options to meet their unique needs. For example, for customers who are paid weekly, we would be able to offer weekly payment plans. For customers who start to struggle to pay their bills, we will be able to proactively reach out and offer support. • We will make it easier for our customers to adopt a payment plan (where our customers commit to paying their bills on a set frequency). • We will put customers in control of their bill by giving them access to data and insights on their water consumption through their online account and meter reads, and providing water efficiency advice. • We will continue to focus on ensuring all properties are billed. 'Void' properties are created when an existing customer moves out, but no new customer moves into replace them. Actively managing void properties is important to ensure that all chargeable properties are paying their bill.
We will make it easy for customers to see that our services are value for money and will offer new value-add services and incentives to support customers	• If there are operational issues in their area (eg interruptions to supply or roadworks), we will proactively contact our customers to warn them that they may be impacted. We will keep them updated and let them know when the issue has been resolved. • We will increase investment in brand and marketing to continually engage our customers on who we are and how we are improving our service. • We will review and implement propositions such as lead pipe replacement incentives, offering an incentive to encourage customers to replace their lead supply pipe with a commitment to renew their lead comms pipe at the same time.

Table 8.5: Our AMP8 plan for fair and affordable bills

8.2.4 | Our AMP8 plan continued

Customer objectives	Our plan to deliver
We will continue to expand our support for customers who struggle to pay their bills	**Seek out customers first** – we want to increase awareness of our support propositions. For example: • We plan to create two-way data sharing partnerships with the debt advice sector and energy suppliers to allow customers to benefit from our support and share the cost of gathering the information. • We are in the process of mobilising a partnership with Policy in Practice to utilise data held by the Department for Work and Pensions and Local Authorities to proactively register customers for our social tariff. • We will continue our partnership working approach with our Vulnerability Network. The network gathers a group of critical friends who provide feedback and help us prioritise our efforts, identify gaps in our propositions and extend the reach of our services. **Act before it is a problem** – we want to keep being proactive to offer support and tailored payment plans to our customers. For example: • We will use our smart meter data and online account management to undertake a more frequent reconciliation of usage against payment plans to allow customers to understand if they are going to have increased payments at the next billing period. • We will investigate creating the ability for a customer to directly change their payment plan, for example to respond to an anticipated change in water usage (and bills) or income level. • We will increase meter penetration from our current level of 54% to 74% by the end of AMP8. We anticipate 65,000 customers will move to a metered charging basis. On average, these customers will save £261 per year in AMP8. • We will continue to help our customers reduce their water demands, to reduce their bills. For example: – We have created a water efficiency calculator to allow customers to discover their household's costs for water and energy. Customers using our water efficiency calculator make savings of around 6% to their water bill. – When identifying continuous flow that suggests the presence of leakage or wastage on the customer's side of the meter, we will provide a free repair service to those who are eligible for our social tariff or are registered for certain categories on our Priority Services Register. We forecast that over 4,500 customers will benefit from this over AMP8. We will enable a further 90,000 to self-fix internal wastage or leaks through smart meter enabled engagement. This will reduce the risk that a leak results in a large bill that is difficult to pay. – Overall, our water efficiency support will reduce customer bills by an estimated £41 per year for over 49,000 income deprived households per year. **Sustainable support** – we are reviewing and expanding our payment support: • We are refining the eligibility criteria of our social tariff (WaterHelp), to better target it at customers below the Affordability Threshold. This will expand the number of customers benefitting from it to 490,000 households in AMP8 (including 146,000 households billed through water only companies). Our social tariff will improve the circumstances of 290,000 customers who are below the affordability threshold. • Subject to Ofwat's approval, we will increase the level of cross subsidy funding available through an innovative and progressive 'rising block tariff', in addition to the current cross subsidy framework. This rising block tariff will reduce bills on average by 9% for three quarters of our households while creating incentives to be more efficient with water consumption. Protections will be in place for households with essential high consumption needs, while those who can choose to use excessive amounts of water will pay more. This 'excessive use' tariff will provide an additional £60m to fund an expansion of our WaterHelp social tariff, creating an equivalent cross subsidy of £37 per household, up from the current level of £23 per household collected. • We are developing an innovative scheme to support customers on a long-term reduced payment plan who are not able to pay their bill in full that will by fully rolled out in AMP8. This long-term indebtedness is an industry wide issue. This scheme will cap the amount of aged debt on a customer's account if they stick to the agreed sustainable payment plan. This will prevent debt from growing to unsustainable levels, encourage engagement and enable customers to make the step to a payment matching plan, where debt is cleared completely with contributions from us. We forecast 17,000 customers will benefit from £12m of support, funded by shareholders, over AMP8. Overall, our affordability support represents an average 59% discount for directly billed, income deprived customers by 2030, up from 27% in 2023, providing an average £358 of support per household.

Table 8.5: Our AMP8 plan for fair and affordable bills (continued)

How we are protecting vulnerable customers

63%

The proportion of directly billed customers below the Affordability Threshold we will lift above it, through our affordability support, up from one third in 2022/23.

491k

The number of families benefiting from a social tariff, with our new, targeted tariff funded through cross subsidy and progressive tariff design.

£358

The average support we will provide per income deprived household.

Tailored support

Continue to improve our struggling to pay journey through data led innovation, providing sustainable payment plans for customers, delivered through our partners and our dedicated Extra Care team.

8.3 | We will provide safe, high-quality drinking water

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS08: Our AMP8 Water Outcomes Delivery strategy.

8.3.1 | Customer need

Providing safe, clean drinking water is the foundation of good public health. Customers have told us very clearly that they want a reliable supply of safe, high-quality water – it is their number one priority. We summarise below what we heard from our diverse customers base, and how we will hold ourselves to account in delivering their expectations.

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

Customer outcome

Safe, high-quality drinking water

The outcome amounts to 10% of totex in our plan (£1.9bn of base expenditure) and will be assessed through two performance commitments.

Our ambition

Reduction in our Consumer Risk Index across AMP8
43%

Number of customer contacts regarding water quality each year
0.45/1,000 customers

What we heard		How customers can hold us to account
Water quality and safety	Customers want a dependable service from us across all core water service areas, including ensuring safe and high-quality drinking water. This is consistently ranked amongst customers' highest priorities.	Two performance commitments reflect our response to customer wants in this area; compliance risk index and customer contacts about water quality. This work is supported by our 'Public Health Transformation Plan', through changes to operational practices and key investment, addresses the key issues that pose a risk to water quality. Although not captured by a performance commitment, we will also work to replace lead pipes. Our AMP8 plans for this work are set out in Table 8.7.
Taste, smell and appearance	While water quality is of high importance to customers, they only place a modest value on improving the taste, smell or colour of water.	
Water treatment	Customers are alarmed at the possibility of water becoming contaminated by harmful bacteria. Customers see the solution in this area (improving processes and technology at water treatments plants) as relatively straightforward and as a potential 'quick win'.	
Lead pipes	Knowledge of lead pipes is low among customers. However, upon learning about the health consequences and prevalence of lead pipes, many customers are surprised this is not in the wider public consciousness, and want to know what water companies are doing to protect customers. They are concerned, particularly with the health risk that this could pose to children, hence there is a clear appetite for us to address this as a priority.	

Table 8.6: Customer line of sight for safe, high-quality drinking water

8.3.2 | Our track record

Two of the common performance commitments proposed by Ofwat measure water quality: customer contacts about water quality[5] and the compliance risk index.[6] Appendix TMS40: Accounting for past delivery and deliverability summarises our historical performance. In brief:

- **Compliance risk index** – Our recent performance has generally been at industry average, or better, but our 2022/23 performance was affected by four microbiological incidents caused by ingress to the contact tank at Coppermills and Hampton Water Treatment Works.
- Our analysis highlights the need to address water ingress (when water makes its way into our assets) at our largest and most complex water treatment sites. We have started a programme to remove some of these assets from operation to allow internal inspection and remedial activities. The insight we have already gained from this programme has enabled us to improve our performance and has been shared with the Drinking Water Inspectorate to ensure we mitigate future risks using a systematic and prioritised approach.
- **Customer contacts about water quality** – Measured in terms of the volume of contacts from customers which relate to water quality concerns, our performance is consistently better than the industry upper quartile. The two primary reasons customers contact us is 'appearance' (an average of 55% of all contacts over the last three-years) and taste/odour (28% of all contacts). We have been improving at a faster rate than the rest of the industry and in 2021/22 we were the second-best performer.

We have also been replacing lead communication pipes since AMP6. We are on track to remove 54,000 lead communication pipes in AMP7, up from 36,500 in AMP6. We are prioritising higher risk properties, for example primary schools and nurseries.

8.3.3 | Our plans for the remainder of AMP7

Every breach of water quality regulations, and every near miss, however minor, is investigated to identify the root cause of the failure. We also produce Drinking Water Safety Plans which proactively identify all potential water quality risks. For the remainder of AMP7 and during AMP8 we will seek to address the learnings from previous failures.

During the final two years of AMP7 (from April 2023 to March 2025), we will have progressed several key programmes of work delivering improvements to our water quality performance.

All our improvement plans are captured under the umbrella of our Public Health Transformation Plan which was launched in 2022. This places water quality and public health at the heart of everything we do.

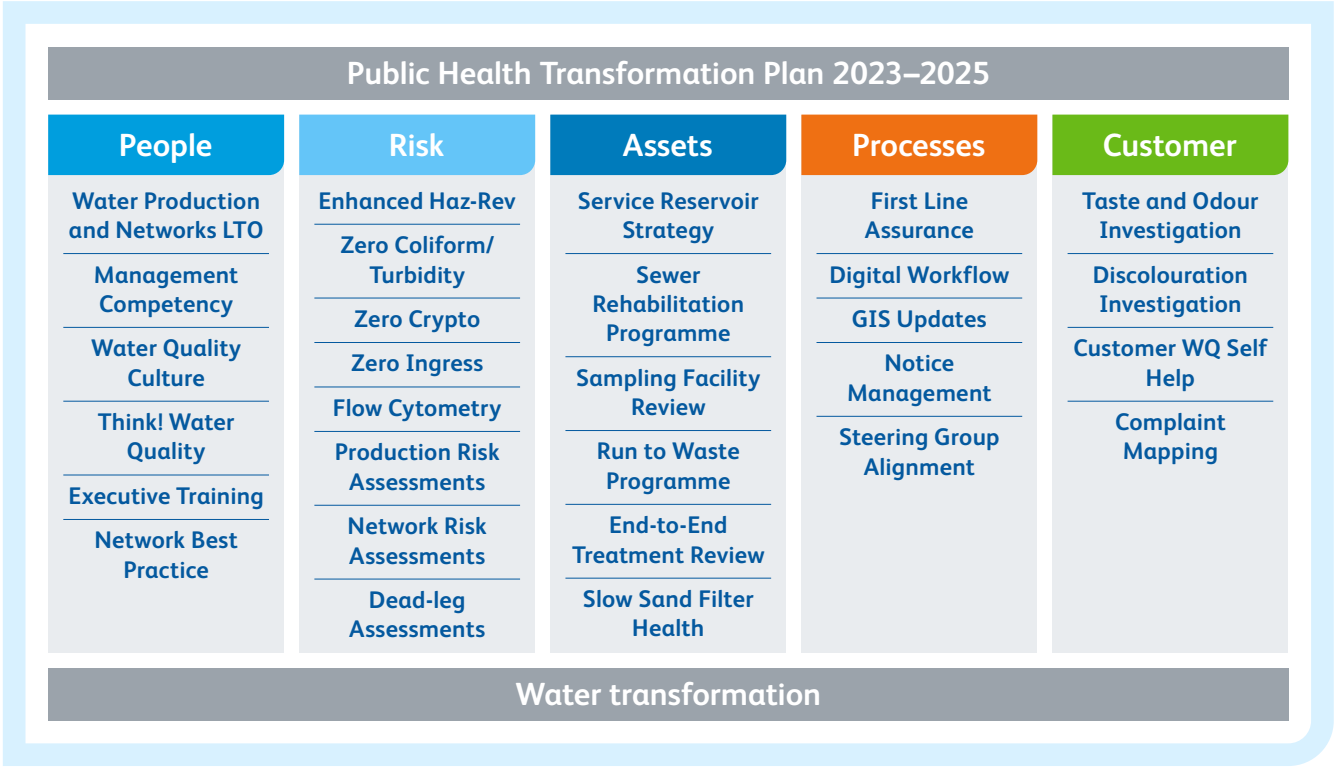


Figure 8.1: Our Public Health Transformation Plan

5 This is a measure of the number of contacts received per 1,000 customers regarding the taste, odour, smell or any other aspect of water quality.

6 The Compliance Risk Index is a measure designed to illustrate the risk arising from water quality compliance breaches and considers three key elements: the significance of the parameter breaching the standard, the cause of the failure, and the location of the failure which takes into account the proportion of the customers affected.

8.3.3 | Our plans for the remainder of AMP7 continued

This 'Public Health Transformation Plan' is a 'source to tap' ambition and encompasses all aspects of our operation that can impact water quality. It starts with smart water quality monitoring (to better understand and respond to raw water risks) and continues through to investment in our assets and people to provide operational resilience, reliability and operational flexibility.

Our approach has been guided and developed in collaboration with the Drinking Water Inspectorate. The Drinking Water Inspectorate's insight into best practice across the industry has allowed us to produce comprehensive plans to further improve our performance as we strive for industry leading performance.

Our work has been reinforced with formal commitments we have made to the Drinking Water Inspectorate which in turn have been reflected in notices issued by the Drinking Water Inspectorate. Through AMP7, we have agreed 25 notices, we have addressed 4 and are working to fulfil the remaining 21. Key areas we have addressed include:

- Enhanced our approach to undertaking site based water quality risk assessments which in turn has resulted in improved prioritisation of investment and interventions.
- Improved the training and competency of all of our teams with everyone acquiring a qualification aligned to the EU Skills Competent Operator Scheme.
- Improving the management of our slow sand filters in London ensuring more consistent and stable operation providing more reliable levels of treatment.
- Improvements at Sheeplands (located in Henley on Thames) water treatment works – upgrading the treatment levels and hence reducing the risk of a water quality breach.

Some of the areas we continue to work to address include:

- Addressing and improving the turbidity at six sites which in turn ensures a more effective disinfection process. There are further general improvements across all sites regarding the monitoring and management of turbidity levels in groundwater sources. (Turbidity is a measure of the clarity of the water. If the clarity declines, the effectiveness of our disinfection process drops).
- Improved disinfection at Netley Mill water treatment works – a site that, due to water quality issues, has resulted in several prolonged supply interruptions in Surrey.
- Improved turnover in treated water service reservoirs, which in turn improves the quality of water as it travels through our network.
- Service reservoirs and contact tank inspection programme, where we have increased the frequency of internal, structural inspections and addressing any defects immediately. This in turn reduces the risk of ingress and maintains the integrity of the treated water stored in these structures.

In its most recent annual water quality report, the Drinking Water Inspectorate confirmed a number of key improvements had been completed and confirmed that our new approach to proactive audits appeared to be industry leading.

8.3.4 | Our AMP8 plan

We summarise below our key activities for AMP8 across the two performance commitments, building on the work started in AMP7. Our AMP8 approach will largely be a continuation from our AMP7 activities, based on our Public Health Transformation Plan.

Performance commitment	Our plan to deliver
Compliance risk index	In line with our Public Health Transformation Plan, we will improve our risk management process, seeking insight and learning from leading companies, deploying innovation and adopting guidance from the Drinking Water Inspectorate. Our key activities will include: • **Continued upskilling of our teams** – We have implemented a programme of continuous technical development for all our operatives, front line managers and senior managers. This is an energy and utility skills based programme which is focused on competency, both through classroom learning and on-the-job task observations. • **Inspection programme and refurbishment of treated water structures** – The primary driver for water quality breaches is ingress of rain/ground/surface water into water treatment structures. We will implement a new, more frequent inspection regime for all treated water structures. In particular, at the five large water treatment works serving London, all treated water civil structures will be drained and inspected (ahead of the current asset standard of every ten years). • **Assets** – Following our inspection, we will undertake any identified refurbishment works to address any potential points of ingress. • **Risk management** – We will complete our detailed electrical, mechanical and control review of our treatment works, with a further 56 sites reviewed (37 sites will have been reviewed in AMP7). We will mitigate all key risks that could affect water quality or plant reliability by 2029/30.
Customer contacts about water quality	Our plans for AMP8 include a customer water quality self-help portal on our website. It will provide readily accessible and up-to-date information on bursts and on planned and emergency works that may impact water quality. We expect this to reduce the need for customers to contact us to get information about any issues that are affecting them. **Addressing concerns about discoloration and particles** Discolouration and particles in water can arise as a result of the way we operate our network. Operating valves, reversing flows and causing surges in the network, displaces iron deposits, which results in discolouration and particles being present in the water. To mitigate this: • We will implement a programme through which we clean 600km of our network each year. This will help reduce the risk of elevated iron levels and discoloured water. We will also trial new in-line water quality monitors to understand real-time changes in water quality as it travels through our network. • We have found that dead legs (ie dead-end pipes) can give rise to discolouration and water quality incidents on the network due to the fact they can allow fine deposits to settle over time. We have identified over 200 high-risk dead legs on the trunk main network and commissioned a £2.5m project to devise solutions for half of these dead legs, including measures to enable flushing, abandonment where appropriate, or hydraulic modelling to devise a plan for future mitigation. • We will undertake proactive maintenance plans, network risk assessments and understand working practices that lead to discolouration and update our training accordingly. For example, we are in the early stages of a programme of work to understand and address discolouration hotspots in Oxfordshire and North-East London. • Following successful trials in AMP7, we will be rolling out further use of 'ice-pigging' technique across 12 more trunk main locations in AMP8. This technique is now used across the industry and involves cleaning the sediments and residuals in the pipe by pushing through ice slurry. **Addressing taste and smell issues** Issues with taste and smell are primarily driven by the presence of chlorine. We think the new chlorine dosing standards, which were introduced in 2023, will reduce taste and smell issues. The new standard provides for dynamic and real time changes to our chlorine dosing practices. Fluctuations of chlorine residuals in treated water can increase the risk of a microbiological contamination. The new dosing standard pre-empts these situations by optimising chlorine dosing setpoints. We are also currently trialling new water quality monitoring technology in four water supply systems, which will provide dynamic, real time water quality information throughout the network, allowing us to make proactive changes when we detect any early signs of water quality deterioration. We aim to roll this instrumentation out further across 12 supply systems in London and Thames Valley in AMP8.

Table 8.7: Our AMP8 plan for safe and high-quality drinking water

8.3.4 | Our AMP8 plan continued

Base expenditure alone will not be sufficient to achieve performance improvements in AMP8. We also plan to invest £273m to address the risk of cryptosporidium at two of our London slow sand filter treatment plants and continue our lead pipe replacement programme.

Enhancement Case	AMP8 costs (£m)	How this Enhancement Case helps to deliver 'Safe, high-quality drinking water'
Long term water quality strategy	273	We will implement works to install UV treatment at two of the four sites where we have a cryptosporidium risk, with the remaining two sites to be addressed after 2030. Cryptosporidium poses a public health risk. In addition, our ability to abstract water to supply London is limited by the prevalence of cryptosporidium in river water under certain circumstances. We have chosen to prioritise investment at Coppermills and Hampton as both of these sites directly feed large populations, whereas Ashford Common and Kempton discharge the majority of their treated water into the ring main allowing both sites to be supported by the wider network. We will continue with our lead reduction programme, replacing 54,000 communications pipes. While the impact of lead failures has historically been low, we do detect lead levels above the standard of 10 micrograms per litre, at customers' taps, on 15–20 occasions per annum and hence this ongoing programme is important to address both the Drinking Water Inspectorate's and customers' expectations that water supplies are free from lead.

Table 8.8: Relevant enhancement case for safe, high-quality drinking water

Further information on these enhancement cases is provided in Appendix TMS22: Enhancement Case: Long term Water Quality strategy: Lead, and Appendix TMS23: Enhancement Case: Long term Water Quality strategy: Crypto

8.3.5 | Our projected performance

By delivering the extensive improvement and investment programme outlined, we are setting ourselves ambitious but credible performance commitment targets for both compliance risk index and customer contacts about water quality.

By the end of AMP8, we are targeting industry upper quartile performance against the Compliance Risk Index, while maintaining our upper quartile position for the number of customer contacts regarding water quality.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 Projected performance	1.75	1.75	1.50	1.25	1.25	1.00
Proposed target	N/A	0	0	0	0	0
Proposed deadband	N/A	2	2	2	2	2

Performance commitment measurement: The compliance risk index is a measure designed to illustrate the risk arising from water quality compliance breaches and considers three key elements:

- The significance of the parameter breaching the standard
- The cause of the failure
- The location of the failure which takes into account the proportion of the customers affected

Table 8.9: Projected performance, Compliance Risk Index

Our proposed target – In line with Drinking Water Inspectorate and Ofwat guidance, we are proposing a deadband at a level which primarily reflects the risk associated with minor breaches that have no impact on customers and/or typically occur within the network and at customer's taps which can be influenced by third-party action. The deadband is proposed to remain at 2.0 for the sector, given the majority (65%) of companies have not yet achieved this stretching target.[5]

5 Ofwat Water Company Performance Report 2021/22.

8.3.5 | Our projected performance continued

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 Projected performance[7]	0.45	0.45	0.45	0.45	0.45	0.45
Proposed target	N/A	0.45	0.45	0.45	0.45	0.45

Performance commitment measurement: The number of customers who contact us about the quality of their water, per 1,000 customers

Table 8.10: Projected performance, customer contacts about water quality

7 Based on the PR24 methodology ensuring a single contact can be categorised across more than one reason for the contact.

Proposed target – We are proposing to maintain our industry leading performance, which is also significantly ahead of the upper quartile position.

Over the longer-term, and in line with our Long-term Delivery Strategy, our ambition is that our customers can trust us to always provide safe and clean drinking water. This is summarised in the table below.

Performance measure	Units	2050 ambition	From base spend	From enhancement
Customer contacts about water quality	Contacts per 1,000 population	0.30	All	None
Compliance Risk Index	Numerical score	0.50	All	None

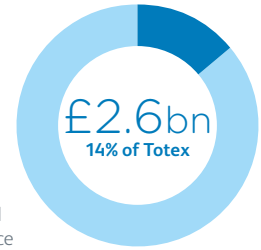
Table 8.11: Safe, clean drinking water – our 2050 ambition

8.4 | We will provide a reliable supply with minimum disruption

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS08: Our AMP8 Water Outcomes Delivery strategy.

Customer outcome

Reliable supply with minimum disruption



The outcome amounts to 14% of totex in our plan (£2.6bn of total expenditure) and will be assessed through three performance commitments.

Our ambition

Reduction in unplanned outage across the end of AMP8
44%

15%
reduction in mains bursts

14%
reduction in average number of minutes lost per customer for the whole customer base for interruptions that last three hours or more by the end of AMP8

8.4.1 | Customer need

Customers have told us very clearly that supply reliability is a priority for them. We summarise below what we heard from our diverse customer base, and how we will hold ourselves to account in delivering their expectations.

What we heard		How customers can hold us to account
Supply interruptions	Customers place a high priority on being able to rely on water being available 24/7. They expect us to proactively monitor, maintain and improve the network to ensure its reliability, now and in the face of future challenges. Customers find supply outages of more than 48 hours unacceptable.	Our performance commitments for AMP8 are focused on reducing water supply interruptions and their impact, through proactive mains repair and reducing unplanned outages. Our AMP8 plans for this work are set out in Table 8.14.

Table 8.12: Customer line of sight for reliable supply with minimum disruption

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

8.4.2 | Our track record

Three of the common performance commitments proposed by Ofwat relate to the reliability of a water supply to our customers: water supply interruptions, mains repairs and unplanned outage. Appendix TMS40: Accounting for past delivery and deliverability summarises our historical performance. In brief:

- **Water supply interruptions** – At times, our recent performance has been around the industry average, but our performance has also been volatile. AMP7 started with a marked improvement, but our 2022/23 performance was poor. It was one of our most challenging years to date in terms of weather effects, and our performance continued to suffer from the impact of high consequence events across our region. Major failures have occurred both on our trunk main network and at water production sites. Variability can also be seen in the performance across the sector; the industry average has fluctuated due to both weather events and large-scale failures.
- **Mains repair** – This measure provides an indication of the health of our water distribution network. It measures the number of repairs carried out per 1,000km of our clean water mains network (excluding communication and supply pipes). Although we generally meet our target, our performance is an outlier in the industry with nearly twice the number of repairs needed on our network compared to the industry average. This is largely due to the characteristics of our network, which is the oldest in England and Wales and over 60% is still ferrous (iron) based, compared to an industry average of just 40%. Ferrous-based mains are more prone to corrosion and ground movement. As a result, our network is very vulnerable to breakage during extreme weather events such as freeze-thaw and drought events.
- **Unplanned outage** – We are currently outperforming our AMP7 performance target, and our performance is broadly in line with the industry average. The primary driver for unplanned outages is the automatic shutdown of treatment sites when our online monitors detect a risk to water quality before any breach in water quality standards occur.

8.4.3 | Our plan for the remainder of AMP7

We have been proactively addressing our performance across the three common performance commitments in AMP7. We summarise below our key activities up to 2025.

Performance commitment	Key planned activities
Water supply interruptions	We have continued to refine our supply interruptions strategy which was initially developed at the start of AMP7. Through our own analysis and learning from leading companies, we have been able to adapt processes and procedures, better target investment and introduce new ways of working and equipment to help restore supplies quicker. Key principles and activities of our plan include: • Prioritising service recovery. We are embedding new ways of working with the aim of maintaining customers' supplies, in parallel to undertaking any repair work, as much as possible. Our workforce understands that 'every second counts', and therefore appreciates the need to prioritise service recovery when there are problems. • Improve supply interruption contingencies for all planned work. For example, we have increased our clean water tankering capability to support supply interruption events by purchasing additional vehicles, investing in more drivers and through a dedicated 24/7 logistics function and control desk. This will allow us to directly inject water into the network to support supplies during an interruption. • Proactive maintenance of high-risk systems, increasing asset availability. We have increased the level of planned maintenance in relation to those assets critical to managing supply interruptions events, for example strategic valves. We have also started a programme to upgrade water mains to address the highest priority risks on our network, under the London Water Improvement conditional allowance. • Enhancing the speed and nature of our response to incidents. We now have six rapid response teams which are in place 24 hours a day, allowing a quicker response, especially to larger scale incidents. They have the right experience and skills to focus on supply restoration and have an available fleet of fully stocked vehicles at their disposal. • Reducing bursts in high-risk systems by introducing 'calm systems' – calm systems provide a holistic approach to pressure management and network configuration which uses real-time information to avoid pressure surges in the network which could give rise to bursts. This allows us to proactively identify issues, reduce the pressure variances and lessen the risk of mains bursts. By the end of AMP7, we will have delivered 143 new control systems on our smaller to medium sized pumped systems which has delivered a reduction in mains bursts of circa 5% and reduced leakage by circa 20Ml/d.
Mains repair	• We will use 'calm' systems to better manage pressure transients and high-pressure variances across our network, providing a more stable network. • We will also continue to manage the pressure in our network using pressure-reducing valves to ensure stable pressure profiles across our network. • We will continue to use our AMP7 conditional allowance to achieve our commitment to replace 112km of distribution mains in our AMP7 plan.
Unplanned outage	As noted above, the primary driver for unplanned outages is the automatic shutdown of treatment sites when our online monitors detect a risk to water quality before any breach in water quality standards occur. Hence our plans to improve water quality will have synergistic benefits for unplanned outage. Please refer to section 8.3.4 for more detail.

Table 8.13: Our plan for the remainder of AMP7 for reliable supply with minimum disruption

8.4.4 | Our AMP8 plan

We summarise below our key activities for AMP8 across the three common performance commitments building on the work started in AMP7. Our strategy will largely be a continuation of our AMP7 activities as we continue to see the benefits of their deployment.

Performance commitment	Key planned activities
Water supply interruptions	We will focus our base investment on delivering a speedier response and more effective mitigation in the event of supply interruptions: • By reducing bursts in the first place: – Increased use of 'calm systems' and pressure management, which will reduce bursts by providing more stable pressure profiles across our network. For example, we plan to install state of the art control systems on 15 strategic pumped systems across London allowing us to more accurately control pressure changes in the network. – Maintenance of air valves to reduce the risk of bursts through over-pressurisation. – Roll out of our Digital Twin programme which will provide a computer model which exactly replicates our network. We can then compare actual network operation to the model in real time and understand when our network is operating outside of its expected design, allowing early and proactive intervention to bring the network back within its expected operating parameters. – We will increase the number of pressure monitors on our network which will allow us to react quicker when pressures fluctuate outside of normal operating parameters. • Improved response when a burst occurs: – Over AMP7, we have built up our own tanker fleet which now includes 13 tankers and will be directly employing an additional 50 tanker drivers – this will remove our current reliance on the supply chain. During the early part of AMP8, we propose to expand to 31 vehicles. – Redesign of 13 service reservoirs to increase capacity while improving access facilitating the use of large, potable water tankers to provide an alternative supply during interruptions. – Increasing the number of network technicians who will have specialist restoration equipment available to improve our response to incidents, allowing a faster response to customer reports or alarms from our digitalised network.
Mains repair	Our activities will largely be a continuation of AMP7 plan. We will: • Use 'calm' networks to manage transient pressures in those parts of our network which are pumped, as outlined above. • We will complete our pressure management programme allowing us to reduce the risk of excessive pressure across our network. • We will use our emerging digitally enabled water network to monitor flows and pressures at more locations so that we can proactively intervene when pressures start to increase, thereby reducing the risk of a mains failure.
Unplanned outage	Our plan to improve water quality as set out in Section 8.3.4 will also contribute to our performance on unplanned outage. This programme will be supplemented with an intervention which is focused on improving resilience against power failure and poor-quality power supplies which can result in operational problems. We are working with electricity providers to address the issues especially associated with poor quality supplies which can cause sensitive control equipment to trip. We also recognise that during extreme weather, especially high winds, widespread power outages can occur. We will therefore maintain a fleet of mobile generators to allow us to provide alternative power supplies during events that overwhelm the local electricity distribution companies, allowing us to position mobile generators at our most sensitive sites.

Table 8.14: Our AMP8 plan for reliable supply with minimum disruption

8.4.4 | Our AMP8 plan continued

We have submitted two enhancement cases to support the delivery of this outcome.

Enhancement Case	AMP8 costs	How this enhancement case helps to deliver 'Reliable water supply with minimum disruption'
Water Supply System Resilience Programme	465	This is a continuation of our PR19 conditional allowance to investigate risks to resilience and deliver mitigation measures. We want to continue works to address single points of failure identified at Coppermills and Hampton water treatment works – two of our most strategically important sites. There are single points of failure on both sites which would significantly impact a large number of customers (over 500,000) who would potentially be without a water supply for a significant period of time. This significant impact on customers could also undermine our statutory obligation to maintain an efficient and economical system of water supply, and to meet related licence obligations.
Reduction of the risk of basement flooding	216	We will replace 13.1km of trunk mains to reduce the risk of basement flooding due to the catastrophic failure of a trunk main located near properties. This will protect approximately 4,000 basements at risk of flooding, thereby reducing the risk of harm to people and property. We propose to deliver this programme of work despite the relative low support from customers outside of London. We regard this as a health and safety obligation for us under the Health and Safety at Work 1974.

Table 8.15: Relevant enhancement cases for reliable supply with minimum disruption

Further information on these enhancement cases is provided in Appendix TMS30: PR24 Water system supply resilience programme and Appendix TMS21: Enhancement case: Reducing the risk of basement flooding

In addition to this, we have submitted a cost adjustment claim to re-commence a proactive, large-scale mains replacement programme in AMP8 (500km of mains). In order to deliver performance improvements for customers, including in supply interruptions, while continuing our long-term plan of a 50% reduction in leakage by 2050, we need to start increasing our mains replacement activity in AMP8. This is the first step with another step up in activity in AMP9, to 1,000km. More detail is provided in Appendix TMS18: Cost adjustment claim: Mains replacement.

8.4.5 | Our projected performance

By delivering the extensive improvement and investment programme outlined, we are setting ourselves ambitious performance commitment targets for our three performance commitments.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 forecast	10:30	10:00	09:45	09:30	09:15	09:00
Proposed target	N/A	10:00	09:45	09:30	09:15	09:00

Performance commitment measurement: The average number of minutes lost per customer for the whole customer base for interruptions that lasted three hours or more.

Table 8.16: Projected performance, Water supply interruptions

This profile will have resulted in us reducing supply interruptions by 50% when compared to 2020.

Proposed target – Our proposed target represents a 14% reduction in water supply interruptions compared to our AMP7 forecast exit position. We are therefore confident this is a stretching but realistic target. We have been making significant progress in recent years. Our AMP8 forecast assumes that the rate of progress will slow down, but that we will continue to make steady progress towards our 2050 ambition level of less than five minutes.

8.4.5 | Our projected performance continued

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 Projected performance	281	270	262	254	246	238
Proposed target	N/A	270	262	254	246	238

Performance commitment measurement: The number of repairs carried out per 1,000km of our entire clean water mains network (excluding communication and supply pipes). It also excludes any repairs caused by third-party damage.

Table 8.17: Projected performance, Mains repair

Proposed target – Our proposed target represents a 15% reduction in mains repairs compared to our AMP7 forecast exit position.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 Projected performance	2.34	2.30	2.05	1.80	1.55	1.30
Proposed target	N/A	2.30	2.05	1.80	1.55	1.30

Performance commitment measurement: This performance commitment measures the unplanned loss of peak week production capacity, which is reported as a percentage of the overall company peak week production capacity

Table 8.18: Projected performance, Unplanned outage

Proposed target – Our proposed target represents a 44% reduction compared to our forecast AMP7 exit position. We are therefore confident it is stretching but realistic.

Over the longer-term, and in line with our Long-term Delivery Strategy, our ambition is that customers can count on a reliable water supply. We have identified a need for enhancement over the next 25 years in two key areas: water supply resilience to remove the risk of water supply interruptions longer than 48 hours and reducing the risk of basement flooding from trunk mains. This is summarised in the table below.

Performance measure	Units	2050 ambition	From base spend	From enhancement
Water supply interruptions	Minutes per property per year	< 5.00	08:00	05:00
Mains repairs	Number per 1,000 km of mains	116	228.2	116.0
Unplanned outage	%	1.10	1.10	1.10

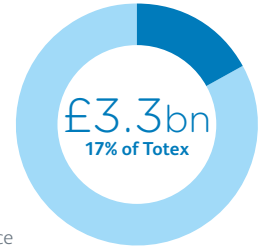
Table 8.19: Reliable water supply with minimum disruption – our 2050 ambition

8.5 | We will prevent sewer flooding and take waste away safely

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS09: Our AMP8 Wastewater Outcomes Delivery Strategy.

Customer outcome

Preventing sewer flooding and taking waste away safely



The outcome amounts to 17% of totex in our plan (£3.3bn of total expenditure) and will be assessed through three performance commitments.

Our ambition

17%
reduction in the number of times sewage floods into properties

14%
reduction in the number of times sewage floods gardens and outdoor areas

Fewer than
4
sewer collapses for every 1,000 km of our network

8.5.1 | Customer need

Only a small minority of customers experience flooding into their property from our sewers. But we understand the very significant distress that such flooding can cause, and we are working hard to prevent any sewer flooding from happening.

Customers have also been clear that they view sewer flooding in someone's home, business or garden as the worst service failure, by far. They want us to prevent sewer flooding as a top priority.

We summarise below what we heard from our diverse customer base, and how we will hold ourselves to account in delivering their expectations.

What we heard		How customers can hold us to account
Wastewater network resilience	Customers want us to maintain and upgrade assets effectively and to increase the capacity of the wastewater network to ensure its reliability, now and in the face of future challenges.	Our delivery against these needs will be reflected in our work towards three performance commitments in AMP8, which focus on preventing both internal sewer flooding and external sewer flooding, and reducing sewer collapses. Our AMP8 plans for this work are set out in Table 8.21.
Internal sewer flooding	Despite a very small minority of customers experiencing sewer flooding into their property, customers recognise the significant distress it can cause and therefore prioritise improvements to significantly reduce it.	
External sewer flooding	Ineffective sewage management can result in negative perceptions of us and our efforts to maintain the network. Customers welcomed more information on what they can do to reduce blockages which result in sewer flooding events.	

Table 8.20: Customer line of sight for preventing sewer flooding and taking waste away safely

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

8.5.2 | Our track record

Three of the common performance commitments proposed by Ofwat relate to the reliability of the wastewater system: internal sewer flooding, external sewer flooding and sewer collapses.

Appendix TMS40: Accounting for past delivery and deliverability summarises our historical performance. In brief:

- **Internal sewer flooding** – Although we have performed better than the industry average in three out of six years up to 2022, our performance has been deteriorating in recent years. Over the last six years, the majority of internal sewer flooding has been caused by blockages on our network and especially in low diameter (<150mm) sewers – typically between 70–80% of incidents result from a blockage. However hydraulic flooding (when sewer flooding is due to an overloaded system as a result of intense rainfall) is the most volatile component of our performance. This was what happened during July 2021, when two intense summer storms struck London, and there were 779 incidents of sewer flooding in just two days. In comparison, over the previous four years the number of hydraulic flooding incidents had averaged just 136 per annum.
- **External sewer flooding** – External sewer flooding has not previously been a performance commitment for us and hence has not been formally reported annually. However, we have been undertaking 'shadow reporting' in AMP7 to track our performance. Based on this, we know that our performance has been consistently below the industry average and significantly behind the upper quartile (except in 2022/23). At this point in time, we have only limited insight into our external flooding performance, but our initial research indicates that the drivers and root cause of external flooding incidents mirror that for internal sewer flooding. Our focus in AMP8 will therefore be on the number of incidents that arise from a blockage.
- **Sewer collapses** – Sewer collapses is a measure of asset health and an indicator of the condition of our sewerage network. We have been generally industry-leading in this measure for six years, which we believe is a function of our extensive proactive investigation programme which focuses on higher risk and critical assets that can significantly impact performance.

8.5.3 | Our plans for the remainder of AMP7

We are working on the following key activities to reduce sewer flooding:

- We have commenced collaborative working with the Greater London Authority and established a strategic working group, to consider how best to address surface water management in London.
- We have been implementing our London sewer resilience programme that was borne out of the 2021 floods. This will protect properties that have flooded in the past, and that are considered at higher risk of flooding in the future. The programme includes the installation of non-return valves and in some cases mini-external pumping stations.
- We will also work with local authorities to construct a wide range of Sustainable Urban Drainage Schemes (SuDs) which will keep rainwater out of the sewers and reduce the risk of sewer flooding.
- By the end of AMP7, we will have installed 19,500 sewer depth monitors on our network to identify blockages sooner, allowing a quicker response and to monitor performance of the sewer network. This information will also help inform future asset management plans.
- We are trialling a new digital platform which links all incoming customer contacts with our job management system and our geospatial mapping tools to create an automated 'virtual' alarm. In essence, using data algorithms we will receive an early warning alarm, that a service failure may occur soon. On receipt of this alarm, we will dispatch a proactive investigations team. The concept will speed up proactive interventions and reduce the possibility of repeat incidents over time, as we forecast where an underlying issue could be emerging.

We are working on the following activities to reduce sewer collapses:

- We are continuing our ten-year inspection programme of high-risk gravity sewers (eg running alongside railways or under/over other critical infrastructure) to manage their condition and prevent collapse or other failures.
- Over the last ten years, we recognise that we have not invested enough in our pumped rising mains. We have started to address this in AMP7 and will continue to do so in AMP8. Rising mains are a particular high-risk asset, and failure can result in extensive flooding and serious pollutions. We have developed a new investment prioritisation tool which considers asset condition and the impact of failure, to identify those rising mains which need to be replaced. During AMP7, we will have completed 17km of rising main replacements, targeting rising mains with a history of failure. Furthermore, we will continue to work with suppliers and industry wide innovation hubs/forums to identify technology that allows in-situ surveys of rising mains without the need to remove them from service for prolonged periods of time.

8.5.4 | Our AMP8 plan

We summarise below our key activities for AMP8 across the three common performance commitments building on the work started in AMP7.

Performance commitment	Key planned activities
Internal sewer flooding	**Improved speed of response** – We are increasing the number of people that we have to respond to reports of sewer blockages, with an additional 20 response teams and associated vehicles. We are also ensuring that they carry the latest equipment, allowing full resolution of the issue without the need for a repeat visit. Our analysis has shown that by attending all blockages within eight hours of a report, we can reduce the risk of any sewage escaping from the network by 10–15%.
	Acceleration of our sewer network digitisation – We will increase the number of sewer depth monitors on our network by 31,000 to over 50,000. These monitors will provide data to a new digital platform, alongside data from our pumping stations and treatment works, to help us identify and address issues on the network proactively.
	Customer education – The most frequent causes of flooding incidents are blockages (which are typically attributed to fats, oils and greases or paper and rag, including wet wipes). In AMP7, our efforts have focused on restaurants and takeaways and on general education of customers through our 'Bin it Don't Block It' campaign. This programme will continue but will be more targeted as we learn from industry experience and engage with customers in blockage hotspot areas. We will also adopt the 'Bin the wipe' campaign being coordinated by Water UK.
	Interceptor removals – Interceptors were originally installed on the sewer network to act as a U-bend when properties did not meet modern day plumbing standards. They are no longer needed and today, they tend to cause blockages. There are an estimated 165,000 remaining interceptors on our network, with 40,500 having been removed to date. We will therefore continue to remove interceptors – up to 43,000 in AMP8.
	Hydraulic flooding – We are working with the Greater London Authority, London Boroughs and the Environment Agency on a new approach to manage surface/rainwater in London. We have seen a massive increase in the area of impermeable surfaces in London as green areas are paved over for development. This increased impermeable area results in more rainwater running off into our sewers, which were never built to receive such a rate and volume of rainwater. During intense rainstorms this can lead to flooding from the sewer network. Following the extensive flooding in London in July 2021, a number of reviews were commissioned to identify lessons. Almost all the reviews identified the fragmented responsibilities for surface water management and the urgent need for its strategic co-ordination in London. This led to the formation of the London Surface Water Strategic Group (LSWSG), which brings together director-level representatives from the key organisations with responsibility for, and interest in, surface water management in London. The LSWSG has commissioned a London-level surface water strategy to provide a strategic framework for action, including the need to engage, inform and empower Londoners to collaborate in managing this risk. We have played a key role in the formation of the LSWSG and we are co-funding the London surface water strategy. Our approach will notably include trialling the concept of 'designing for exceedance' with a London Borough, updating models to reflect surface water flows alongside flows within the network, and investing in protecting properties at risk. These programmes will be supported by our ongoing capital and operational maintenance activities, including: proactive cleaning of 1,500km of sewers per annum, undertaking 400 proactive and reactive sewer repairs per annum and ongoing maintenance at our pumping stations.
	Sustainable drainage systems (SuDS) – SuDS work by slowing and holding back the water that runs off from an impermeable area and hence reducing the risk of sewers becoming overwhelmed resulting in sewer flooding. These can be 'green' SuDS which use plants and trees to absorb rainwater and help break down pollutants in the surface water run-off, or 'grey' SuDS which simply contain and temporarily delay the stormwater, effectively taking some of the strain off our drains and sewers. Green SuDS can also reduce air pollution, improve biodiversity, help cool the city in hot weather and play an important role in amenity and creating accessible places. Our Drainage and Wastewater Management Plan proposes a 'SuDS-first' approach to the hierarchy of options to manage surface water, and seeks to stop and unwind the 'urban creep' of impermeable surfaces that have increased the risk surface water and sewer flooding, allowing natural processes to break down pollutants. In AMP8, we are targeting 73 hectares of SuDS. In addition, we plan to create a number of new 'strategic partnerships' with London Boroughs to mainstream the integration of SuDS into their maintenance programmes for housing, schools, other public buildings, roads and streetscapes. We recognise that local authorities have a responsibility for a lot of land uses (schools, housing estates, roads, public realm etc) that need to be maintained. Through our 'strategic partnerships', we want to encourage local authorities to identify opportunities to integrate SuDS into their maintenance plans, as we believe this can deliver more effective SuDS, more cheaply. One of our initiatives is to provide them with a ring-fenced budget that they can use to deliver more cost-effective solutions. For example, Lambeth used £2.5m of our funding to develop a £6m SuDs programme.

8.5.4 | Our AMP8 plan continued

Performance commitment	Key planned activities
External sewer flooding	As explained above, we have assumed that our performance on external sewer flooding is driven by the same causes as internal sewer flooding. The activities outlined above for internal sewer flooding therefore apply equally to external sewer flooding.
Sewer collapses	Overall, our performance is upper quartile and in many years has led the industry. This performance has been driven by the low failure rate of our gravity sewer network, however, we are observing a declining performance with regards to our pumped rising mains. For gravity sewers, we will: • Continue our long-term programme to inspect our critical, high-risk assets – assets that we know are at risk of failure. • Refurbish sections of the original Bazelgette sewers constructed in the mid-1800s that still convey wastewater from central London to the largest treatment works in Europe at Beckton. This programme will also include key maintenance on the same assets at 13 crossing locations, as the sewers pass under/over rivers, railways and roads. • Undertake an estimated 80km of patch lining repairs (which allows us to fix joint dislocation without excavating) and sewer rehabilitation. • Install a further 31,000 sewer depth monitors on our networks. For rising mains, we will: • Replace a further 76km, targeting those rising mains with a history of failure. • Continue to work with suppliers to identify robust technology that allows in-situ surveys of rising mains without the need to remove them from service for prolonged periods of time.

Table 8.21: Our AMP8 plan for preventing sewer flooding and taking waste away safely (continued)

8.5.5 | Our projected performance

We are setting ourselves ambitious targets for our three performance commitments.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	1.83	1.77	1.68	1.62	1.57	1.52
Proposed target	N/A	1.77	1.68	1.62	1.57	1.52

Performance commitment measurement: The number of incidents (per 10,000 sewer connections) where material has escaped from the sewerage system and resulted in water, silt or sewage debris within a property.

Table 8.22: Projected performance, internal sewer flooding

Proposed target – Our proposed target represents a 17% reduction in internal sewer flooding compared to our forecast AMP7 exit position. We are therefore confident it is stretching but realistic. Our modelling suggests that it would not be feasible or credible for us to achieve a performance commitment level that is based on the upper quartile of industry performance, given the level of improvement needed in such a short space of time.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	27.2	25.7	24.9	24.3	23.8	23.4
Proposed target	N/A	25.7	24.9	24.3	23.8	23.4

Performance commitment measurement: The number of incidents (per 10,000 sewer connections) where material has escaped from the sewerage system and resulted in water, silt or sewage debris being deposited within the curtilage of a property used for residential, public, community and business purposes.

Table 8.23: Projected performance, external sewer flooding

Proposed target – Our proposed target represents a 14% reduction in external sewer flooding compared to our forecast AMP7 exit position. We are therefore confident it is stretching but realistic.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	3.89	3.89	3.89	3.89	3.89	3.89
Proposed target	N/A	3.89	3.89	3.89	3.89	3.89

Performance commitment measurement: Number of sewer collapses per 1,000 kilometres of all sewers that have not been identified proactively by the company and causing an impact on service to customers or the environment.

Table 8.24: Projected performance, sewer collapses

Proposed target – We are proposing to retain our existing performance through AMP8, given that our performance is industry leading. Further, given the deteriorating performance in respect of pumped rising mains, our ambition is to reverse this trend and hold our performance stable.

Over the longer-term, and in line with our Long-Term Delivery Strategy and Drainage and Wastewater Management Plan, our ambition is to significantly reduce flooding up to a 1 in 50 year storm. We have identified the need for enhancement spend to protect 187,000 properties that will be at risk of sewer flooding by 2050, when taking into account population growth and climate change. This is summarised in the table below.

Performance measure	Units	2050 ambition	From base spend	From enhancement
Internal sewer flooding	Number per 10,000 connections	0.40	1.18	0.40
External sewer flooding	Number per 10,000 connections	5.0	16.82	5.00
Sewer collapses	Number per 1,000km of sewer network	3.88	3.98	3.88

Table 8.25: Preventing sewer flooding – our 2050 ambition

9.0
Our plan delivers for our communities

In this section

Key messages

- Our AMP8 plan focuses on activities across the five pillars of our communities strategy:
  - Creating a diverse inclusive workforce, giving opportunities to our employees to develop and local people to access jobs with us.
  - Helping to deliver ten significant community investment projects and provide around 30 small, one-off grants for charities and community groups each year.
  - Continuing to focus on further reducing traffic disruption, building on our experience of collaborative working in London and extending it into the Thames Valley region using third party data.
  - Measuring the change in biodiversity at nominated sites in line with the new common performance commitment on biodiversity.
  - Continuing to partner with a range of organisations to ensure a great customer experience at sites which are accessible to the local community and visitors and increase the number of accessible sites.
- We have designed and applied a public value framework which allows us to identify opportunities to deliver additional benefits to communities and the environment through our service and enhancement cases.

We summarise below what our customers expect from us and how we are being held to account. We then review our track record in AMP7, our plan for AMP8 and expected performance in AMP8 across each relevant measure.

Customer outcome

Having a positive impact on the community

The outcome is assessed through two performance commitments: biodiversity and collaboration in London.

Our ambition

1	27	600
Bespoke performance commitment to reduce streetworks disruption	Wetlands and nature reserves	Apprentices, graduate scheme participants and summer interns during AMP8

9.1 | We will have a positive impact on the community

In this chapter, we summarise our plans in AMP8 to deliver for our communities, including to protect and increase biodiversity.

9.1.1 | Customer need

Our customers want us to have a positive impact on the communities that we operate in and serve.[1]

As a provider of essential public services, our customers want to feel we care for them and are motivated by more than just profit. Our stakeholders also want us to take on a proactive social and environmental role. They want us to act as a force for good within the communities we serve.

We summarise below the key insights we have learnt from our customer engagement and research. We also explain how we plan to address these insights in AMP8.

1 Source: What Customers, Communities and Stakeholders Want.

9.1.1 | Customer need continued

What we heard		How we are responding
Investing in local communities	Customers want us to invest into the communities we operate in, including through programmes that provide access to our sites for recreation purposes. They welcome the creation of jobs and apprenticeships for local people, our involvement in local issues and expect us to behave responsibly, in how we treat water and the environment within their communities.	Our AMP8 plan is supported by five pillars: • Establishing a diverse, inclusive workforce that represents the customers we serve. • Investing in local communities. • Minimising our impact (including our bespoke performance commitment on collaborative streetworks). • Protecting and enhancing biodiversity (including our performance commitment on biodiversity). • Providing access to our sites for recreation. These pillars guide work that will help us to invest in and build partnerships with local communities, and reduce the impact of disruptive aspects of our work on them. Table 9.3 sets out further details on our AMP8 activities.
Building partnerships	There is a desire to see us focusing on partnership working and building strategic relationships with relevant organisations to deliver a range of project/schemes.	
Reducing impact of our operations on local communities	Where we have a presence in local communities, customers expect us to minimise the impact of our sites and operations, including roadworks, through effective maintenance, collaboration with other utilities and proactive communication relating to works.	
Protecting and enhancing biodiversity	Our customers care about biodiversity and expect us to take action to preserve it. Customers are generally impressed by the information about our current biodiversity strategy and support remains high, even when presented in the context of a potential bill increase.	

Table 9.1: Customer line of sight for having a positive impact on the community

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

9.1.2 | Our track record

In AMP7, we have started to build the foundations for the long-term role we wish to play. In early 2021, we launched our long-term skills strategy, to help establish a diverse and skilled workforce and it is already having a positive impact:

- **Removing barriers to employment** – We have engaged local untapped talent and formed meaningful partnerships to recruit from under-represented, and lower socio-economic groups, such as care leavers, young black men, prison leavers, refugees, and domestic abuse survivors. This has involved employing more than 130 people at risk of long-term unemployment, 80% of whom sustained employment for more than six months. Separately, through the government's Kickstart Scheme in 2021, we offered 75 six-month placements for unemployed 16–24-year-olds on Universal Credit, helping participants to gain valuable experience in the workplace and benefit from internal training, coaching and mentoring.
- **Apprenticeships** – We launched our first ever T-level placements in engineering and digital, hosting five students on 45-day placements which feed into our apprenticeship programmes. We aim to have 5% of our employees in 'earn and learn' roles by 2025, which includes 223 external recruits onto an apprenticeship and 104 internal recruits onto an apprenticeship, across 28 active apprenticeship qualifications.

9.1.2 | Our track record continued

- **Summer internships** – Between 2021 and 2023, our annual summer intern programme recruited a diverse group of interns. In 2023, 80% of those that graduated secured employment with us. Further information about the demographics of our interns is set out in the table below.

Year	Number of summer interns	Demographics	
2021	15	• Gender split: 60% male and 40% female. • 60% from an ethnically diverse background. • 13% have an impairment, health condition or learning difference.	• 40% received free school meals. • 67% first in family to go to university. • 58% care leavers (including one refugee and two asylum seekers).
2022	20	• Gender split: 47% male, 47% female and one non-binary. • 84% from an ethnically diverse background. • 16% had an impairment, health condition or learning difference.	• 53% received free schools meals. • 32% were first in the family to attend university. • 21% of the cohort are care leavers with two refugees and one asylum seeker.
2023	24	• Gender split: 52% male and 48% female. • 87% from an ethnically diverse background. • 9% had an impairment, health condition or learning difference.	• 40% received free schools meals. • 48% were first in the family to attend university. • 21% of the cohort are care leavers with one refugee.

Table 9.2: Our annual summer internship programme, 2021–23

We have also been actively participating in our communities:

- Since April 2020, our employees have booked over 7,000 hours (980 working days) of 'Time to Give' volunteering in a wide range of settings, from local schools to Reading's riverside.
- We provided over 192 charitable grants to projects during AMP7. We support charitable groups within the communities we serve, through projects that are linked to our core business. Local charitable groups can submit funding applications to us, which our Charities Committee reviews on a quarterly basis. For example, we provided a grant to support the charity KIDS and their 'Love the Lea' project, which helped KIDS to organise fun, educational trips to help disabled children in Hackney connect with their local river. We also provided funding for the Surrey Care Trust's Swingbridge boat initiative, which gives young people and vulnerable adults the opportunity to crew boats. They can also take part in conservation projects and enjoy boat trips.
- As part of our drive to develop our communities and cities, we are working with the Mayor of London to offer drinking fountains across the capital. Our drinking water fountain campaign is the biggest single-use plastic reduction initiative of any city across the UK. 110 fountains were delivered across public spaces in London during AMP7, as part of a partnership between the Greater London Authority and ourselves. The data collected from our smart meters shows that these are being well used and are having a positive impact across the capital. The fountains are dispensing an average of 76 litres per day. That's the equivalent of 55,000 500ml single use bottles saved from entering landfill and our rivers every year, from each fountain.

With regard to biodiversity, in AMP7, we became the first water company to have a bespoke biodiversity net gain performance commitment. In the first three years, we have created over seven hectares of new wetlands on our operational sites (at Aylesbury, Bicester, Cirencester and Godalming), a new nature reserve on a decommissioned operational site at Blewbury, ponds projects in Basingstoke and Wantage, nature recovery projects at Speen, Dorney and Netley Mill, and we improved grassland management on 100 of our operational sites. Collectively we have delivered 331 biodiversity units across 253 reportable sites in the first three years of AMP7. We were recognised by the Chartered Institute of Ecology and Environmental Management for this work in 2021.

We have introduced an obligation, for all projects that are in danger of removing a significant amount of biodiversity on a permanent basis, to deliver a minimum of 10% biodiversity net gain. This is in addition to the mandatory planning biodiversity net gain requirement by the Local Planning Authority. We are considered leaders in this field in the utility industry.

In addition, we have signed up to the Get Nature Positive campaign, led by DEFRA, and our Walthamstow Wetlands site has been provided as a case study. We are part of the Water Industry's Tree Planting commitment and have already planted over 60,000 trees on our land-holdings.

9.1.3 | Our plan for the remainder of AMP7

During the remainder of AMP7, we will:

- Continue to invest in our communities by providing charitable grants and supporting community projects.
- Continue to encourage our employees to use their volunteering hours allowance.
- Continue to proactively identify opportunities for cross-sector collaboration to minimise disruption caused to our customers when we deliver capital programmes.
- Work to introduce Ofwat's proposed new performance commitment on biodiversity.

9.1.4 Our AMP8 plan

Our strategy for having an even greater, positive impact on our communities in the five-year period from 1 April 2025 (AMP8) builds on the five key pillars that led our work in AMP7

A diverse, inclusive, local workforce that represents the customers we serve

We directly employ more than 7,000 people across our region and support a large supply chain. As a major employer, we have a responsibility to create a diverse and inclusive workforce that represents the customers we serve, and to equip people in our region for a changing job market and ensure that our suppliers do the same. Our customers support the provision of jobs and apprenticeships for local people. Indeed 'local employment opportunities' were ranked as the most important of local community issues.

Investing in local communities

We hold a privileged position in our communities, both as a provider of an essential service and a custodian of the natural environment. Our customers want us to invest in the communities we operate in – they think that giving to local charities and supporting local initiatives shows that we care about the communities we serve.

Minimising our impact

We want to minimise the disruption our activities can cause to our customers and communities, such as traffic interruption caused by roadworks, noise, vibration, interruption to the water supply and environmental impacts on habitats. Customers living in close proximity to our sites can also suffer disruption. We understand how frustrating any type of disruption can be for our customers and communities and look to minimise its impact where possible.

Protecting and enhancing biodiversity

Biodiversity includes all species of plants and animals and the complex habitats and systems they are part of. When we talk about biodiversity, this is not limited to rare or threatened species or habitats. It includes the whole of the natural world, from the commonplace to the highly endangered. The need to protect and enhance our biodiversity has never been greater. The RSPB's State of Nature 2019 report highlighted that since 1970, more species in England have seen their populations decrease than increase and 15% of species in England are currently threatened with extinction from Great Britain. Customers are interested in hearing about river health and biodiversity initiatives – they care about biodiversity and expect us to take action to preserve it. Their support for action on biodiversity remains high, even when presented in the context of a potential bill increase.

Providing access to our sites for recreation

Many of our sites are accessible for recreational activities such as sailing, paddle boarding, angling and windsurfing, or simply to provide somewhere to relax and enjoy nature. Our customers agree that the natural environment improves quality of life and would like to see more access to local sites for recreation.

9.1.4 Our AMP8 plan continued

We summarise in Table 9.3 our key activities for AMP8 across our five pillars.

Pillar	Key initiatives in AMP8
A diverse, inclusive, local workforce that represents the customers we serve	We will continue to implement our Skills Strategy. For example, we will increase the number of local people accessing employment with us, in particular, via T-levels, summer internships and apprenticeships. In doing so, we will continue to demonstrate responsible, inclusive employment practices. We will also continue to engage with our supply chain to ensure they too are striving towards the same long-term goal.
Investing in local communities	During AMP8, we will invest directly in our communities through: • **Community investment projects:** We will partner with a variety of organisations to deliver ten significant community investment projects across the region. These will include: – River and wetland community days: continuing the successful Wild Trout Trust programme of small grants to enhance rivers and wetlands across the catchment; and – Heritage: funding established heritage attractions with a link to water, to improve their educational potential eg projects at the London Museum of Water and Steam. • **Charitable grants:** Our Charities Committee will provide around 30 one-off grants for charities and community groups each year that meet the criteria of water and health and/or water and the environment. We will also continue our fundraising for WaterAid and our Charity of the Year. • **Community engagement:** We will engage with local communities for example through open days (like London Open House), forums, and site visits. • **Educational programmes:** We want to reach as many school age children in our catchment as possible. We will make our education programme accessible through innovative partnerships and enhanced online resources. We will develop key skills in young people, encourage positive environmental behaviours such as saving water, and broaden knowledge of clean and wastewater treatment in line with the National Curriculum. Our outreach programme will include engineering challenges, talks in schools about our business and careers activity. We will reopen and resource two of the, previously closed, education centres at Slough and Hogsmill and restart activities at our Angling Academy. We will continue our strategic work with the London Design and Engineering University Technical College, to promote apprenticeship recruitment through presentations, careers fairs and additional support to students considering an apprenticeship with us; to provide mentoring to Year 9 and 10 students; and to increase our brand presence in the community, through a design competition for students to design a Thames Water themed room. • **Employee volunteering:** We will continue to encourage our employees to take their two days of 'Time to Give' leave each year and opportunities will be linked to community projects that we invest in. • **Drinking water fountains:** We and the Greater London Authority are keen to extend the successful drinking fountains project into AMP8.
Minimising our impact (including our bespoke performance commitment on collaborative streetworks)	• We will continue to focus on further reducing traffic disruption, building on our experience of collaborative working in London and extending it into the Thames Valley region using third party data. • We have proposed a bespoke performance commitment to incentivise us to collaborate with others to reduce disruption caused by streetworks. • We will also continue to seek to minimise all other aspects of customer disruption, whether that be the impact of noise, vibration, pollution, or other environmental impacts or the disruption caused by interruption of water supply.

Table 9.3: Our AMP8 plan to have a positive impact on the community

9.1.4 Our AMP8 plan continued

Pillar	Key initiatives in AMP8
Protecting and enhancing biodiversity (including our performance commitment on biodiversity)	• We will invest an additional £10m for the creation of new habitats, and spend £2.5m on the management and maintenance of new habitats. • In AMP8, we will be continuing with creation of new wetlands at our operational sites, such as Godalming, which has recently been leased to Unstead Nature Community Group. We also plan to deliver biodiversity programmes at nine new sites, such as Beddington, where we will be undertaking a conservation project focused on lapwings. Further detail on our plans to increase biodiversity in AMP8 is presented in Appendix TMS09: Our AMP8 Wastewater Outcomes Delivery strategy.
Providing access to our sites for recreation	• We will continue to partner with community groups, charities and non-governmental organisations so that we provide a great customer experience at existing sites and increase the number of sites accessible to the local community and visitors, including: – Farmoor Reservoir – We will enhance this site and complete upgrades to buildings and the car park. – Beddington Farmlands Nature Reserve – We will create this new site in partnership with waste management. – Molesey Reservoirs Nature Reserve – We will work in partnership with an aggregate removal company to manage and maintain the site and provide community access. – Hornsey Wetlands – There is local community support for transforming areas of the site into new wetlands. • We will also take steps so that our other existing sites stay clean, safe, tidy, and accessible for all visitors. This will include: – management and maintenance of our directly managed nature reserves and fisheries, including signage, boardwalks, pontoons, fishing platforms, fish, pond dipping areas and fencing. – a new sustainable electric boat fleet at Farmoor Reservoir. – giving our 70 leaseholders (including the 23 nature reserves) the opportunity to apply for funds to enhance their leased areas.

Table 9.3: Our AMP8 plan to have a positive impact on the community (continued)

> We plan to deliver biodiversity programmes at nine new sites, such as Beddington, where we will be undertaking a conservation project focused on lapwings.

More generally, as we have developed our AMP8 plan, we have sought to seize opportunities to deliver wider public value benefits, through our Public Value Framework.

9.1.4 Our AMP8 plan continued

To deliver value for our customers and communities, and deliver our purpose, we have committed to incorporating public value within all relevant decision-making. With this approach, we will seek to identify every opportunity to make the biggest positive difference to customers, colleagues, communities and the environment as we deliver our service. Our commitment to public value is embedded in our vision for 2050 and our public value policy, with strong support from the Board.

Our approach begins by using a credible, largely qualitative, public value framework which we will then continue to evolve in order to unlock partnership-working and catchment-led planning opportunities in the future.

We use a multi-criteria analysis approach, where values are weighted using customer preferences. There are 19 measures in our public value framework which are used to assess an option including biodiversity, waterbody quality, recreation, amenity and local economies.

The framework considers both short and long-term impacts, looking broadly 30 years ahead.

Figure 9.1: The six capitals considered in our public value framework

The public value framework has been applied to our suite of AMP8 enhancement cases in alignment with Ofwat's six principles of public value. We used the framework to determine the expected public value of a solution or portfolio of work, and for two enhancement cases, also to assess the merits of different solutions.[2] This approach ensured that public value was considered throughout our decision-making.

Where the public value framework analysis highlighted an option with additional benefit for little added cost, both options were considered further. For two enhancement cases (sewage treatment growth and lead control), we also determined monetised benefits across the range of measures to identify benefit-to-cost ratios and undertake best value analysis.[3] The option with the highest benefits-to-cost ratio was selected as the best value option for customers.

> "Most of our enhancement cases act to strongly benefit either social and natural capital, often both, while also positively building intellectual and human capital. Manufactured capital is created by all cases.

2 For WINEP, Drainage and Wastewater Management Plan and Water Resources Management Plan enhancement spend, the framework was applied only to articulate the expected value for customers in the context of our public value framework. These cases have used regulatory best value frameworks to determine the investment required.

3 We have followed Ofwat's hierarchy for sourcing robust marginal benefit values from outcome delivery incentive rate research to WINEP and then to other publicly available, robust valuations to ensure all funded benefits are traceable for customers.

9.1.4 Our AMP8 plan continued

The figure below highlights where our enhancement investment leads to impact on the six capitals and delivers public value. A detailed view of public value creation can be found in each of our enhancement cases, in the relevant Appendices.

Figure 9.2: How our enhancement cases contribute to the six capitals

9.1.5 | Our projected performance – biodiversity

To reflect the value of our land to wildlife, Ofwat set a common performance commitment that requires us to deliver an increase in biodiversity units at nominated sites. We will measure the change in biodiversity on land within these nominated sites. Sites have been chosen based on their potential to have a significant impact on local nature recovery plans such as size and connectivity to other wildlife habitats.

Specifically, at each site, the number of 'biodiversity units' present will be recorded using a calculation tool created by Natural England. This tool converts measurements of habitat type, area and quality into a quantifiable metric referred to as biodiversity units. The number of biodiversity units can also be calculated for proposed habitat creation or enhancement on our land.

We will create new habitats at Speen, Grimsbury, Godalming, Beddington, Bishop Stortford, Bracknell, Aylesbury, Tring and Fiddler's Hamlet.

Performance commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 forecast performance	N/A	0	0	0	0.32	0.44
Proposed target	N/A	0	0	0	0.32	0.44

Performance commitment measurement: Biodiversity net gain per 100km^2 of company land.

Table 9.4: Projected performance, Biodiversity

Note: No gain expected in the first years of AMP8 as we will be introducing our initiatives which will need time to deliver results.

9.1.6 | Our projected performance – collaboration in London

We have also proposed a bespoke performance commitment to incentivise us to deliver streetworks interventions collaboratively in London through a 'Dig-Once' approach. This approach involves working with the Greater London Authority, other utility companies and highway authorities in London to reduce the frequency and impact of repeat or siloed work to London's road network, communities, and businesses. Since 2019, we have been involved in several pilot collaborative schemes which have saved over 500 days of disruption. This equates to £3m in increased wellbeing benefit to local residents and £0.25m in journey time saved to road users according to the Greater London Authority's monitoring and evaluation.

Despite our good track record, there remain significant barriers and costs to working collaboratively. Working together requires us to change processes, collect and manage data differently, and devote greater additional resources to project management. Other barriers to collaboration include, legal requirements (eg around construction design and management liabilities and sites responsibilities), procurement and supply chain engagement, and cultural barriers (eg relationship building and trust, short-term thinking, etc).

We propose a bespoke financial incentive that will offset the barriers to collaboration and facilitate behaviour change. It will provide funding to overcome the high initial costs of working collaboratively and support the 'Dig-Once' approach to streetworks. This incentive supports our ambition to respond to customers' priorities. It would also bring our incentives in line with the incentives introduced by Ofgem for the London-based energy network companies. It will act as a catalyst for behaviour change that provides benefits to customers and communities in terms of days of disruption saved, reduced road user journey time impact, positive resident wellbeing, avoided business losses, cost savings to work commuters, carbon savings and air quality benefits.

This performance commitment will measure the cumulative number of collaborative projects delivered over AMP8. Ofwat has set a number of criteria for a project to be considered collaborative (eg having a minimum of two collaborating partners, offering a permanent solution to the specific street or asset). Projects may also qualify based on a 'strategic importance criteria', which will be assessed by the Greater London Authority.

The value of incentive payment is linked to the social value (wellbeing) generated for customers by the overall reduction in duration of collaborative works. This wellbeing value equates to £305,000 per project (2018/19 prices).[4] We have inflated the financial incentive to 2022/23 prices, consistent with our PR24 business plan. Applying CPI-H (year average) results in a wellbeing value of £353,000 per project in 2022/23 prices.

To be consistent with Ofwat's approach, we have applied the totex sharing rate to the measure of wellbeing resulting in a financial incentive for us of £176,000 per project.

With experience, we expect that our net additional costs will reduce, and the data, processes, skills and capabilities will become more efficient. However, in these early stages of collaborative working, we anticipate the net additional costs will exceed the value of the incentive and this provides a catalyst for long-term thinking and improved execution of collaborations.

Given this is a new incentive and the investment needed before financial reward is achieved, we do not believe a financial penalty for non-delivery would be appropriate. We have instead built in several safeguards for customers, to make sure the level of incentive reward is proportionate to the benefits we deliver, including, for example clear criteria that must be satisfied, independent oversite of collaborative streetworks by the Greater London Authority, and a cap on the total reward.

Further detail about our proposed bespoke performance commitment is presented in Appendix TMS34: Bespoke Performance commitment: Collaboration in London.

4 SGN, RIIO-GD2 Business Plan, December 2019, Chapter 6, page 63.

10.0
Our plan delivers for the environment

In this section

Key messages

We have defined three outcomes for this theme. Overall, we will invest £6.6bn in base expenditure, and £2.1bn in enhancement expenditure in AMP8.

Stopping river pollution and improving river quality

- 30% reduction in total pollution incidents compared to our AMP7 exit position.
- 28% reduction in storm overflows compared to our AMP7 exit position.
- 20% reduction in phosphorus emissions against our 2020/21 baseline.

Fixing leaks and ensuring there is enough water in the future

- 22% reduction in leakage against our 2019/20 baseline.
- 5.5% reduction in per capita consumption and 10.1% reduction in business demand against our 2019/20 baseline.

Reducing emissions and reaching net zero –

- 3.5% average reduction in our operational greenhouse emissions over AMP8 across our water and wastewater networks.

We will continue to be transparent about the impact of our activities on the environment, building on the progress with have made in AMP7 with our Event Duration Monitor map (indicating when storm overflows have operated) and responding to Environmental Information Requests.

Customers have been clear that they want us to reduce our impact on the environment. Our work on restoring and protecting the environment is overarching and influences every aspect of what we do.

Our customer engagement has confirmed their increasing concern about pollution and the health of rivers in recent years. Customers expect us to reduce and eradicate incidences of storm overflows and pollution events, and to improve the quality of river water. They expect us to secure water resources and plan to mitigate against future challenges such as population growth and climate change, and to reduce leakage as a top priority. We also recognise customers place increasing importance on issues relating to climate change and emissions.

We plan to address this customer feedback through our work to stop polluting rivers and improve the river water quality, to fix leaks, ensure there is enough water in the future, and to reduce emissions. Our plans include:

- Upgrading sewers and sewage treatment works.
- Providing more storm water storage on our sewer network and at our sewage treatment works.
- Removing unwanted groundwater and storm water flows from sewers.
- Using smart meters and digital technology to identify and fix leaks quicker.
- Working with customers to help them reduce water consumption.
- Investing in new sources of water.

In terms of river health and environmental obligations we have had to make tough choices. In doing so we have taken account of customer feedback and ensured we retain investment in pollution reduction, reducing spills and ensuring safe bathing waters.

We summarise below what our customers expect from us and how we are being held to account through the relevant performance commitment. We then review our track record in AMP7, our plans for AMP8 and expected performance.

As we have developed this plan, we have consulted with the Drinking Water Inspectorate, the Environment Agency and DEFRA. We have worked hard to develop what we consider the best possible plan for our customers, our communities and the environment. We acknowledge the need to strike the right balance between competing demands. Although our plan is the culmination of years of work, we recognise that we are at the beginning of a process. We are open to further engagement. We expect to get and respond to feedback on some of the tough choices that we have made.

10.1 | We will stop polluting rivers and improve their quality

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS11: Our Customer Strategy and Appendix TMS09: Our AMP8 Wastewater Outcomes Delivery Strategy.

Customer outcome

Stopping polluting rivers and improving their quality

The outcome amounts to 31% of totex in our plan (£5.9bn of total expenditure) and performance is assessed through six performance commitments.[1]

Our ambition

28% reduction in storm overflows

30% reduction in total pollution incidents across AMP8

20% reduction in phosphorus emissions against our 2020/21 baseline

1 Our ambition for the other three performance commitments can be found on pages 100 and 101.

10.1.1 | Customer need

River pollution is a key concern for our customers and the health of our rivers has attracted increasing attention in recent years.

A significant contributor to this situation is the water industry, including ourselves, with storm overflows occurring more frequently and investment in assets not keeping pace with either population growth or the impact of climate change.

We summarise below what we heard from our diverse customers base, and how we will hold ourselves to account in delivering their expectations.

What we heard		How customers can hold us to account
Pollution incidents	Customers have a low tolerance for pollution of rivers with untreated sewage and want to see significant efforts made to reduce both the frequency and severity of pollution events – they support our commitment to reduce, and ultimately eliminate, river pollution by 2050.	Our performance commitments on total pollution incidents, serious pollution incidents, discharge permit compliance and storm overflows reflect activities that will reduce the frequency and severity of pollution events. Details of our AMP8 plans are set out in Table 10.2.
Improving river quality	Customers and stakeholders want us to protect and improve the quality of rivers and the environment and want to see clean, well-flowing rivers. Customers want us to ensure healthy rivers that support a wide variety of activities including wildlife, fishing and recreation including swimming.	Our work to improve river quality is supported by our performance commitments on Bathing Water Quality and river water quality. Table 10.2 provides further details on our AMP8 plans.

Table 10.1: Customer line of sight for reducing polluting rivers and improving their quality

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

10.1.2 | Our track record

Regrettably, we are one of the biggest contributors to poor river water quality in the Thames River basin. We must take a leading role in addressing the problems, and not just those for which we're directly responsible. Our approach has been:

- **To 'speak up'** – by being transparent about the serious problems we need to fix.
- **To 'open up'** – by providing full and open information about what is happening.
- **To 'clean up'** – by acting to improve the situation and doing this as quickly and efficiently as possible.

We were one of the first UK water companies to accept our accountability in this area and confirm that sewage discharges to the environment are unacceptable. We reinforced our strategy to 'open up' by being the first to publish live information on our website on when our sewer overflows are discharging.

In April 2022, we produced the first version of our River Health Action Plan, describing how we are planning to improve the health of rivers in the Thames region. Every year for the last three years we have published a Pollution Incident Reduction Plan.

Our plans are ambitious and deliberately stretching, given a realistic assessment of our current performance. It is true that we have historically missed our targets, but we will undertake the biggest investment in environmental upgrades in a generation.

10.1.2 | Our track record continued

Our customers, stakeholders, regulators and Board will hold us to account through the adoption of six common performance commitments: total pollution incidents, serious pollution incidents, discharge permit compliance, storm overflows, bathing water quality and river water quality. Appendix TMS40: Accounting for past delivery and deliverability summarises our historical performance against these commitments. In brief:

- **Total pollution incidents (from our asset base)** – Over the last six years, our performance has been around the industry median. However, we have consistently missed our targets during AMP7 and our performance has seen little improvement over the last six years.
- **Serious pollution incidents** – Our performance has been poor. In part, this reflects the fact that this performance metric does not take account of the scale of our infrastructure. We are the largest water and wastewater business. The value of our assets is £18.9bn, which is around £5.5bn more than the next largest company (United Utilities) and more than double the average for water and wastewater companies. In addition to the comparative scale of our infrastructure, which increases risk, the location of our works also increases risk as we operate in more densely populated cities. However, this does not excuse our shortcomings – we recognise that the number of serious pollutions we are responsible for is unacceptable.
- **Discharge permit compliance** – This measure focuses on the quality of the continuous final effluent discharge from our sewage treatment works and our target must be to achieve 100% compliance at all times. Overall, our performance in recent years has been within the industry upper quartile.
- **Storm overflows** – We lead the way in recognising our responsibility to do better in this area, and every year we publish a Pollution Incident Reduction Plan to underline our drive towards improved performance.[2] The number of overflows is primarily determined by the intensity and volume of rainfall that companies experience. In 2020/21, our performance was below industry average and was in the lowest quartiles for the sector. Our performance was better in 2022/23, but this was due to the dry weather we experienced in the southeast of England.
- **Bathing river quality**[3] – This is a new performance commitment for AMP8, which will cover two designated bathing waters within our region: Frensham Great Pond and Wolvercote Mill Stream. Frensham Great Pond has been rated as 'excellent' every year, whereas Wolvercote Mill Stream, which has only just been designated, is currently considered poor status.
- **River water quality** – This is a new performance commitment for AMP8 to incentivise companies to work to reduce the level of phosphorus in discharges of treated effluent from sewage treatment works. Despite past reductions, the level of nutrients (nitrates and phosphorus) in our rivers is often more than the rivers can cope with. Excess nutrients can cause algae to grow quickly, which reduces biodiversity and plant life on which insects thrive. That said, 70% of our sites have a low phosphorus permit, which is a higher proportion than any other company. Our AMP7 WINEP programme will result in a further 20% reduction in phosphorus in our discharges when compared to 2020.

The Thames Tideway Tunnel is also on track to be in service by 2025. The completion of the Lee Tunnel in 2016 and the expansion of London wastewater treatment works have already resulted in a reduction in spills to the Tidal Thames of 55%. In November 2022, we reported the preliminary findings from a fish survey in the River Lee to help assess the impact of the operation of the Lee Tunnel on water quality. The findings are encouraging. A total of 714 fish from 12 species were identified, where previously there had been little aquatic life.

2 Our River Health Action Plan will be incorporated into our Pollution Incident Reduction Plan.

3 Designated bathing waters are assessed as being poor, sufficient, good or excellent. Once a river becomes a designated bathing water, we have three years to ensure that the status is at least 'sufficient'.

10.1.3 | Our plans for the remainder of AMP7

We remain ambitious in what we plan to do for the remainder of AMP7. In summary:

- **Total pollution incidents** – Over the next two years, we will continue to invest in sewage treatment plants and sewers, to reduce storm discharges and pollution incidents. It will help us achieve our commitment to reduce the number of pollutions by 30% by 2030.
- **Serious pollution incidents** – Our initiatives for the rest of AMP7 focus on the root causes of our serious pollutions. When reviewing the last three years:
  - To reduce structural failures of our pumped sewers (rising mains), we have funded the replacement of four of the most problematic mains in AMP7. We are continuing to carry out tactical activities such as analysing broken sections of the main to understand the reason for the failure. We're starting the design associated with our expanded AMP8 programme to improve the speed of delivery.
  - We are maintaining our focus on the delivery of mitigation work at sewage treatment works that are at risk of polluting – work is still on track at nine sites that have in the past posed a higher risk of a pollution incident.
  - All pollution risks at sewage treatment works are being assessed through our Waste Asset Assurance Programme (WAAP). We've accelerated the installation of flow-to-treatment monitoring, which will provide more accurate data for our new digital tool known as the 'discharge alert manager'. With this data, we are now detecting discharges much earlier and can react much quicker preventing them from becoming serious pollutions.
  - Infiltration reduction activity has continued to progress well, reducing the amount of groundwater entering our sewerage system – we have been focusing on sewer relining and manhole sealing. This programme continues through AMP7. We agreed with the Environment Agency we would produce 'groundwater impacted system management plans' across sites affected by groundwater infiltration, and we will continue to do this in a transparent way.
- **Discharge permit compliance** – Over the remainder of AMP7, we will continue to invest in sewage treatment plants addressing those asset risks that could result in deteriorating compliance with the quality aspect of the permit.

In the case of the Thames Tideway Tunnel, during AMP7, we will continue to facilitate the construction programme, co-create the new regulatory environment with the Environment Agency, start the commissioning of the Tunnel and recruit/train the new operational team to operate the tunnel. We will also manage the return of surplus land from the Tideway project and, with the correct legal and commercial arrangements, will pass this land back to owners or prepare the land for commercial sale. Further detail is available in Chapter 13.

Read more

We have also been trialling Smart Water Catchment initiatives in the River Chess, River Evenlode and River Crane to improve river quality in an environmentally friendly and potentially low-carbon impact method, by managing land use practices on a catchment scale.

Managing our catchments in partnership with others, by addressing issues at their source can deliver better long-term value. Successful catchment management projects in England and Wales have focussed on tackling single issues, such as pesticides, phosphorus or nitrate, which although they primarily focus on improving the river water quality, can have benefits in terms of water treatment downstream. We believe that further benefits and better value can be achieved by tackling multiple challenges together, recognising the environment as a system, the value that can be offered by harnessing natural processes, and capitalising on opportunities of greater scope and scale. This is the premise of our Smarter Water Catchment initiative. Further benefits that are being explored through this innovative approach include reduction of flood risk and increased resilience to climate change.

10.1.4 | Our AMP8 plan

We summarise here our plan to deliver our performance commitments across our six metrics.

Our long-term strategy is focused on resolving environmental challenges through nature-based solutions, including catchment management (smarter water catchment). Our trials are delivering results, however, this approach does not form part of the statutory programme within the Water Industry National Environment Programme (WINEP). This has resulted in us removing our smarter water catchment investment (Advanced WINEP) from this plan. However, subject to DEFRA's agreement, we would welcome the opportunity to revisit this decision, given the support from our environmental partners and the long term benefits this programme could deliver.

> We will measure the change in biodiversity on land within nominated sites in line with the new performance commitment on biodiversity. These surveys will be repeated every four years so that we are able to accurately measure, record and report on the net gain in biodiversity units.

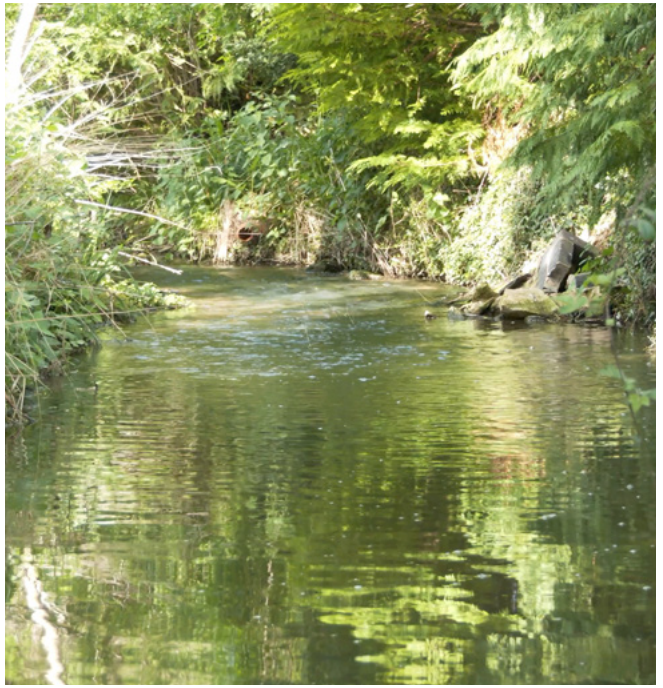
Performance commitment	Our plan to deliver
1. Total Pollution Incidents	In AMP8, we will be continuing to implement our Pollution Incident Reduction Plan. We have evolved our ability to understand the way our initiatives are likely to reduce pollution. This will help ensure that our pollution reduction activities target the most effective investments. Our approach considers: • **Prevention** – Initiatives to reduce the number of operational events that historically are at higher risk of causing a pollution incident, typically through asset investment and changes to our ways of working. • **Mitigation** – Improvements in our response to incidents that will prevent and minimise any impact on the environment and our communities. • **Culture and behaviour** – Work to educate, train, and motivate employees throughout all levels of the organisation, so they are better able to identify risks to the environment and act urgently to prevent impact. We are also working to develop and maintain a culture of openness that encourages our team to prioritise the best environmental outcomes. We are planning a range of actions across these three areas, covering our sewage network, sewage treatment works, and sewage pumping stations.
2. Serious pollution incidents	Many of our initiatives to reduce total pollution incidents will also contribute to reducing serious pollutions. However, there are two further specific initiatives which will have greatest impact with regards our serious pollution performance: • **Increase investment in rising main replacements** – In 2022, nearly 50% of our serious pollutions incidents were caused by structural failure, the majority of which related to failures of rising mains from our pumping stations. We have experienced an increasing trend in rising main failures, and this is something we need to reverse quickly, in order to deliver the reductions. This will involve a record level of investment for this asset cohort replacing 76km of assets that are at risk of causing a serious pollution if failure were to occur. • **Infiltration reduction** – Infiltration is the process whereby groundwater enters the sewerage system through minor defects. When groundwater levels rise then groundwater and surface water can inundate our systems resulting in storm overflows operating for prolonged periods resulting in serious pollutions. During AMP8, as part of our storm overflow reduction plan, we will undertake infiltration reduction work at 17 high risk catchments. This involves sealing sewers, manhole chambers and covers, reducing the volume of water entering our system.
3. Discharge Permit Compliance	Our focus will be to ensure the reliability of plant and equipment, monitoring the efficacy of the sewage treatment process and enhancing the capability of our operations and maintenance teams. Our key focuses will be: • **Equipment maintenance** – Through our routine capital maintenance programmes we will refurbish our key assets which screen sewage to remove non-biodegradable materials (inlet works) and enable efficient biological treatment of sewage (aeration lane). • **Process monitoring** – We will install mid-process monitoring at our larger treatment works, allowing us to identify issues early, where the treatment process is starting to deteriorate and/or toxic loads (eg illegal high-strength waste from businesses) are arriving at the site within the incoming sewage, and could weaken the biological treatment process. The monitors will allow us to intervene early before the quality of the discharge is compromised and/or the sewage treatment process has failed. We will also maintain monitoring of specific process elements (eg Dissolved oxygen concentration, final effluent, etc) through the process. • **Training and development** – We have developed a competency framework for all staff working on our sewage treatment works. This not only builds the knowledge and competency of our staff with regards discharge permit compliance, but also helps with the reduction in pollutions from our sewage treatment works.

Table 10.2: Our AMP8 plan for reducing polluting rivers and improving their quality

10.1.4 | Our AMP8 plan continued

Performance commitment	Our plan to deliver
4. Storm overflows	We will use our base allowance to maintain our assets so that equipment failure or blockage does not result in premature storm overflows. This will ensure the current position is maintained. Our plan is based on and fully consistent with our published Storm Overflow Discharge Reduction Plan, which outlines the actions we are taking to meet the long term ambition outlined in the Environment Act 2021. Through delivery of our Storm Overflow Discharge Reduction Plan, which aligns with our proposed WINEP, we will reduce storm discharges by 28% and address 107 high priority locations.
5. Bathing water quality	**Frensham Great Pond** – Our Churt sewage pumping station is located upstream of Frensham Great Pond. We will continue to maintain and undertake capital maintenance at this location to maintain the high level of reliability that has been experienced over the last six years. **Wolvercote Mill Stream** – Within our base expenditure we will ensure treatment works and the sewerage network upstream of this location are fully compliant with permits and will work to prevent pollution incidents. We will install UV treatment at three sewage treatment works upstream of the Wolvercote Mill designated bathing water. We will also continue working in partnership to support all initiatives that will improve the status of the bathing water, as sewage discharge is not the only factor affecting bathing water quality. We currently work with River Trusts, councils, land owners, sharing our expertise and helping them to take actions that improve the bathing water quality. We are providing live alerts of storm discharges at six sites in the Oxford catchment. We will review the bathing water data and identify improvements that may be necessary to achieve standards. The river will be tested regularly for bacteria which are harmful to human health in the summer bathing season and will have signage displayed at the site.
6. River water quality	With the completion of our AMP7 WINEP, we will reduce phosphorous levels by 20% against our 2020–21 baseline by providing enhanced treatment at 65 sewage treatment works.

Table 10.2: Our AMP8 plan for reducing polluting rivers and improving their quality (continued)



10.1.4 | Our AMP8 plan continued

Our base allowance is not sufficient to deliver on the performance our customers expect, and therefore we propose the following enhancement cases.

Enhancement case	AMP8 costs (£m)	How this enhancement case helps to 'stop polluting rivers and improve their quality'
Water Industry Environment Programme (WINEP)	950	In line with our customers' priorities, our AMP8 WINEP will focus on our storm overflow reduction plan, reducing abstraction at sites that impact chalk streams, and investing at the newly designated bathing water at Wolvercote Mill Stream, which is currently designated 'poor'. The storm overflow reduction works are key to minimising the risk of harm to the environment as well as improving river health which is an area of high stakeholder focus. The investment at Wolvercote Mill Stream, which is now a designated bathing water for the public, will help minimise the risk of harm to public health.
Sewage Treatment Growth	355	We want to create additional capacity at our sewage treatment works in AMP8, to meet the forecast growth in population across our wastewater supply area. We have identified 16 sites where additional capacity is needed in AMP8. This will provide treatment capacity for a population equivalent to 97,233 people or 40,371 homes.
Thames Tideway Tunnel (TTT)	87	The Thames Tideway Tunnel is on track to be commissioned in the last year of AMP7. The tunnel will prevent millions of tonnes of untreated sewage mixed with rainwater, from entering the tidal reaches of the River Thames via storm overflows each year. The completion of the Lee Tunnel in 2016 and the expansion of London wastewater treatment works have already resulted in a reduction in spills to the Tidal Thames of 55%. We are close to activating and commissioning the Tunnel. Once the project is complete, it will increase the reduction of spills to 95%. This is covered in more detail in Chapter 13.

Table 10.3: Relevant enhancement cases for stopping polluting rivers and improving their quality

Further information on these enhancement cases is provided at Appendices TMS24: Sewage Treatment Growth, TMS26: WINEP and TMS47: Thames Tideway.

> The storm overflow reduction works are key to minimising the risk of harm to the environment as well as improving river health which is an area of high stakeholder focus.

10.1.5 | Our projected performance

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	53.2	50.0	46.6	43.4	40.2	37.0
Proposed target	N/A	50.0	46.6	43.4	40.2	37.0

Performance commitment measurement: The total number of pollution incidents (categories 1 to 3) in a calendar year per 10,000km of sewer length

Table 10.4: Projected performance, Total pollution incidents

Note: the data is based on the EA's new classification of pollutions.

Proposed target – We propose setting our performance commitment levels at the level of our forecast performance, which we believe to be a stretching but achievable target, as it represents a 30% reduction in total pollution incidents compared to our forecast AMP7 exit position and meets government expectations with regards to pollution reductions.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	8	7	6	5	5	4
Proposed target	N/A	7	6	5	5	4

Performance commitment measurement: 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.

Table 10.5: Projected performance, Serious pollution incidents

Proposed target – We recognise that the aspiration must be to achieve zero serious pollutions and the government's Water Industry Strategic Environmental Requirements (2022) by 2030. However, we recognise that given our current position and the challenges we have faced in reducing serious pollutions over the last four years it is important that we set an ambitious reduction target, but also one that is credible. Our proposed target represents a 50% reduction in serious pollution incidents compared to our forecast AMP7 position. We are therefore confident it is stretching but realistic.

We also note the ongoing work of the Task and Finish groups to create more uniform reporting of serious pollution incidents across the industry. We think this work is important to ensure that some water companies are not disadvantaged due to differences in reporting standards.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	99.7	100	100	100	100	100
Proposed target	N/A	100	100	100	100	100

Performance commitment measurement: Measures the quality of the continuous final effluent discharge from STWs as the percentage of sites failing to comply with their numeric discharge permit conditions.

Table 10.6: Projected performance, Discharge permit compliance

Proposed target – Our proposal for AMP8 reflects our ongoing target to achieve 100% compliance at our sewage treatment works and water treatment works, subject to the Environment Agency's decisions regarding the treatment of the AMP7 and AMP8 Water Industry National Environment Programme. We recognise that we may need to adjust this forecast in light of the EA's decisions.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	23.9	22.6	21.4	21.0	19.9	17.2
Proposed Ofwat target	N/A	22.6	21.4	21.0	19.9	17.2

Performance commitment measurement: The average number of spills per overflow

Table 10.7: Projected performance, Storm overflows

Proposed target – Our proposed target represents a 28% reduction in storm overflows compared to our forecast AMP7 position. We are therefore confident it is stretching but realistic.

10.1.5 I Our projected performance continued

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	50.00	50.00	50.00	50.00	50.00	66.50
Proposed target	N/A	50.00	50.00	50.00	50.00	66.50

Performance commitment measurement: Performance is calculated as a single overall average 'score' for bathing water quality. Weighting is 100% for excellent classification, 66% for good classification, 33% for sufficient classification and 0% for a poor classification.

Table 10.8: Projected performance, Bathing water quality

Proposed target – Our proposed target represents a meaningful improvement in bathing river quality in our designated rivers, as it improves the newly designated Wolvercote Mill Stream from 'poor' to 'sufficient' following investment at three upstream sewage treatment works. We are confident it is stretching but realistic.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	-4%	-5%	-5%	-8%	-15%	-20%
Proposed Ofwat target	N/A	-5%	-5%	-8%	-15%	-20%

Performance commitment measurement: Measures the percentage reduction in phosphorus emissions in kilograms per capita against a 2020/2021 baseline

Table 10.9: Projected performance, River water quality

Proposed target – Our proposed target represents a 20% reduction in phosphorus discharges from all sewage treatment works compared to our 2020/21 baseline and is fully aligned with the investment we have planned during the period 2025–30. We recognise that this does not take into account any improvements from the potential AMP8 Water Industry National Environment Programme, which we are currently proposing to deliver beyond 2030.

Over the longer-term, and in line with our Long-term Delivery Strategy and Drainage and Wastewater Management Plan, our ambition is that our leadership and collaboration will improve the health of rivers. Consistent with our 2050 vision, we have identified the need for enhancement spend over the next 25 years to reduce sewage spills to rivers and improve river health and increase sewage treatment works capacity to accommodate population growth, which will contribute to delivering performance improvements in line with our ambition. This is summarised in the table below.

Performance measure	Units	2050 ambition	From base spend	From enhancement
Total pollution incidents	Number per 10,000km of wastewater network	11.0	22.11	11.0
Serious pollution incidents	Number per 10,000km of wastewater network	0	0	0
Bathing water quality	Percentage Score	100%	50%	100%
River water quality (phosphorus)	Percentage reduction from a 2020 baseline	80%	3.86%	80%
Storm overflows	Average number of spills per overflow	5.00	25.09	5.00
Discharge permit compliance	%	100	100	100

Table 10.10: Stop polluting rivers and improving their quality – our 2050 ambition

10.2 | We will fix leaks and ensure there is enough water in the future

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS11: Our Customer strategy and Appendix TMS08: Our AMP8 Water Outcome Delivery strategy.

Customer outcome

Fixing leaks and ensuring there is enough water in the future

The outcome amounts to 22% of totex in our plan (£4.1bn of total expenditure) and covers performance assessed through three performance commitments.

Our ambition

22% reduction in the number of litres lost a day through leakage

5.5% reduction in three-year average daily water consumption per person

10.1% reduction in three-year average business demand

10.2.1 | Customer need

Our region is already designated by the EA as an area of 'severe water stress' and there are strong reasons to believe we will face greater challenges in the future:

- Climate change and population growth will put an increasing strain on both water supply and wastewater systems.
- We estimate our customer base will grow by more than two million people to 11.8 million by 2050, resulting in a supply-demand deficit of up to 850Ml/d by 2050.

The government has set a legally binding target under the Environment Act 2021 to reduce the use of public water supply in England per head of population by 20% by 2038. Achieving this target will rely on a range of new government-led initiatives, in addition to action by water companies.

To deliver this objective, it is essential we make our system more water efficient, for example by fixing leaks. We also need to engage our customers and help make positive behaviour changes to save water and prevent blockages.

We also know from our research and engagement programme, that our customers want us to ensure a reliable supply of water into the future, and they want us to help make it easy for them to play their part in this, including by reducing their water consumption and by becoming more water efficient. We summarise below what we heard from our diverse customers base, and how we will hold ourselves to account in delivering their expectations.

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

What we heard		How customers can hold us to account
Water resources	Customers expect us to mitigate impacts from the effect of a growing population and climate change, to ensure that they continue to receive a reliable supply of water now, and in the future.	Our progress on customer priorities in this area are reflected in our performance commitments on per capita consumption, business demand and leakage. Please see Table 10.12 for further information on our AMP8 plans to achieve performance improvements.
Demand management	Customers are generally positive about the idea of reducing their consumption ahead of developing new resources, but also want to see us doing our bit (for example, by reducing leaks). They accept the role of smart meters in helping to achieve this.	
Sustainable abstraction	Customers believe that improved water supply resilience should not come at the expense of the environment. They support limiting the amount of water taken from groundwater and rivers/streams, particularly those considered fragile, for example chalk streams.	
Leakage	Customers feel that the current level of leakage is too high and place a high priority on reducing it. They see it as a waste of a valuable resource, which results in negative perceptions towards us. They support the use of smart meters to help achieve this.	

Table 10.11: Customer line of sight for fixing leaks and ensuring there is enough water in the future

10.2.2 | Our track record

Three of the common performance commitments proposed by Ofwat measure our performance in this area: per capita consumption (PCC), business demand and leakage. Appendix TMS40 Accounting for past delivery and deliverability summarises our historical performance. In brief:

- **PCC** – Across the industry, performance has been significantly impacted by the COVID lockdowns, a continued increase in working from home and the very hot and dry summer weather in 2022/23. As a result, only one company met its 2020/21 and 2021/22 targets. Although there are some signs of PCC coming down with reduced working from home, the extent of any permanent shift in PCC remains unclear. In 2022/23 we have seen a reduction in household consumption levels, despite experiencing a peak in water demand across the 2022 summer due to record heatwave temperatures and the nationwide drought.
- **Business demand** – This is a new common performance commitment which promotes the reduction of business demand in line with our Water Resources Management Plan. Business demand towards the end of AMP6 was reducing, reflecting demand reductions achieved through the Smarter Business Visit programme, where water efficiency retrofits and internal wastage fixes were carried out by our qualified plumbers. This reduction in overall consumption was despite economic growth and a record hot dry summer. There was also a large reduction in business demand in 2020/21 as a result of the COVID pandemic, due to a shift to work from home and a decline in economic activity. Business water use increased in 2022/23 but is still below pre-COVID levels.
- **Leakage** – Our rate of leakage per kilometre of water main is significantly higher than that of other companies. However, according to performance comparisons published by Ofwat, our performance is improving faster than that of the industry. So far in AMP7, we reported a 10.7% reduction (three-year average) against 2019/20, exceeding the industry average (6.6% reduction).

Our 2022/23 performance was significantly affected by the weather, with a summer heatwave, a severe drought (one of the worst on record) and a freeze-thaw event in December and our performance did not recover until April 2023. We were more affected by these events than most other companies, as London clay is far more prone to movement than other UK soil types, causing heave and bursts, particularly in extreme temperatures. In 2022/23 we repaired 42% more burst mains than in 2021/22.

Our increasing smart meter base has enabled us to gain valuable insights in water consumption and wastage, improving our understanding of water use after the COVID pandemic and during record heatwaves and drought periods. We are sharing these insights with the rest of the industry and they have critically informed our plan to reduce water demand. For example:

- Our data analysis has confirmed that the majority of peak water demand during hot weather is going towards gardens and outdoor usage.
- We now know that a smaller proportion of homes use significantly above average water volumes and hence skew the average PCC. Referred to as the 'long tail' of consumption, this has become the priority focus of demand reduction activities now and into AMP8. This insight supports our initiative to introduce a rising block tariff in AMP8.
- Smart metering allows us to identify high usage and continuous flows, which then become the focus of water efficiency and customer engagement efforts. Our smart meter data shows at least 10% of London homes have continuous flows (customer side pipe leakage or internal 'wastage' such as dripping taps or leaky loos).
- Smart meter data also allows us to prioritise our Smarter Home Visit programme to those customers with high usage and continuous flow. Our advisors provide practical and personalised support for high-usage customers on how to be water efficient, including helping them to reduce their usage of hot water, which can also reduce their energy bills.
- All of our consumption and continuous flow insight is shared with government, regulators and water companies, to support the design of future policy, regulation and demand reduction interventions.

10.2.3 | Our plans for the remainder of AMP7

To reduce Per Capita Consumption, we have planned the following key activities for the remainder of AMP7:

- We started to install smart meters on a significant scale in AMP6 and estimate that by 2021/22 this had resulted in a 32Ml/d saving. By 2035, we plan to have a smart meter fitted to all household connections where it is feasible. We estimate that smart-metered households use 13% less water than unmeasured households – 10% of this saving is due to changes in behaviour and 3% is due to a reduction in wastage.
- Our Smarter Home Visits programme provides practical and personalised support for high usage.
- We continue to offer household customers with free wastage fixes. These separate home visits by qualified plumbers continue to deliver consistent and useful water savings. The insight from our wastage fix initiative was supplied to DEFRA and Ofwat to inform National Water Target and PR24 demand reduction approaches.
- In addition to the water efficiency programme linked to smart metering, we will continue to encourage customers to save water, with improved digital communication platforms. For example:
  - We are working to implement a single communications and marketing platform, which would allow us to deliver targeted water efficiency campaigns to help our customers use less water. This would allow us to segment our customer base and send relevant advice to different groups. For example, sending information on water butts to people with gardens, providing differentiated information depending on whether a customer owns their home or not, and campaigns in areas where we know we have demand 'hot spots'.
  - We will analyse smart meter data to enable us to target real-time water consumption data to be shared with customers through an online portal. This will allow customers to track their usage, make comparisons with similar properties and set consumption thresholds.
- We are focussed on improving and optimising our smart metering journey to increase installation rates, to maximise PCC reductions through behavioural change and to drive accurate billing.

To reduce leakage, we have planned the following key activities:

- In response to the summer drought of 2022 and the resulting increase in leakage, we implemented a substantial and ambitious Leakage Recovery and Transformation Plan, which included additional leakage funding of £65m. This will continue through the remainder of AMP7 and will drive benefits as we enter AMP8. Through this plan, we increased our repair and maintenance team capacity by 100 team members, improved logistics and support resources, and changed working patterns and approaches, including new KPIs and performance management frameworks to find and fix leaks more quickly. It also helped us to provide additional support for customers so they can identify, report and repair leaks on their pipes. We have also increased the proportion of our network that can now operate as smaller, discrete areas (District Metered Areas) which in turn, improves our ability to control the network and identify where leakage is highest.
- The London Water Improvement conditional allowance was approved by Ofwat in November 2022, and allows us to invest a further £700m to address asset performance and integrity issues. £300m was included in the PR19 Determination and an additional £400m invested by shareholders. This will include replacement of 112km of distribution mains and seven large trunk mains in London, which will contribute to leakage reduction. It also includes a smart system pilot, which will link telemetry data to live network models and the work management system, to improve customer service and develop adaptive plans to achieve performance commitments.
- We have been developing our data-driven 'calm systems' approach – a holistic approach to pressure management and network configuration, using real-time information to avoid pressure surges in the network which could give rise to leaks. This also has the benefit of improving water quality, customer resilience, leakage, and energy efficiency, with a particular focus on reducing mains bursts.

> We have been developing our data-driven 'calm systems' approach – a holistic approach to pressure management and network configuration, using real-time information to avoid pressure surges in the network.

10.2.4 | Our AMP8 plan

We have defined the following key areas of focus to deliver performance improvements across the relevant measures.

Performance commitment	Our plan to deliver
PCC	Improvements on this performance commitment are largely delivered through our smart metering programme, which is funded as enhancement expenditure. We will continue to: • Encourage our customers to save water – Current smart meter data tells us that the majority of customers are using less than 110lh/d but there is still a small percentage of customers who use a disproportionate amount. We will pilot innovative solutions to help customers reduce their water use: – Subject to Ofwat's approval, we are working to implement our new rising block tariff, which will use smart meter data to set charges which are as fair as possible for efficient water use. In effect, for the first time, customers who use typical amounts of water would see savings on their bills, while those customers who use more would pay for their water at a premium price. Under this approach customers who have excessive use would see their unit rate double, with half of this increase being utilised to fund social tariffs. A rising block can reduce bills for 3/4 of customers. This 'excessive use' tariff will fund an expanded social tariff scheme (see section 8.2 for further detail). – We will enhance the Retailer Digital Data Service and provide more detailed data sets and customer self-service. We want to make it easier for our retailers and their business customers to use smart meter data to improve their water efficiency (for example, by giving notification of leak alerts, flexible ways to extract data, access to benchmarking). • Work with government on water efficiency legislation – We will target getting legislation that increases standards for water efficiency in homes and the uptake of water neutrality schemes. We also wish to work in partnership with communities and local authorities to reduce consumption. • Work collaboratively with the rest of the industry and representative bodies (for example, Water UK) – We will do this to draw attention to water-related problems (for example, water efficiency, resources sustainability, water neutrality). This will allow us to push for improvements in future policy and regulation which will have a positive effect on water efficiency.
Business Demand	Similarly to PCC, much of the performance improvement for this measure will be delivered by our smart-metering programme. Our base operations to reduce business demand primarily consists of water efficiency activities for business customer properties where we retrofit water saving devices and fix internal leaks. Our Smarter Business Visits operators are qualified plumbers and will aim to deliver a 3.9Ml/d reduction across a range of business customer categories, focusing on properties which are already smart metered or business types that typically yield large water savings per intervention (eg schools, leisure facilities).
Leakage	We forecast that to meet the leakage reduction target, which aligns to our Water Resources Management Plan, we will need to deliver over 350Ml/d of Find & Fix activity where we proactively locate below ground ('hidden') leaks on our network and undertake repairs. In addition to this: • We have submitted a cost adjustment claim to replace 500km of mains in AMP8 which will prevent the further deterioration of our distribution network. 275km of this will be delivered with base expenditure. • We will prevent leakage through redesigning and reconfiguring our existing pressure management projects and delivering 'calm systems' which reduces pressure fluctuations and subsequent leaks. • We will proactively survey approximately 1,000km of trunk mains annually to identify active leaks on our trunk main network. To improve visibility of our trunk main network we are also installing 127 additional access chambers on the trunk main network which will enable us to proactively inspect a further 50km of pipe. We envisage through this approach we will repair approximately 150 trunk mains leaks per annum. We will also make it easier for customers to find and fix their leaks: • We will provide more accurate and responsive insight into continuous flow and potential customer-side leaks via a digital solution (currently we do this via letters and emails) and we will help customers to get their leaks fixed. • We will develop a household and non-household digital toolkit with improved analysis of smart meter data and an online portal. This will enable us to provide regular usage data and tailored water saving advice to customers regarding their water consumption. • We will use data science to advance our understanding of water use and maximise demand reduction savings – working out how to better detect low levels of continuous flow (currently 10l/p/h) which accounts for how different customers use water, for example those who work night shifts or non-household usage.

Table 10.12: Our AMP8 plan for fixing leaks and ensuring there is enough water in the future

10.2.4 | Our AMP8 plan continued

In line with our Water Resources Management Plan, we are proposing enhancement activities to deliver performance improvements in this area.

Enhancement case	AMP8 costs(£m)	How this enhancement case helps to 'fix leaks and ensure there is enough water in the future'
WRMP Demand Reduction	328	We will increase smart meter penetration across the household and non-household customer base and deliver additional demand reduction activities to achieve the PCC and business demand targets set by DEFRA[3]. The expected total combined reduction in demand is 102Ml/d (with 37.4Ml/d from leakage and 64.7Ml/d from water usage). By improving demand management, we will increase the resilience in the supply of water to our customers and deliver environmental improvements, as per our revised Water Resources Management Plan.
WRMP Supply Options	410	We will address the urgent need to develop new water supply options to ensure there is sufficient water available to our customers against a backdrop of climate change increasing the severity and nature of droughts, and a growing population. We are progressing two priority options: • **Teddington Direct River Abstraction** – This scheme is a new river abstraction on the River Thames close to Teddington Weir. Water abstracted from the river would be transferred via an existing underground tunnel to the Lee Valley reservoirs in East London. • **SESRO** – The SESRO is a raw water storage option in the upper catchment of the River Thames. It provides a resilient supply of raw water to the River Thames during periods of low flow. We are also progressing other back-up options should these two schemes not go forward. The investment in supply options will enable us to provide a higher standard of drought resilience to our customers and protect the environment by reducing our abstraction in vulnerable catchments.

Table 10.13: Relevant enhancement cases for fixing leaks and ensuring there is enough water in the future

Further information on these enhancement cases is provided in Appendix TMS27:Enhancement Case WRMP supply and TMS28: Enhancement Case WRMP demand.

10.2.5 | Our projected performance

Through the actions and funding listed in Table 10.13, we are setting ourselves ambitious performance commitment targets for leakage, per capita consumption and business demand[4].

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	-15.3%	-22.5%	-29.3%	-32.7%	-35.1%	-37.1%
Proposed target	N/A	-22.5%	-29.3%	-32.7%	-35.1%	-37.1%

Performance commitment measurement: Percentage change in the number of litres lost a day through leakage against a 2019/20 baseline.

Table 10.14: Projected performance, Leakage

Proposed target – Our proposed target represents a 37.1% cumulative reduction in leakage since 2019/20 and is in line with our Water Resources Management Plan. We are therefore confident it is stretching but realistic.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	-3.4%	-3.7%	-4.2%	-4.9%	-5.2%	-5.5%
Proposed target	N/A	-3.7%	-4.2%	-4.9%	-5.2%	-5.5%

Performance commitment measurement: Percentage change in the three-year average PCC in litres per person per day (l/person/d) from the 2019/20 baseline.

Table 10.15: Projected performance, Per capita consumption

Proposed target – Our proposed target represents a 5.5% reduction in per capita consumption compared to our 2019/20 baseline. It is in line with our Water Resources Management Plan and it represents a realistic reduction given changes in working patters with more people working from home. We are therefore confident it is stretching but realistic.

4 We have asked Ofwat to consider adjusting the Green Economic Recovery funding conditions in light of the affect that the summer drought of 2022 and subsequent freeze-thaw event has had on the achievability of our end of AMP leakage target. The outcome of these discussions will determine if we can proceed with the Green Economic Recovery programme.

10.2.5 | Our projected performance continued

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	N/A	-9.1%	-9.1%	-9.4%	-9.7%	-10.1%
Proposed target	N/A	-9.1%	-9.1%	-9.4%	-9.7%	-10.1%

Performance commitment measurement: Percentage change in the three-year average business demand in Ml/d from the 2019/20 baseline.

Table 10.16: Projected performance, Business demand

Proposed target – The government has set a legally binding target under the Environment Act 2021 to reduce the use of public water supply in England per head of population by 20% by 2038. As part of achieving this target, we are proposing to deliver a 10% reduction in business demand in AMP8.

Over the longer-term, and in line with our Long-term Delivery Strategy and Drainage and Wastewater Management Plan, our ambition is to have a future-proofed water supply that can meet the changing needs of our customers and the world around us. In order to achieve our vision, we have identified the need for enhancement spend over the next 25 years to develop new water resources and reduce demand by reducing leakage and increasing water efficiency. This is summarised in the table below.

Performance measure	Units	2050 ambition	From base spend	From enhancement
Leakage	% reduction in Ml/d for a three year average from 2019/20	50.0%	24.2%	50.0%
PCC	% reduction in litres per person per day for a three year average from 2019/20	27.6%	12.8%	27.6%
Business Demand	% reduction in Ml/d for a three year average from 2019/20	15%	-3.6%	15%

Table 10.17: Fixing leaks and ensuring there is enough water in the future – our 2050 ambition

10.3 | We will reduce our carbon emissions and reach net zero by 2050

We summarise below our AMP8 plans to deliver this outcome, along with associated costs. Further detail is presented in Appendix TMS49: Our AMP8 Carbon Reduction strategy & Net zero bid and Appendix TMS10: Bioresources: AMP8 and Market strategy.

Customer outcome

Reducing emissions and reaching net zero

The outcome performance is assessed through three performance commitments.

Our ambition

5%
reduction in operational carbon emissions for wastewater by the end of AMP8

2%
reduction in operational carbon emissions for water by the end of AMP8

£71m
will be requested for Ofwat's Net Zero Challenge Fund to deliver further carbon emissions reductions

10.3.1 | Customer need

The UK government has set a target to limit the volume of greenhouse gases emitted by the UK by 78% by 2025 (compared to 1990 levels) and to achieve net zero by 2050.

The water industry has an important role to play in achieving this target since it directly contributes to around 1% of the UK's greenhouse gas emissions. This role was recognised in Ofwat's 2022 position paper, which set an expectation for the water industry to align with national government net zero targets for 2035 and 2050.

We will work to reduce the emissions that result from our operational and investment activities. Our bioresources operation is also able to help reduce emissions as it can offset our energy imports through the production of renewable energy using biogas, or by producing biomethane which can be injected into the gas network. Biomethane will therefore help to decarbonise the gas network and biogas can also provide fuel to run our transport fleet. We can also utilise waste heat from our assets to operate our processes or, where possible, to promote district heating systems.

Our customers are placing greater importance on actions to reduce climate change and therefore support what we are trying to achieve. We summarise below what we heard from our diverse customers base, and how we will hold ourselves to account in delivering their expectations.

What we heard		How customers can hold us to account
Renewable energy	Customers place increasing importance on issues relating to climate change and emissions; they generally expect us to pursue options to reduce our operational emissions to achieve net zero as soon as possible, such as by generating our own green energy and becoming self-sufficient.	Our work in AMP8 will be supported by two Performance Commitments: Operational Greenhouse Gases (Water) and Operational Greenhouse Gases (Wastewater).
Reducing emissions	While reducing carbon emissions is seen as important, some customers view this as something all companies should be addressing as part of base expenditure, without increasing bills.	

Table 10.18: Customer line of sight for reducing emissions and reaching net zero

Further information about what our customers expect from us is presented in Appendix TMS03: Customer Engagement.

10.3.2 | Our track record

We define operational greenhouse gas emissions as those associated with the operation and maintenance of an asset, while capital greenhouse gas emissions are those associated with the creation, capital maintenance, and end-of-life treatment of an asset.

Operational carbon emissions

We have been reporting operational emissions since 2008/09. The baseline year for government reduction targets is 1990. Against this baseline, we have achieved a 70% reduction in emissions from 846ktCO_2e[5] to 258ktCO_2e in 2022/23 using a market-based methodology (which includes the impact of our green power purchases and is the methodology adopted by government). These reductions have been achieved by purchasing green energy, investment in sludge treatment processes, and by doubling on-site renewable energy generation, while actively managing the use of fossil fuels. The equivalent emissions reduction using a location-based methodology (which excludes the impact of our green power purchase and which is adopted by Ofwat) is 51%, from 846ktCO_2e to 430 ktCO_2e.

For AMP8, Ofwat has selected 2021/22 emissions to be the baseline for the common performance commitment. Figure 10.1 shows the source of operational carbon emissions in 2021/22 retrospectively recalculated using Ofwat's annual performance reporting guidance for 2022/23. This uses a location-based methodology and includes for the first time chemical use, extraction and production (E&P) and transmission and distribution (T&D) of energy purchased, and disposal of waste from operations in the calculations. This increases the reported 2021/22 emissions by 101kt compared to previous reporting guidelines (from 445kt to 546kt CO_2e).

5 Kilotonnes of carbon dioxide equivalent.

10.3.2 | Our track record continued

Based on Ofwat's annual performance reporting guidance for 2022/23, our 2022/23 net operational greenhouse gas emissions were 536ktCO_2e.

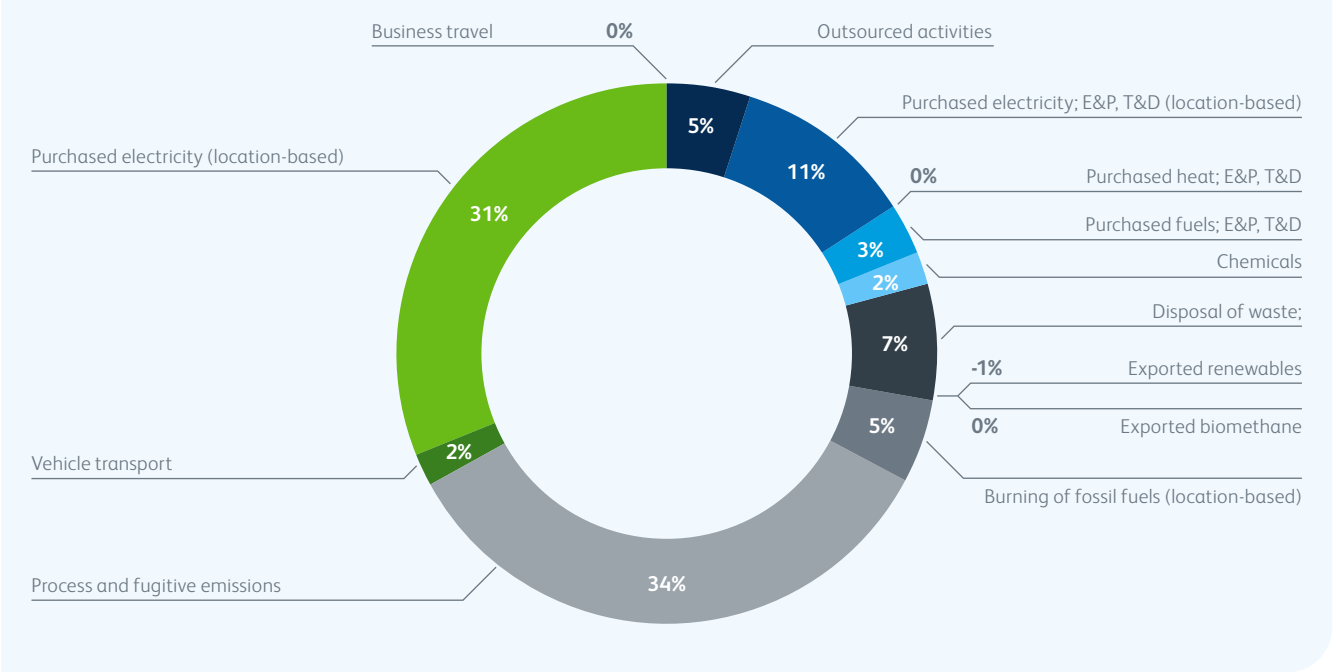


Figure 10.1: Our 2021/22 carbon emissions (PR24 Performance commitment methodology)

Capital carbon emissions

Our current capital carbon accounting covers emissions from:

- Capital projects.
- Work to support new connections to the water and wastewater networks, pipe diversions, and upgrades to our pumping network when required.
- Maintenance and upgrades to existing areas of the business.

For each project, we calculate a yearly estimate of capital carbon emissions, including the materials and products used and the labour and plant requirements to provide a 'cradle to build' emissions figure.

Using this approach, our first annual account for capital carbon in 2022/23 was 424ktCO_2e, with 220ktCO_2e associated with water projects and 204ktCO_2e associated with waste projects.

During AMP8, we will work with the industry and regulator to develop an agreed methodology for reporting capital carbon and will start to report progress in reducing capital carbon, through an agreed performance commitment from 2030.

10.3.3 | Our plans for the remainder of AMP7

We are following a greenhouse gas management hierarchy, which sets out the sequence of actions we should take to reduce our emissions and which is summarised below.

This hierarchy is consistent with the views of customers and the regulators, namely, that priority should be given to avoiding and reducing emissions before the use of carbon offsets. Our approach is an adaptation of the Institute of Environmental Management and Assessment's (IEMA's) greenhouse gas Management Hierarchy.

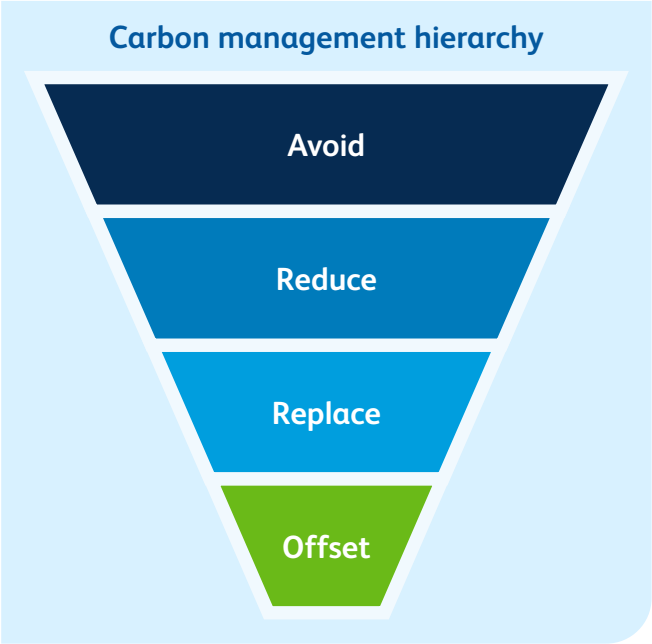


Figure 10.2: Our carbon management hierarchy

We will apply this strategy, as follows:

- **Avoid** – Where possible we will avoid producing emissions. This will include actions to reduce demand, limit travel and avoid building by looking for other solutions to deliver the required outcomes.
- **Reduce** – Where economically and technologically possible, we will reduce emissions from our activities. This includes our actions to reduce waste by changing behaviours and optimising processes, improving our efficiency, building less by making the most of our existing assets, and building efficiently with low carbon designs, techniques and equipment.
- **Replace** – Where economically and technologically possible, we will replace emission sources with alternative fuels and materials. This includes our purchase of renewable energy, and our actions to maximise renewable energy generation, replace fossil fuels with low carbon alternatives, and use vehicles that use low carbon fuels.
- **Offset** – Carbon offsetting describes when a company or individual financially contributes to a third party to create a positive environmental impact that will counteract their own internal emissions. Activities could include tree planting, peatland restoration and CO_2 sequestration. Offsets provide the final option to net-off emissions that can't be practicably avoided, reduced, or replaced. Offsets can be internal (generated by us) or external (generated by a third party) and include emissions displacement, capture and sequestration. Examples of internal offsets are Renewable Energy Guarantee of Origin (REGOs) for exported renewable electricity and Renewable Gas Guarantee of Origin (RGGO) for exported renewable biomethane.

At present, technologies to reduce capital carbon emissions are limited, so our short-term plan is to focus on interventions to reduce our operational carbon emissions using proven technologies.

In AMP7, we are implementing low-cost measures to reduce operational carbon. In particular:

- We are aligning our asset standards to ensure asset investment decisions promote low carbon technology.
- We are developing revised operational and capital carbon baselines in line with the new PR24 Ofwat requirements.
- We continue to reduce our fossil fuel use in our processes.
- We will generate on-site renewable energy. We generate about 526GWh's of renewable energy annually. We have delivered our first large scale biomethane facility at Deephams, which is able to offset up to 9158tCO_2 over what an equivalent gas generator could achieve. We also plan to deliver a further biomethane plant at Mogden.

10.3.4 | Our AMP8 plan

Our plans for AMP8 build on the work of the previous ten years, and follow our emissions management hierarchy to deliver known and available solutions. This will mean prioritising efforts on our own emissions and those that won't be reduced as a result of external factors, such as the rate at which the electricity grid is decarbonised, or the steps being taken by the supply chain (eg chemical manufacturers) to reduce their own emissions. As these solutions need to be affordable, and to limit the amount of capital carbon generated, our AMP8 plans will focus on using existing assets as efficiently as possible and replacing life expired assets with low carbon alternatives.

Emissions are typically considered to be scope 1, 2 or 3. Scope 1 covers emissions from sources that we own or control directly, scope 2 are emissions that we cause indirectly and come from the production of the energy we purchase and use, and scope 3 are those emissions we are indirectly responsible for up and down our value chain. Our AMP8 plans to reduce emissions across scopes 1, 2, and 3 are summarised below:

- For our scope 1 emissions, we plan to minimise fossil fuel use, and use ongoing testing and monitoring to understand how innovation and process control can be used to further reduce emissions.
- For our scope 2 emissions, we plan to expand the ambition of our energy efficiency programme and continue to deliver activities that contribute to the economically efficient reduction of our energy consumption. Our energy programme will focus on areas with the biggest saving potential, such as pump efficiency, blower efficiency and maximising self-generation.
- For our scope 3 emissions, we will be identifying areas where we can reduce the commodities we purchase and will be working with our suppliers to reduce emissions.

Ofwat is proposing to operate a Net Zero challenge fund:

- We will request funding to decarbonise our vehicles and office heating. If we receive this funding, we will replace our fossil fuel boilers and our life-expired vehicles with low carbon alternatives. We have chosen these initiatives because technology solutions are either available now, or will be available in the near-future, and the carbon benefits can be accounted for under the performance commitment methodology.
- We will also request funding to convert our existing combined heat and power generators to biomethane. To minimise costs and carbon emissions we are only considering installation of biomethane plants at sites where we have existing plant which has reached the end of its life. We are seeking funding to cover the running costs of the biomethane plants (which can be higher than that of the existing assets).

We will request £71.5m and we expect this to deliver 23ktCO_2e in annual carbon savings in 2030, and a cumulative operational carbon reduction of 39ktCO_2e in AMP8.

Further information on our 'bid' to the Net Zero challenge fund is presented in Appendix TMS49: Our AMP8 Carbon Reduction strategy and Net Zero Bid.

10.3.5 | Our projected performance

We expect our actions to deliver a slight reduction in our operational carbon emissions as set out below. This small reduction reflects the Secretary of State's steer to seek opportunities to phase investments in net zero into future AMPs.

The projected performance below assumes our bid to the Net Zero challenge fund is not accepted by Ofwat. We expect to deliver further carbon emissions reduction if our bid is accepted.

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	N/A	156,096	155,211	154,326	153,441	152,556
Proposed target	N/A	156,096	155,211	154,326	153,441	152,556

Performance commitment measurement: Greenhouse gas emissions expressed in tonnes CO_2e (carbon dioxide equivalent). This is also reported as kgCO_2e per megalitre of distribution input (pre-MLE).

Table 10.19: Projected performance, Operational carbon emissions, water

Performance Commitment	Year					
	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
AMP8 projected performance	N/A	378,075	373,433	368,791	364,149	359,507
Proposed target	N/A	378,075	373,433	368,791	364,149	359,507

Performance commitment measurement: Greenhouse gas emissions expressed in tonnes CO_2e (carbon dioxide equivalent). This is also reported as kgCO_2e per megalitre of volume of wastewater received at sewage treatment works.

Table 10.20: Projected performance, Operational carbon emissions, wastewater

11.0
Our proposed expenditure

In this section

Key messages

- Over AMP8 we are planning to spend £18.7bn across our six price controls.
- We estimate that we will receive a base allowance of £12.1bn for us to keep operating and maintaining our assets across our six price controls. This includes £517m of cost adjustment claims.
- We are also proposing to invest £4.7bn as enhancement expenditure as part of our phased approach to meet our statutory requirements and increase the resilience of our assets to protect customers against unacceptable risks. This includes the cost of delivering the final phase of the Thames Tideway Tunnel project.
- We request £1.9bn to start repairing our 'asset health deficit'. We have identified a list of priority activities for AMP8 to do this.
- We continue to use markets to deliver better services to customers at lower costs. The range of tools we use include our bid assessment framework, our alliances with key partners, the development of specific markets (eg developer services and bioresources) and Direct Procurement for Customers (DPC).
- We have concluded that four programmes of work could be suitable for DPC. All four programmes are in our Strategic Resource Options portfolio.

This chapter summarises our proposed totex and enhancement cases, sets out why we consider we should receive additional funding to address our asset health deficit, summarises our cost adjustment claims, explains why we consider our plan to be efficient, summarises the way we use markets for the benefit of customers and provides a synopsis of our assessment of potential DPC projects.

11.1 | Our proposed totex

Over AMP8, we are planning to spend £18.7bn across our six price controls. This is more than we have ever spent before. Through this expenditure, we will deliver our phased approach to meeting statutory and regulatory requirements, undertake critical investments to increase the resilience and performance of our assets, and to start addressing our asset health deficit.

The figure below summarises the split of our proposed expenditure across our price controls. £17.7bn will be spent on our water and wastewater business and in bioresources. We will also spend £1bn on our retail business and £87m on the Thames Tideway Tunnel.

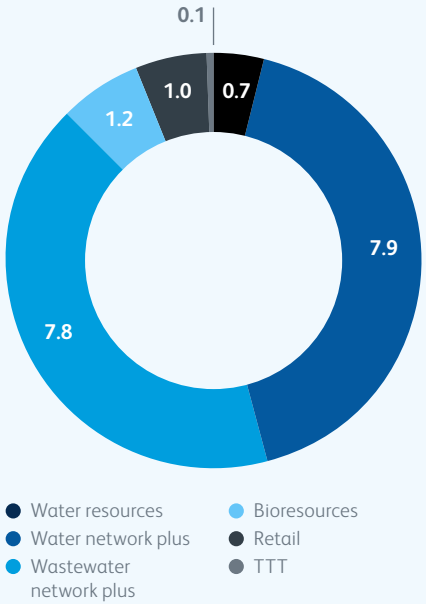


Figure 11.1: AMP8 proposed total expenditure, 2022/23 prices, £bn

11.1 | Our proposed totex continued

Ofwat makes the distinction between base expenditure and enhancement expenditure:

- We estimate that we will receive a base allowance of £12.1bn, including retail. We will use this to operate and maintain our assets. This figure includes £517m of wholesale cost adjustment claims to fund network reinforcement and distribution mains replacement. Our cost adjustments claims are summarised in Section 11.3.
- We are also proposing £4.7bn of enhancement expenditure to respond to statutory requirements, address risks and increase the resilience of our assets. We have submitted nine enhancement cases to justify this spend which are summarised in section 11.2.

Our proposed expenditure also includes £1.9bn to limit the decline in our asset health – this is explained in more detail in section 11.4.

Our base expenditure, cost adjustment claims, enhancement expenditure and asset deficit requests are essential for us to deliver performance improvements and put our business on a more sustainable path. We summarise these different items below, before providing more detail in the following chapters.

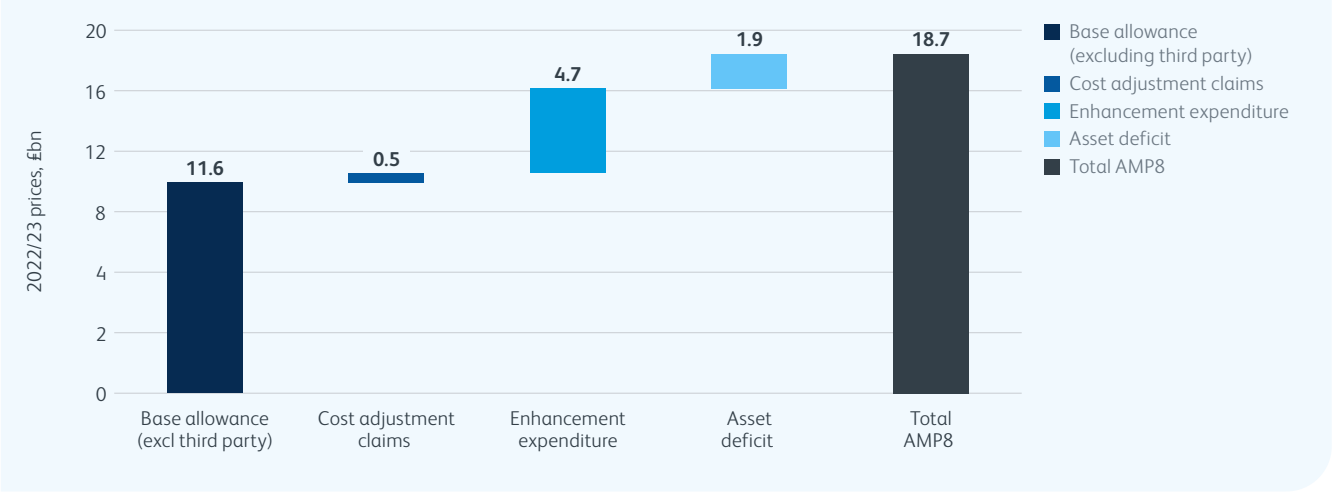


Figure 11.2: Breakdown of our AMP8 expenditure across spend categories

Note: Base allowance includes retail. Enhancement cases includes spend for Thames Tideway Tunnel, our water system supply resilience programme, first time sewerage and improving sewer flooding in homes which Ofwat requested be included as enhancement spend in the data tables. However, we have not submitted an enhancement case for these items as they are subject to a different treatment.

Proposed expenditure	Description and rationale	AMP8 Cost (£m)
Base expenditure		
Base allowance	Our base allowance as provided by Ofwat to cover the costs of operating and maintaining our business, including retail and our proposed transience cost adjustment claim (which is to fund the additional costs we incur as a result of the high transience rates in our area).	11,600
Network reinforcement cost adjustment claim	To cover the additional costs of reinforcing our network to accommodate population growth. A lack of reinforcement could mean that existing customers could experience low water pressure and sewer flooding. It could also increase the risk of pollution and storm overflows.	240
Distribution mains cost adjustment claim	To cover the additional costs we incur to replace 500km of distribution mains in AMP8 and prepare us to replace over 1,000km of replacement in AMP9. Mains replacement will improve asset health and reduce leakage.	277

Table 11.1: Summary of our proposed expenditure

11.1 | Our proposed totex continued

Enhancement expenditure		
WRMP Demand reduction	Installation of over a million smart meters across the household and non-household customer base and delivery of additional demand reduction activities. We expect this investment to result in a total combined demand reduction of 102.1Ml/d.	328
WRMP Supply options	Development of additional water resources, with Teddington Direct River Abstraction and South East Strategic Reservoir (SESRO) (a raw water storage option in the upper catchment of the River Thames) being our preferred schemes. This will increase water resources (67M/d from Teddington and 149Ml/d from SESRO) and lead to a 50% reduction in drought risk by the early 2030s.	410
Long term water quality strategy[1]	Replacement of 54,000 lead communication pipes and installation of UV treatment equipment at two of our four London slow sand filter facilities to mitigate the risk of cryptosporidium. This investment is supported by the Drinking Water Inspectorate and will result in a proportionate reduction in public health risk posed by the presence of lead or cryptosporidium in drinking water.	273
Reducing the risk of basement flooding	Rehabilitation of 13.1km of trunk mains to protect at risk properties from flooding. This will protect over 4,000 basement properties identified as being at the highest risk of flooding protected from a failure of our trunk main network.	216
Water Industry National Environment Programme AMP8 (WINEP8)	Investments as part of the WINEP to reduce storm overflows, improve bathing water quality and address abstraction that impacts chalk streams.	950
Water Industry National Environment Programme AMP7 (WINEP7)	Investments to complete the remainder of our AMP7 WINEP programme.	1,134
Sewage Treatment Growth	Increase capacity at 15 specific sewage treatment works to provide treatment capacity to a population equivalent to 96,700 people or 40,292 homes. This investment will allow us to remain compliant with our discharge permits.	355
Industrial Emissions Directive	Delivery of the first phase of our approach to become compliant with the permit requirements, as issued under the Environmental Permitting Regulations for the Industrial Emissions Directive – Anaerobic Digestion.	180
Cyber security	Delivery of a range of improvements in our cyber capabilities to reduce the risk of cyber attacks and comply with our statutory obligations. This investment will lead to a proportionate reduction in cyber risk exposure and enhanced operational continuity.	135
Water supply resilience programme	Continuation of our PR19 conditional allowance to deliver mitigation of risk to water supplies in North East London. We want to address single points of failure at our key water treatment sites, Coppermills and Hampton. At these sites, a failure could lead to a large number of customers (over 500,000) facing a prolonged water supply interruption.	465
Other	Other enhancement expenditures, covering sewer flooding resilience, first time sewerage, Thames Tideway Tunnel.	233

Table 11.1: Summary of our proposed expenditure (continued)

1 There are two enhancement cases included in our submission for long term water quality strategy, one covers lead and one covers mitigating the risk of cryptosporidium.

11.1 | Our proposed totex continued

Asset health deficit		
Service reservoirs	Service reservoirs are critical for water supply resilience. We have fewer service reservoirs compared with other water companies and the size of the population we serve. Our service reservoirs are also ageing and several have reached the end of their life and require replacement.	192
Water Operational technology[2]	Our operational technology is ageing and needs to be replaced. The number of repair jobs that we are having to do on the estate is rising. Service failures are increasingly impacting customers and the environment.	73
Waste Operational technology[2]		129
Customer Meters	We need to replace the old analogue meters with digital ones to allow us to start monitoring customer usage in near real-time	118
Gravity Sewers (including Critical assets)	Many of our wastewater assets, particularly across London present a major risk to public safety if they were they to fail. Securing adequate funding to address the deficit on our waste critical assets is crucial to protect the wider waste network capital programme from reprioritisation that would otherwise be necessary to facilitate work on these high consequence assets.	190
Rising Mains	Rising mains make up 3% of our wastewater network by length but are responsible for 20% of bursts/ collapses, 9% of network pollutions, and up to two serious pollutions a year. We need to replace sections or entire mains where the likelihood and consequence of a pollution is high or very high and where there is previous history.	179
Wastewater Asset Assurance Programme	We have shared with our regulators that 157 of our wastewater treatment works are 'of concern' in terms of meeting 'flow to full treatment' before storm discharges occur. This is unacceptable and we will invest in these sites to reduce the risk of this non-compliance.	677
Find & Fix	Our network has poor asset health, with the highest levels of leakage and mains repairs compared to other companies. Consequentially, we spend significantly more on reactive operating cost activities to maintain leakage levels relative to other companies.	348

Table 11.1: Summary of our proposed expenditure (continued)

2 Our Operational Technology includes all of the infrastructure needed to monitor and control our assets (such as Programmable Logic Controllers, Remote Terminal Units and Human Machine Interfaces). These all allow our operators to control assets in the field and relay information back to our control room, so that we can deliver service to customers and manage incidents.

"We continue to use markets to deliver better services to customers at lower costs.

11.2 | We have submitted nine enhancement cases

We explained in section 7.7 the trade-offs we made when we prioritised our enhancement programme for AMP8.

We have submitted eight enhancement cases which we summarise below. We also include a short summary of our submission to Ofwat to continue our work to improve water system supply resilience through our conditional allowance.

11.2.1 | We have requested £950m for our WINEP8 programme

We will invest to respond to new and existing environmental legislative requirements that apply to water companies in England under the WINEP. The WINEP is designed to enable companies to meet new legal obligations and regulatory expectations in relation to the environment. Actions required under the WINEP, as cascaded from priorities and expectations in the Water Industry Strategic Environmental Requirements (WISER) are designed to ensure compliance with UK environmental legislation.

In most cases, the actions are statutory, and companies and their stakeholders have limited influence over associated investment. In some cases, the need for a scheme is dependent on a favourable cost-benefit assessment and/or evidence of customer support.

We are proposing to deliver a WINEP8 programme which is double the size of WINEP7 programme that was funded in our PR19 final determination. As explained in section 7.7, due to deliverability and financeability constraints, we have prioritised some investments in AMP8 and deferred others into AMP9.

In line with our customers' priorities, our AMP8 WINEP will focus on our storm overflow reduction plan, reduce abstraction at sites that impact chalk streams, and address investment at the newly designated bathing water at Wolvercote Mill Stream, which is currently designated 'poor'. The storm overflow reduction works are key to minimising the risk of harm to the environment as well as improving river health which is an area of high stakeholder focus. The investment at Wolvercote Mill Stream, which is now a designated bathing water for the public, will help minimise the risk of harm to public health.

We have phased other investments across future AMPs, including:

- **Phosphorus reduction** – Actions to reduce phosphorus concentration in rivers, lakes and canals and therefore reduce the risk of eutrophication (ie the excessive presence of nutrients, particularly phosphorus and nitrogen, in water which cause excessive plant growth reducing light penetration and oxygen absorption necessary to underwater life).
- **Sanitary requirements** – Actions at our sewage treatment works to reduce quality risks to our sewage (eg the load of ammonia, biochemical oxygen demand and suspended solids).
- **Monitoring equipment** – Installation of river quality monitors to provide detailed river monitoring around our discharges, flow monitors to detect if overflows are being operated too soon, and new event-duration monitors at newly identified storm overflow locations.
- **Chemicals in discharges** – Upgrades to treatment processes at our sewage treatment works to reduce the concentration of specific chemicals and pharmaceuticals (eg copper, zinc and antibiotics).
- **Drinking water protected areas** – Catchment investigations to understand the sources of nitrate in one groundwater catchment (Cleeve, Oxfordshire), and catchment protection actions to prevent deterioration of water quality as a result of pesticides and nitrate entering waterbodies designated as Drinking Water Protected Areas.
- **River restoration and fish passage** – A series of actions to enhance physical habitats within and around rivers.

11.2.1 | We have requested £950m for our WINEP8 programme continued

- **Invasive and non-native species, biodiversity, Sites of Special Scientific Interest (SSSI), habitats and eels** – A series of actions to mitigate the risk that invasive and non-native species pose, enhance biodiversity on landholdings we own or impact, contribute to the restoration of a SSSI to favourable condition, reduce phosphorus loadings at the point of discharge to improve water quality, to remove eels from 12 of our reservoirs and investigations into the impact of our outfalls on eels.
- **Rethinking Rivers** – Working together with stakeholders, co-funders and co-deliverers to implement a broad mix of solutions to achieve better value environmental outcomes under the 25-year environment plan, including deployment of catchment and nature-based solutions.
- **Other Water Framework Regulations (WFR) river and groundwater quality improvement** – Actions to improve water quality to ensure no river, lake or estuary is in poor or bad ecological status due to the water industry. Actions to prevent deterioration in areas where groundwater does not have Water Framework Directive 'good' status.

We summarise the key elements of our proposed WINEP8 in Table 11.2.

WINEP

Key investment drivers	This investment is necessary to respond to our new and existing obligations under the WINEP.		
Customer support	Our customers have long supported the achievement of positive environmental outcomes, and our latest customer research confirms this remains the case. Addressing concerns about storm overflows is a high priority for customers, with strong preferences shown for addressing the issue quicker than the legislation dictates.		
Outputs	We will deliver: • Storm overflows – 107 actions and 454 investigations to reduce storm overflows. Our storm overflow programme is a combination of investigations and improvements to meet the targets set out in our Storm Overflow Reduction Plan. Improvement actions include increased treatment capacity at sewage works, providing storage for high flows, reducing flows entering the system and provision of treatment for storm overflows which are separate from the main treatment route. The programme aligns with our Storm Overflows Discharge Reduction Plan, frontloading actions in high priority areas. • Bathing river quality – Investment to ensure our newly designated bathing water reaches a 'sufficient' level of quality. • Low flow alleviation – Licence reductions will be made at sources either where abstraction at our existing licensed volume poses a risk of causing deterioration, or where making a licence reduction is considered very likely to result in the improvement of water body status (subject to cost-benefit analysis). Investment is required to ensure that our supplies for customers continue to be resilient when licence reductions are made. We will also carry out 22 low-flow investigations to determine licence reductions that may be needed in the future.		
Expected outcome	This work will drive improvements under the bathing water quality common performance commitment (a forecast improvement of 16.5%) and under the storm overflow performance commitment (a forecast reduction in discharges by an average of 6.63 discharges per asset per year over AMP8).		
Total AMP8 cost (£m, 2022/23 prices)	**Cost in water**	**Cost in wastewater**	**Total**
	58.4	892	950.4
Customer protection	We propose a price control deliverable (PCD) and a time incentive to cover our work on storm overflows and protect customers in the event of non- or partial, or late delivery. We do not propose a PCD for the two other streams of work as they do not meet the 1% materiality threshold.		
Long-term Delivery Strategy (LTDS)	In line with our Drainage Water Management Plan and Long-term Delivery Strategy, we have mapped the required investment up to AMP12. We expect the required investment to be over £5bn per AMP until AMP11, and £4bn in AMP12. Regulatory and investment requirements from 2040 onwards are harder to predict and will evolve over time. However, we anticipate that future investment programmes are likely to significantly exceed those of AMP 7 and 8, driven principally by investment needed to meet storm overflow targets and completing the investment needed to meet Environment Act phosphorus targets.		
Direct Procurement for customers (DPC)	This enhancement is not deemed suitable for DPC.		
Appendix Reference	TMS26: Enhancement case: WINEP		

Table 11.2: Summary of our WINEP enhancement case

11.2.2 | In line with our Water Resources Management Plan, we have requested £328m to fund our demand reduction activities

Our region is designated by the Environment Agency as an area of 'severe water stress'. The government has recently published through DEFRA's Environmental Improvement Plan, under the Environment Act 2022, the first ever National Water Targets for demand reduction, which seeks a 20% reduction in 'water into public supply' (Distribution Input) by 2050.

This enhancement case sets out the need for investment to increase smart meter penetration across our household and non-household customer base and deliver additional demand reduction activities to achieve DEFRA's per capita consumption and business demand targets.

This enhancement will continue the smart meter rollout that was funded through enhancement cases in PR14 and PR19, and will deliver the bulk of the additional demand reduction volumes required to meet supply-demand challenges as per our Water Resources Management Plan and the Water Resources South East regional plan.

Meters are an important part of our demand management activities and the Water Industry Regulations 1999 allows water undertakers to meter customers on a compulsory basis. However, we recognise that some customers may have a higher bill as a result of moving to a metered basis. During AMP6 and AMP7 we have observed that approximately half of our customers see an increase in their bill following the switch to a metered tariff and half see a decrease. This is consistent with the evidence from metering programmes carried out by Southern Water and South East Water.

We have a range of measures in place to ensure our customers can anticipate and appropriately manage any adverse change on their bill. For example, customers are not charged on a metered account until one year after their meter has been activated unless they choose to switch sooner. We write to customers to let them know the date we have activated their meter and then start sending comparison letters at three, six, and ten months, showing what they could pay on their smart meter, compared to their current bill. We also offer support to our customers who struggle to pay their bills, for example through our social tariffs (see section 8.2).

> This Enhancement Case sets out the need for investment to increase smart meter penetration across the household and non-household customer base and deliver additional demand reduction activities to achieve PCC and Business Demand targets set by DEFRA.

11.2.2 | In line with our Water Resources Management Plan, we have requested £328m to fund our demand reduction activities continued

We summarise below the key aspects of this enhancement case.

WRMP Demand Reduction

Key investment drivers	This enhancement case sets out the need for investment to increase smart meter penetration across the household and non-household customer base and deliver additional demand reduction activities to achieve per capita consumption and business demand targets set by DEFRA and to meet the national water targets for demand reduction.
Customer support	87% of customers either somewhat or strongly support our plan to help them use less water. There is also widespread support for working with manufacturers of water efficient appliances on the basis that this requires no effort on the part of customers and will have an impact on their consumption. A minority don't agree with using smart meters, believing it will cost them more money.
Outputs	• Installation of 1,067,042 smart water meter installations and delivery of supporting water efficiency/demand reduction activities. • 191,000 Progressive Meter Programme household smart meter installations. • 645,000 Progressive Smart Upgrade household installations. • 65,000 Optant smart meter installations. • 55,000 Bulk smart meter installation (large & small bulk meters). • 109,000 smart water meter installations on business properties. • 218,000 in-home water efficiency visits. • 18,000 in-home wastage fixes. • 624,000 new digital engagement activities to new smart meter households. • 8,500 on-site water efficiency visits to business customers.
Expected outcome	• Total combined demand reduction of 102.1Ml/d (37.4Ml/d in leakage and 64.7Ml/d in usage). • Increase total meter penetration to 75%. • Increase total smart meter penetration to 60%.
Total AMP8 cost (£m, 2022/23 prices)	**Opex**: 53 — **Capex**: 275 — **Total enhancement**: 328
Customer protection	• We propose a price control deliverable (PCD) for our metering activities consistent with Ofwat's approach for the Accelerated Infrastructure Delivery Project and Green Recovery schemes.[3] • We have not proposed a PCD for our other demand reduction activities (eg Water efficiency visits and advice) as the enhancement totex does not meet Ofwat's 1% materiality threshold. • We do not consider there is a need for us to be incentivised to deliver in a timely way. The associated Performance Commitments and ODI payments will already provide an annualised incentive to deliver our metering programme.
Long-term Delivery Strategy (LTDS)	Our programme aims to achieve smart meter penetration on 100% of meterable household and non-household connections by the end of AMP9. Although this falls inside the 25-year timeframe that the LTDS aims to cover, this programme finishes before any scenarios can have a material impact. We have therefore not performed adaptative planning for this case.
Direct Procurement for customers (DPC)	This enhancement is not deemed suitable for DPC.
Appendix Reference	TMS28: Enhancement Case: WRMP demand reduction

Table 11.3: Summary of our WRMP Demand reduction enhancement case

3 An Accelerated Infrastructure Delivery Project is a scheme agreed by Ofwat and DEFRA which provides companies with certainty that approved schemes would be funded through the transition expenditure programme at PR24. The transition expenditure programme allows companies to start their AMP8 enhancement works in AMP7, to spread investment volumes over the AMP7 and AMP8 periods.

The Green Recovery scheme encouraged companies to bring forward new investment proposals and accelerate existing ones to contribute to the recovery from COVID-19, for example concerning water resources, flood mitigation, net zero and water quality improvements.

11.2.3 | In line with our Water Resources Management Plan, we have requested £410m to fund the development of additional water resources

This enhancement case covers the required investment in supply side options to enhance our supply demand balance. We have an urgent need to develop new water supplies to ensure there is sufficient water for our customers against a backdrop of a growing population and climate change – we expect climate change to increase the severity and nature of droughts. The investment in supply options will enable us to provide a higher standard of drought resilience to our customers and protect the environment by reducing our abstraction in vulnerable catchments.

This enhancement case is driven by the outputs of our Water Resources Management Plan and Water Resources South East Regional Plan – both of which are published and have been through consultation with our regulators, stakeholders and customers. Through these processes, we have identified the preferred new water supply options for our region. These options are the construction of a new storage reservoir in the Upper Thames catchment, southwest of Abingdon in Oxfordshire (called southeast strategic reservoir or SESRO), and a new abstraction sited on the River Thames close to Teddington weir (called Teddington Direct River Abstraction. Both options, along with our ambitious demand reduction programme, should meet the needs of the Thames region up to 2075.

There is a risk that these options may not receive the planning consents required for them to progress to construction. There are also inherent uncertainties in our supply and demand forecasts that may require us to adapt our plans at a future point. It is therefore important that we continue to develop other supply options in addition to our preferred options, so that we can manage this uncertainty and adapt our programme if required.

With this in mind, our plan also includes investment to progress the development of the Severn Thames Transfer (STT) as an alternative option to SESRO and the Beckton water recycling scheme (as an alternative option to Teddington Direct River Abstraction). In addition, we have two much smaller supply schemes in our AMP8 enhancement programme: a raw water transfer from the Didcot power station via a water purchase agreement with the energy company RWE, and new groundwater supply at Addington. Both schemes will be fully delivered during AMP8.

The Lower River Thames to West London Reservoirs scheme is also a potential new Strategic Resource Option. Early feasibility work is underway and if this confirms the need for a scheme then this would be required by the mid-2030s.

The supply options we are proposing to progress in AMP8 are shown in Table 11.4. New supply options take many years to develop and span several investment cycles. The element of work planned in AMP8 is described in the table, which is primarily detailed design, planning and permitting, and land acquisition. It is important to note that while we are not planning to bring any major new water resource schemes into supply during AMP8, significant benefits to our supply demand balance will be delivered through our demand reduction programme.

Most of our supply side options are sufficiently large to be classed as a Strategic Resource Option and are part of Ofwat's Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process and have successfully moved through Stage Gate two and rated as good by Ofwat.[4]

4 The gated process relates to the funding of investigations and development of water resource solutions from April 2020 until March 2024. There are four gates during this period. At each gate, companies submit information about their work on a solution, which is assessed to ensure companies are making progress on investigation and development of solutions. Ofwat also decides whether companies should continue to be allowed funding to further investigate and develop a solution to the next gate.

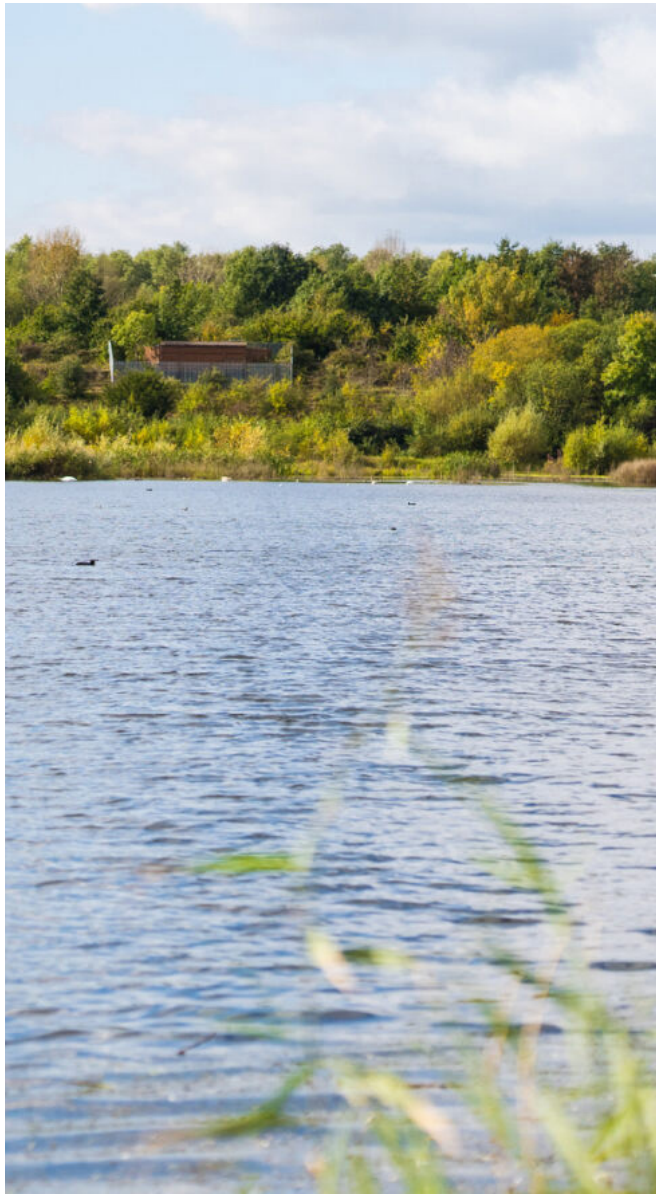
11.2.3 | In line with our Water Resources Management Plan, we have requested £410m to fund the development of additional water resources continued

We summarise below the key aspects of this enhancement case.

WRMP Supply Options

Key investment drivers	The need for these additional water resources and the options preferred were identified through our Water Resources Management Plan, which we have a duty to prepare and maintain as set out in Sections 37A-37D of the Water Industry Act 1991.
Customer support	Customers are supportive of the collaborative and coordinated approach taken in Water Resources Southeast, and that there is a strong expectation that we will plan for the future. Customers want us to reduce dependency of our water resources system on the environment and recognise that we should build additional capacity to ensure resilience in the face of wider uncertainty.
Outputs	We are progressing two preferred options: • Teddington Direct River Abstraction: This scheme is a new river abstraction on the River Thames close to Teddington Weir. Water abstracted from the river would be transferred via an existing underground tunnel to the Lee Valley reservoirs in East London. The total lead time is expected to be six to eight years. Our plan for AMP8 involves obtaining consent for and constructing the Teddington scheme as soon as possible. • South-East Strategic Reservoir Option: The SESRO is a raw water storage option in the upper catchment of the River Thames. It provides a resilient supply of raw water to the River Thames during periods of low flow. SESRO is a key part of the Water Resources South East regional plan, and would be used by us, Affinity Water, and Southern Water. It is required to facilitate a 1 in 500-year resilience in our London Water Resource Zone, and to enable licence reductions in our Swindon and Oxfordshire zone, Southern Water's Western Area, and at Affinity Water's chalk sources. As with all major projects there is a risk that SESRO and/or Teddington Direct River Abstraction may be denied planning consent through the Development Consent Order (DCO) process. As such, we think it is essential that we continue investigations into other schemes. We plan to continue working on two other schemes: • Development of Severn to Thames Transfer: A transfer of water from the River Severn to the River Thames, potentially supported by transfers from United Utilities and Severn Trent Water, used to provide water to our customers, Affinity Water, and/or Southern Water. The AMP8 investment is to continue investigations to ensure that we would be able to quickly move to consenting the Severn Thames Transfer, should this be necessary. • Beckton water recycling scheme: This is an alternative scheme should the preferred option at Teddington be proven unviable. In this scheme, Beckton sewage treatment works final effluent will receive additional treatment via an Advanced Water Recycling Plant located within Beckton STW. The recycled water would then be transferred and discharged into the River Lee Diversion above the inlet for King George V Reservoir to supplement the raw water supply to the Lee Valley reservoirs. • Lower River Thames to West London Reservoirs – this scheme would provide a new raw water conveyance tunnel from a new abstraction point on the Lower River Thames to a discharge point into the existing Queen Mary Reservoir. We will also progress two smaller schemes which will be fully delivered in AMP8: • Agreement with the energy company RWE, relating to Didcot Power Station. Didcot Power Station abstracts water from the River Thames for evaporative cooling purposes. If we enter into a contractual agreement with RWE then during drought periods we can request that they reduce the amount of water which is consumed. • Addington groundwater: this investment is to develop our currently limited capacity to abstract from our Addington source in South London. These are not Strategic Resources Options schemes.

Table 11.4: Summary of our WRMP Supply options enhancement case



11.2.3 | In line with our Water Resources Management Plan, we have requested £410m to fund the development of additional water resources continued

WRMP Supply Options	
Expected outcome	• Additional water resources: 67M/d from Teddington DRA and 149Ml/d from SESRO. • 50% reduction in drought risk by the early 2030s, compared to current level of resilience, with emergency drought restrictions not being required more often than once every 200 years. • 80% reduction in drought risk by 2040, compared to current level of resilience, with emergency drought restrictions not being required more often than once every 500 years.
Total AMP8 cost (£m, 2022–23 prices)	410
Customer protection	Significant scrutiny of the Strategic Resources Options (SRO) is provided by RAPID and the requirement for each of the schemes to go through a gated process. We therefore do not propose a PCD for these schemes. Although the two non-Strategic Resources Options are outside of RAPID's gated process, we do not consider setting a PCD to be appropriate for these schemes for the following reasons: • The spend included for Didcot RWE import is to enable the payment of an agreed fee to RWE. This will be covered by a contract. • The Addington groundwater scheme will be fully delivered in AMP8 for a cost of circa £5m. This is too small to warrant a separate PCD.
Long-term Delivery Strategy (LTDS)	As defined in our best value pathway, we will continue to ramp up investments beyond 2030. We plan to invest £1,158m in AMP9, £563m in AMP10, £187m in AMP11 and £453m in AMP12.
Direct Procurement for customers (DPC)	All four SRO schemes could be suitable for DPC. All four programmes are in our SRO portfolio and are included in our draft WRMP and are being progressed through the RAPID gated process.
Appendix Reference	TMS27: Enhancement Case: WRMP supply options

Table 11.4: Summary of our WRMP Supply options enhancement case (continued)

Note: The costs for developing SESRO and Severn to Thames Transfer are shared between the water companies which will benefit from the schemes. The cost and benefits shown in this table are our share of the total cost and benefits of the scheme.

11.2.4 | We have requested £273m to fund our long-term water quality strategy

This enhancement case supports our long-term ambition to further reduce public health risks and reliably supply safe drinking water to our customers. It also shares core objectives of the Drinking Water Inspectorate's long-term strategic guidance: 'to use treatment processes to make water safe and clean, with the aim of proactively mitigating risks to public health, and to the wholesomeness and acceptability of supplies.'

There are two water quality focus areas for AMP8:

- Firstly, replacing lead communication pipes and customer supply pipes which is a long-standing enhancement requirement that we propose continues due to the public health risk posed by lead in drinking water.
- Secondly, we and the DWI agree that we need to take action to address increasing risk at our four large London processing plants (LPPs). These use slow sand filtration, which is an efficient and sustainable treatment process. We have detected cryptosporidium in the final water from these plants and we have managed this so that it does not pose undue risk to our customers. But climate change and deteriorating raw water quality mean the risk is increasing and we must act in AMP8 to reduce the risk.

It is not possible to address either of these public health risks through our base plan. We need to enhance the quality of the water supplied to customers, to ensure that it remains safe to drink and to realise our vision for 2050.

We summarise below the key aspects of this enhancement case, separately for lead control and cryptosporidium risk reduction.

Long-term water quality strategy – Lead control

Key investment drivers	The Drinking Water Inspectorate has an ambition to have a lead-free drinking water network by 2050. They state that water companies will need to continue to mitigate the risk of lead with treatment in the medium term, but they will need to replace all lead pipes to guarantee compliance with a tighter regulatory standard.		
Customer support	Our customer engagement on enhancement cases has revealed that this enhancement case is in the top three priorities for customers as it supports the delivery of safe and clean drinking water.		
Outputs	We will replace 54,000 lead communication pipes in AMP8 and deliver an AMP8 customer trial to determine the most effective support we can provide customers in the long term to remove the public health risk posed by lead pipework within properties.		
Expected outcome	Proportionate reduction in public health risk posed by the presence of lead in drinking water.		
Total AMP8 cost (£m, 2022/23 prices)	**Opex**	**Capex**	**Total**
	0	94	94
Customer protection	We propose a PCD based on the number of lead communication pipes replaced annually. We have also proposed a time incentive for late delivery.		
Long-term Delivery Strategy (LTDS)	Our vision for 2050 is to move to a lead-free network by 2050. We plan to progressively ramp up our replacement rate to achieve 315,167 replaced per AMP from AMP10.		
Direct Procurement for customers (DPC)	This enhancement case is below the value threshold for DPC.		
Appendix Reference	TMS22: Enhancement case: Long-term water quality strategy: Lead		

Table 11.5: Summary of Lead control enhancement case

11.2.4 | We have requested £273m to fund our long-term water quality strategy continued

Long-term water quality strategy – Cryptosporidium protection

Key investment drivers	The presence of cryptosporidium in drinking water presents a public health risk. In recent years, the Drinking Water Inspectorate has rightly been placing increasing significance on the public health risk posed by detections of active cryptosporidium oocysts in drinking water, responding to notifications of detections with an increasingly critical eye and using enforcement action against water treatment works which are non-compliant. The Drinking Water Inspectorate has issued a Letter of Support for the installation of UV treatment at the four SSF LPPs with an Enforcement Notice to follow, to prevent active cryptosporidium oocysts being detected.		
Customer support	Our customer engagement on enhancement cases has revealed that this enhancement case is in the top three priorities for customers as it supports the delivery of safe and clean drinking water.		
Outputs	We are planning to install ultraviolet disinfection at two of our four London SSF facilities, mitigating the risk of cryptosporidium in the River Thames and River Lee and helping secure supplies by allowing abstraction irrespective of the quality of the river water. We have chosen to prioritise investment at Coppermills and Hampton as both of these sites directly feed large populations, whereas Ashford Common and Kempton discharge the majority of their treated water into the ring main allowing both sites to be supported by the wider network. Design will also be completed for the remaining two similar sites for construction in AMP9.		
Expected outcome	Proportionate reduction in public health risk posed by the presence of cryptosporidium in drinking water		
Total AMP8 cost (£m, 2022–23 prices)	**Opex**	**Capex**	**Total**
	1.2	177.9	179.1
Customer protection	We propose a PCD based on the number of sites with all UV equipment installed and commissioned. We have also proposed a time incentive for late delivery.		
Long-term Delivery Strategy (LTDS)	We expect to invest a further £134m in AMP9 to equip our remaining two sites with UV equipment. We do not expect further investments in this area beyond this.		
Direct Procurement for customers (DPC)	This enhancement case is not deemed suitable for DPC.		
Appendix Reference	TMS23: Enhancement Case: Long-term water quality strategy: Cryptosporidium		

Table 11.6: Summary of Cryptosporidium protection enhancement case

11.2.5 | We have requested £216m to reduce the risk of basement flooding from trunk mains

We recognise that there is a significant health and safety risk from rapid flooding of basement properties due to the proximity of trunk mains to basement properties. Our analysis concludes that we cannot respond quickly enough by proactive monitoring or other operational techniques to mitigate this safety risk to customers.

We therefore want to enhance the network, and proactively replace trunk mains, to reduce the risk of potential customer harm arising from the rapid flooding of a basement property in the event of a network failure. We have targeted our investment to the highest risk locations across our network, where the likelihood of failure and the number of basements affected are highest. As a result, we expect to protect over 4,000 basement properties from flooding.

We also include £46m of investment to complete the schemes started in AMP7 under the London Water Improvement Conditional Allowance, which proactively targets the highest risk mains across our network in AMP7. The remainder of the work proposed under this enhancement case will continue to build on what was delivered under the London Water Improvement Conditional Allowance during AMP7.

We summarise below the key aspects of this Enhancement Case.

Trunk mains basement flooding

Key investment driver	We consider the risk of flooding for basement properties resulting from a failure of our trunk mains poses a genuine and critical risk to the health and safety of our customers.		
Customer support	Generally, customers value investment in trunk main rehabilitation schemes very highly, given the potential catastrophic consequences of failure. Customers strongly support a change of approach to regular and proactive renewal (74% favoured a high increase in activity), starting with pipes most at risk and favour a 'prevention rather than cure' approach. Our London customers were particularly enthusiastic about this enhancement, reflecting the level of risk in London compared to other towns and cities in the UK.		
Outputs	• We will rehabilitate 12km of trunk mains across ten locations alongside customers at the highest risk of flooding • We will also deliver an additional 1.1km of mains rehabilitation to complete the London Water Improvement Conditional Allowance AMP7 schemes. This will be managed under the existing customer protection mechanism for the conditional allowance.		
Expected outcome	• Over 4,000 basement properties identified as being at the highest risk of flooding protected from a failure of our trunk main network.		
Total AMP8 cost (£m, 2022–23 prices)	**Opex**	**Capex**	**Total**
	0	170 to deliver trunk main rehabilitation 46 to complete London Water Improvement Conditional Allowance A AMP7 schemes	216
Customer protection	To protect customers from any potential under-delivery, we propose a PCD based on the number of 'kilometres of trunk main rehabilitated'. Operational/response interventions such as proactive leak find and fix, monitoring, valve maintenance, cross connections are not included. We do not consider any performance commitments and associated ODI rates are applicable to this enhancement case. Accordingly, we also propose a time incentive.		
Long-term Delivery Strategy (LTDS)	Our LTDS sets an ambition of fully mitigating the risk of basements flooding by 2050. Our AMP8 activities are constrained to protecting 4,000 properties in the period. This will ramp up to 1,200,000 properties in AMP9, 990,000 properties in AMP10, 610,000 properties in AMP11 and 140,000 properties in AMP12.		
Direct Procurement for customers (DPC)	This enhancement is not deemed suitable for DPC.		
Appendix Reference	TMS21: Enhancement Case: Reducing the risk of basement flooding		

Table 11.7: Summary of our Trunk mains basement flooding enhancement case

11.2.6 | We have requested £355m to fund additional sewage treatment capacity

The population in our area is forecast to increase by 17% from 2025 to 2050. As the population in our area increases, we need to provide additional treatment capacity to meet population growth where and when it is needed.

The majority our STWs will be able to accommodate the growth within their catchments using existing treatment capacity. However, some sites will require an upgrade to meet either the current or new permit conditions (as determined by the EA) to ensure that we do not have a negative impact on the health of our rivers and that we deliver against our customers' expectations for a reliable wastewater system.

This enhancement case addresses the cost of providing additional capacity at our sewage treatment works in AMP8, to meet the forecast growth in population across our wastewater supply area. We have only included those sites where we have high confidence that they will be unable to meet their discharge permit requirements when the planned growth occurs. We summarise below the key aspects of this enhancement case.

> As the population in our area increases, we need to provide additional treatment capacity to meet population growth where and when it is needed.

Sewage Treatment Growth			
Key investment drivers	We have a regulatory obligation under Section 94 of the Water Industry Act to provide, improve and extend our sewerage system. We are also required to collect and safely treat wastewater from our customers before returning it to the environment, while meeting the conditions set out in the environmental discharge permit for each of our sewage treatment works.		
Customer support	Support for sewage treatment growth enhancement is very strong, with many customers feeling it is part of our core responsibilities. Customers believe it is essential for sewage treatment works to be upgraded due to a rising population and climate change. Customers feel that the approach of targeting areas most in need is sound.		
Outputs	We will increase capacity at 15 named sewage treatment works where additional capacity is needed in AMP8 to accommodate growth.		
Expected outcome	This investment will provide treatment capacity for a population equivalent to 96,700 people or 40,292 new homes. It will allow us to remain compliant with our discharge permits.		
Total AMP8 cost (£m, 2022/23 prices)	**Opex**	**Capex**	**Total**
	0.3	354.8	355.2
Customer protection	We propose implementing a PCD to safeguard customers from non-delivery of sewage treatment upgrades to cater for growth for this multi-period enhancement. Customers are also protected by our common performance commitment 'Discharge Permit Compliance', as well as preventing deterioration to storm overflows and pollution performance. We also proposed a time incentive to protect customers against late delivery.		
Long-term Delivery Strategy (LTDS)	In line with our best value pathway, we will ramp up our investment to: • £717m in AMP9 to serve a population equivalent to 470,000 people • £351m in AMP10 to serve a population equivalent to 460,000 people • £52m in AMP11 to serve a population equivalent to 510,000 people • £77m in AMP12 to serve a population equivalent to 560,000 people.		
Direct Procurement for customers (DPC)	This enhancement is not deemed suitable for DPC.		
Appendix Reference	TMS24: Enhancement case: Sewage Treatment Growth		

Table 11.8: Summary of our Sewage treatment growth enhancement case

11.2.7 | We have requested £180m to fund the first phase of our programme to comply with the Industrial Emissions Directive

The basic principles of Industrial Emissions Directive (IED) are to reduce the impact of industrial emissions on the environment, whether these be to air, land or water from defined installations and activities. The Environment Agency informed the water industry at a meeting of the Water UK Strategic Steering Group on 4th February 2019 of its intent to require permits for the biological treatment of sewage sludge above the IED thresholds.

We have accepted the Environment Agency's position, although it should be noted that the scope and scale of the improvements required to comply with permit conditions has changed beyond what was previously assumed with the latest Environment Agency guidance only recently published in September 2022.

This enhancement case is critical in complying with our regulatory permits once issued, while allowing us to develop the evidence to deliver risk based interventions in line with the Best Available Techniques (BAT) guidance. We recognise that without this investment, failure to obtain the required permits would mean a breach of our Section 94 Water Industry Act obligations.[5]

We are therefore proposing to acquire the permits and carry out a phased delivery of all relevant interventions on our 25 sludge treatment centres (STCs).

However, there remains considerable uncertainty over the potential capital expenditure needed to comply with the IED requirements, in particular for the following activities: the biological treatment of sewage sludge, the operation of biogas engines, and the injection of biomethane gas into the grid. Indeed, Ofwat's letter to the industry published on 1st August 2023 noted that because only one IED permit has been issued at the time of writing, the scope and cost that will need to be incurred by the companies is uncertain.

Due to this uncertainty, we have proposed to meet the requirements of the IED in three phases:

- In AMP8, we will assess the condition and structural integrity of our civil assets, monitor and analyse our return liquors, imports and treatment processes to inform future interventions under BAT. We will also establish and deliver management controls and systems in line with the requirements of the IED permits.
- In AMP9, we will deliver the BAT interventions that are stipulated in the IED regulations.
- In AMP10, we will deliver additional interventions, when supported by our analysis, if we are required to meet the Appropriate Measures guidance as issued by the EA.

In total, we expect to spend £180m in AMP8. We have estimated that an additional investment of £484m will be needed over AMP9 and AMP10 to secure IED permits based on our current understanding of the implementation of the regulations.

We have discussed this approach with our stakeholders, including the Environment Agency, in a letter from our CEO on the 29 June 2023 and in a meeting with DEFRA in July 2023. We have taken this approach for two reasons:

- To enable us to carry out monitoring and surveys so as to fully understand the investment requirements for each of the 25 Sewage Treatment Centres in question as the permits are issued. This ensures that we deliver the best value plan for both our customers and the environment.
- To manage our deliverability constraints arising from the unprecedented scale of our overall AMP8 investment requirements.

5 The Act states, we are *"to make provision for the emptying of those sewers and such further provision (whether inside its area or elsewhere) as is necessary from time to time for effectually dealing, by means of sewage disposal works or otherwise, with the contents of those sewers."*

11.2.7 | We have requested £180m to fund the first phase of our programme to comply with the Industrial Emissions Directive continued

This enhancement case seeks to fund our activities for the first phase. We summarise our case below. However, given the fact that there is currently an end-2024 deadline for implementation of the IED and the potential for enforcement action and the requirement to suspend sludge treatment activities at non-compliant sites – which would create considerable opex costs; we note it is possible that we will have to bring forward some of the capex into AMP8.
We therefore propose an uncertainty mechanism is applied to help manage the risks around the capex required to secure IED compliance over AMP8. This is explained in section 12.5.4: IED Capital Expenditure.

Industrial Emissions Directive

Key investment driver	Compliance with the Industrial Emissions Directive (IED)		
Customer support	This enhancement supports the key priorities of our customers, in particular: improving river health and stopping river pollution, reducing our emissions and reducing our impact on the environment.		
Outputs	We will: • Install flow meters and sampling at appropriate locations at the 25 sites to meet the requirements for liquor monitoring • Improve our importing systems and procedures to meet the requirements for waste acceptance • Take and analyse appropriate samples as detailed within both the liquor monitoring and waste acceptance criteria • Assess our civil assets and site geology to identify appropriate interventions to be delivered in AMP9.		
Expected outcome	Delivery of the first phase of our approach to become compliant with the permit requirements as issued under the Environmental Permitting Regulations for the Industrial Emissions Directive – Anaerobic Digestion.		
Total AMP8 cost (£m, 22–23 prices)	**Opex**	**Capex**	**Total**
	165	15.4	180.4
Customer protection	We propose a PCD to protect customers in the event we do not complete our planned activities for a given site. The PCD will be based on the number of sites with monitoring, procedures and systems completed. We also propose a time incentive to protect customers from late delivery.		
Direct Procurement for customers (DPC)	This enhancement is not deemed suitable for DPC.		
Appendix Reference	TMS29 Enhancement case : IED		

Table 11.9: Summary of our IED enhancement case

11.2.9 | We have made a submission to continue our work to improve water supply system resilience programme under our conditional allowance

In our PR19 Final Determination, Ofwat awarded a £180m (2017/18 prices) conditional allowance to investigate risks to resilience and deliver mitigation of risk to water supplies in North East London. This conditional allowance is subject to a gated governance structure, with each gate requiring Ofwat approval to progress to the next phase. The objective of our post-September 2022 Gate 4 activity was to:

- Refine the scope and delivery profiles of our solutions.
- Improve the robustness of our cost estimates.
- Update the Customer Protection Mechanism with appropriate incentives and safeguards for the delivery of the programme.

We provided our Gate 4 submission to Ofwat on 28 July 2023. Through this, we sought approval for c.£437m across eight schemes from AMP7 to AMP9. These are key projects at Coppermills and Hampton where our resilience assessment identified significant single points of failure. There are single points of failure on both sites, which if they were to fail, would significantly impact on a large number of customers (over 500,000 customers) who would potentially be without a water supply for a long period of time. This significant impact on customers could also undermine our statutory obligation to maintain an efficient and economical system of water supply, and relate licence obligations.

As agreed with Ofwat for Gate 4, we have included our proposed AMP8 expenditure as an enhancement in our PR24 business plan and data tables. The breakdown of the costs is shown below:

	AMP7	AMP8	AMP9	Total
Cost (£m, 2022/23 prices)	20.6	464.9	26.5	512

Table 11.11: Summary of WSSRP spend profile

As part of our Gate 4 submission, we proposed customer protection mechanisms for late or non-delivery of the programme that applies to AMP7, AMP8 and AMP9. We reviewed Ofwat's guidance note IN23/05 on PCDs and consider further customer protection is not required above those set out in our Gate 4 submission proposals.

At the time of our PR24 business plan submission, we have not yet received Ofwat's decision on our Gate 4 submission.

Further detail on our submission is provided in Appendix TMS30: PR24 Water System Supply Resilience Programme.

11.3 | We have submitted three cost adjustment claims

In April, we submitted two cost adjustment claims as part of Ofwat's early submission process. These claims covered additional mains replacement and retail transience (reflecting the costs we incur as a result of people moving homes).

We now provide updates to those two claims and add a third, covering network reinforcement. We do not consider our network reinforcement claim to be a symmetrical adjustment that should have been circulated to other companies for comment.

We provide a summary of each case below. We also comment on the cost adjustment claims from other companies in Appendix TMS17: Response to cost adjustment claims. In addition, we set out our arguments for why we consider Ofwat's materiality threshold needs revision which is Appendix TMS16: Cost adjustment claims overview.

11.3.1 | We have requested an adjustment of £277m to replace distribution mains

We summarise below our mains replacement cost adjustment claim. Further detail on our cost assessment claim is provided in Appendix TMS18: Cost adjustment claim: Mains replacement.

11.3.1.1 | We need to fund our required level of distribution mains replacement

In our vision for 2050, we have set an ambition to halve leakage levels and eliminate significant interruptions to supply. Realising our ambition requires a step-change in the level of mains replacement at PR24 and beyond – an investment requirement that goes well beyond that which we have historically delivered through our base allowances.

In its final PR24 methodology, Ofwat indicated that 'companies can submit cost adjustment claims where they can evidence that a step change in capital maintenance/ renewals is required to maintain asset health'.

We need a cost adjustment to fund this additional activity, since it isn't funded through the cost assessment models. We have consistently overspent our cost allowances for water networks during AMP5, AMP6 and AMP7. We spend significantly more on reactive operating cost activities relative to other companies. We estimate that water companies incur on average just below £4m operating cost per 1,000km length of main between 2011/12 and 2021/22 (2022/23 prices), while our costs reach almost £8m per 1,000km.

Our higher levels of expenditure reflect key features of our network, specifically:

- Our water network is the oldest, with over 80% of the current pipes installed in London pre-dating privatisation.
- Our network is under the most stress, with the highest hydraulic load and volume per length of main.
- Our network has poor asset health, with the highest levels of leakage and mains repairs compared to other companies.

Asset health will continue to deteriorate further unless there is an increased level of replacement activity. Our analysis indicates that 2,800km of distribution mains network is at the end of its useful life at AMP7, and that this is deteriorating at a rate of 750km every five years.

We propose to increase mains replacement activity in AMP8 to reach a total of 500km of mains replaced. This figure has been reduced from the 750km programme set out in our June 2023 submission, following completion of a deliverability assessment.

We will progressively ramp-up the number of km replaced from the start of AMP8, and through to AMP9 to achieve 200km per year and maintain this volume thereafter.

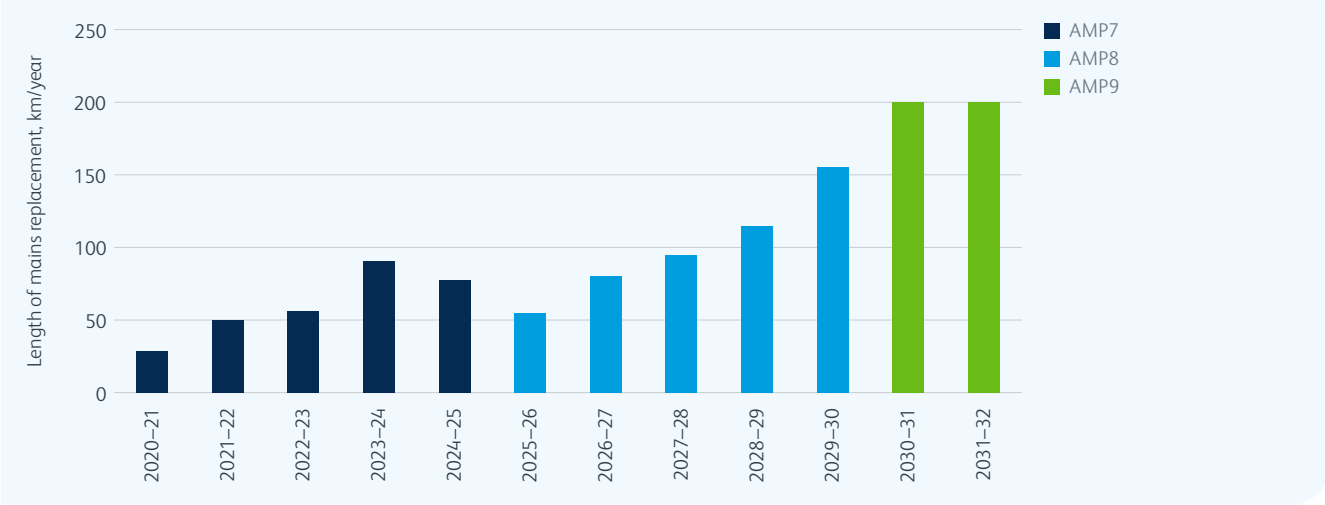


Figure 11.3: Forecasted mains replacement activity in AMP8

11.3.1.1 | We need to fund our required level of distribution mains replacement continued

We think it is right to increase our mains replacement activity steadily from the current levels:

- This revised volume of activity represents a substantial increase from today's baseline which can be realistically delivered in AMP8 – 500km of mains replacement represents a stretching but achievable step towards offsetting our asset deterioration rate in the longer-term, given our current levels of replacement.
- This approach will prepare us to deliver over 1,000km of replacement in AMP9 to meet our Water Resources Management Plan leakage reduction targets and improve asset health in the long term.

As can be seen from Figure 11.3, our base mains replacement activity has varied over time. This is because we have needed to use base funds to undertake higher levels of short-term fixes to address the immediate network challenges at the expense of longer-term replacement activity. Our approach has been to deliver substantial performance improvement through 'find and fix' leakage activity alongside network optimisation techniques such as pressure management. This approach is not sustainable over the long-term – it leaves the network vulnerable to weather events such as freeze-thaw and drought, which will become more frequent as the climate changes.

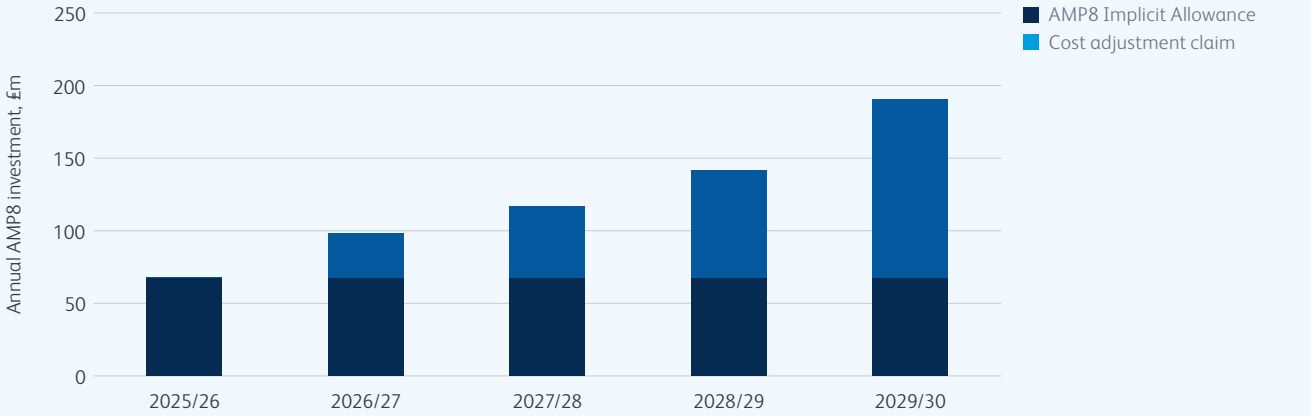


Figure 11.4: Value of mains replacement cost adjustment claim – Annual AMP8 investment

11.3.1.2 | The adjustment required is material – We have estimated it at £277m

To estimate the size of this claim, our starting point was the unit cost rates recently agreed with Ofwat for the London Water Improvement Conditional Allowance at Stage Gate 4. We then assumed we can deliver further efficiencies including as a result of economies of scale.

We have used several techniques to identify the implicit allowance rate for mains replacement. We consider that the renewal we have been able to deliver through our base expenditure is the most appropriate and balanced approach to determining the implicit allowance. The graph below shows the activity split between the implicit allowance and cost adjustment claim. Our historical average funded through base was 0.17% of the total length.

The total funding required for AMP8 stands at £615m, of which we assume the base costs models would provide an implicit allowance of £337m. Therefore, the value of our claim is £277m. This would fund an additional 225km of mains replacement with 275km delivered through our base allowance in AMP8.

11.3.2 | We have requested an adjustment of £83m to fund our high transience costs

11.3.2.1 | We disagree with Ofwat's decision to remove transience costs from retail cost models

Population transience is the propensity for people to migrate between addresses, both within the UK, and internationally. Transience impacts the efficient residential retail costs in two main ways:

- First, our costs increase as we need to process our customers' change of address, for example to open, close or modify their accounts, issue new and final bills and proceed customer contacts necessary to proceed to these changes.
- Second, it increases our exposure to bad debt, because the more often customers relocate, the harder it is to recover debt from them.

At PR19, Ofwat allowed all companies their efficient retail costs related to transience by capturing the effect of transience in its retail cost models. At PR24, Ofwat no longer proposes to include a transience variable in its residential retail model as it states that 'transience does not have a material impact on bad debt costs'[6] based on its assessment of its retail cost models. We disagree with this statement and consider that transience should remain in Ofwat's cost models and make concrete proposals on the best way of doing so. We consider that the exclusion of transience from the retail cost models will result in companies being under-rewarded or over-rewarded relative to their true efficient costs. Given that we have the highest level of transience in the sector, we will be significantly under-funded for our retail costs. Should Ofwat continue with its current approach to cost modelling, we consider our allowed costs should be adjusted so we can recover our efficient retail costs related to transience. We have estimated the adjustment claim at £83 million.

We commissioned Economic Insight to review the impact of transience on our retail costs and provide input to our adjustment claim. We provide a summary of our analysis and rationale below, with references to their main report. Our cost adjustment claim has also been reviewed by Deloitte as part of our assurance process.

11.3.2.2 | We have unusually high levels of population transience, which is outside of management control

We have the highest level of transience across the sector with a total migration rate of over 18%, which is around six percentage points above the average level of transience.[6] This is presented in the figure below.

Our analysis indicates that most companies have a rate of population transience similar to the average. The average total migration rate is 12%, and 11 out of 17 companies have a total migration rate between 10% and 14%. This is in contrast with our total migration rate of over 18%.

Transience is irrefutably outside of management control, although we have still taken steps to reduce the impact of transience on our retail costs. For example, we have:

- Improved our processes to reduce the costs of identifying transient customers.
- Identified opportunities to reduce costs when customers move home.
- Re-engineered our 'move home' customer journey process to reduce the handling time for these interactions.
- Promoted direct debit payments to reduce the time we spend on chasing and managing customers' payments.

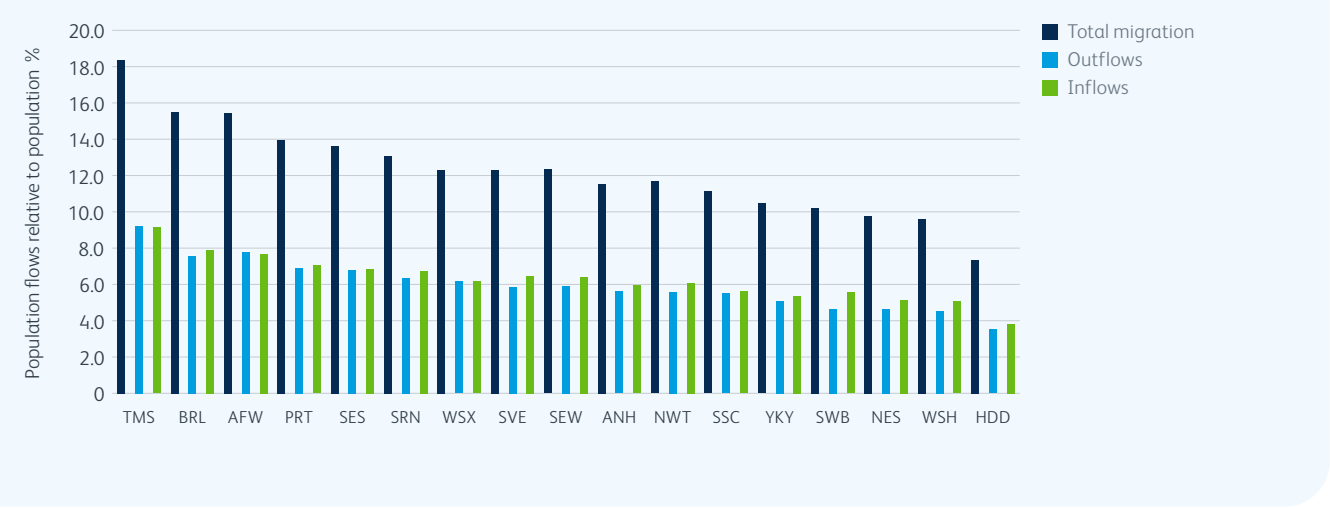


Figure 11.5: Measures of overall transience by water company (2013/14 to 2019/20)

6 In broad terms, we measure transience rate as a total migration rate, which expressed the sum of the total inflows (customers coming into our area) and outflows (customers moving out of our area), as a proportion of the population for our supply area.

11.3.2.2 | We have unusually high levels of population transience, which is outside of management control continued

Transience has a material impact on our costs. Economic Insight's cost benchmarking models, which are based on peer-reviewed models, show a statistically significant impact of transience on efficient retail costs. Our own econometric modelling at industry level indicates that transience is an important driver of retail costs. This conclusion is corroborated in our 'within-Thames' analysis which finds a positive and statistically significant relationship (at the 1% level) between transience and our debt-related (unit) costs.[7]

11.3.2.3 | The adjustment required is material, we have estimated it at £83m

The significance of the impact of transience on our retail costs warrants a cost adjustment. Without the adjustment, our retail cost allowance will be insufficient. Using Ofwat's models, we estimate the impact of excluding transience would result in our total operating costs being set 9% below the efficient level.

The table below sets out the summary of our cost adjustment claim calculations.

	5-year value (£m, 2022/23 prices)
Gross cost adjustment	889
Implicit allowance	806
Cost adjustment claim	83

Table 11.12: Summary of transience cost adjustment claim

We acknowledge that if we receive a higher allowance for transience, some companies will need to receive a lower allowance. We propose that Ofwat should calculate a 'unit cost' of transience, which is the cost per level of transience above/below the industry average per connected household. We recommend accounting for any other companies who submit a transience cost adjustment claim, by using the combined unit cost for all companies with a successful transience claim. This 'unit cost' should then be scaled for each company who did not submit a transience cost adjustment claim, by multiplying by their transience above/below average and number of households.
We propose this approach because it accounts for each company's unique transience rate, and the potential impact on costs.

Further detail on our rationale, calculation and methodology is presented in Appendix TMS19: Cost Adjustment Claim: Transience.

11.3.3 | We have requested an adjustment of £240m to fund higher than average network reinforcement needs

10.3.3.1 | We will face particularly high network reinforcement costs due to high population growth

We monitor and track Local Authority plans, major housing developments and Opportunity Areas across London.[8] By 2030, we are expecting the completion of some large developments that will need to connect to our network for water and wastewater services. If we do not reinforce our network in advance of these developments being completed, existing customers nearby are at risk of experiencing low water pressure and sewer flooding. Lack of reinforcement could also result in increased pollution and storm overflows.

In its PR24 Final Methodology, Ofwat has confirmed that network reinforcement will continue to form part of base expenditure allowances and that Ofwat will consider cost adjustment claims for companies that expect to deliver a higher amount of network reinforcement work than is funded from the base cost models. We have therefore submitted a cost adjustment claim for network reinforcement.

We did not submit this claim to Ofwat alongside our other cost adjustment claims, as our work on finalising our developer services submission for AMP8 had not been completed at that time. However, as we are not proposing any symmetrical adjustments, we do not expect other companies will need to comment on this claim.

In establishing the need for network reinforcement costs above base allowances in AMP8, we have analysed historical industry growth expenditure. Our analysis demonstrates that we have seen the highest growth in properties connecting for water services over the last decade, and the second highest growth in properties connecting for wastewater services. Conversely, the length of our water network and sewerage network has remained relatively static compared to others. This places stress on the network and service to customers.

To avoid passing inefficient costs on to developers, in recent years, we have focused on optimising our network (using pressure management as an example for water, and improved surface water management for wastewater) to ensure that any headroom capacity is utilised. However, the demand for our water per length of main and the load on our sewerage network per length of sewer is now higher than any other company. We therefore consider that an increase in network reinforcement will be required going forward to accommodate new developments.

7 Thames Water's debt related costs for 2021–22 distributed by the postcode-level shares of Thames Water's customer debt write-offs. This is divided by the number of customers in the unit cost models.

8 Opportunity Areas are those parts of London that will see significant development over the lifetime of the London 2021 Plan. This is a defined term under the London Plan 2021: Chapter 2 Spatial Development Patterns | London City Hall.

10.3.3.1 | We will face particularly high network reinforcement costs due to high population growth continued

We have examined carefully Local Authority housing plans, development sites and Opportunity Areas included in the London Plan. Using this information, we follow an accredited hydraulic modelling approach to determine network reinforcement requirements for water and wastewater services,[9] to prevent any detriment in service to customers. We consider a wide range of options, including network reconfiguration and alternative pumping arrangements before committing to network reinforcement costs. We forecast a significant increase in network reinforcement in AMP8.

11.3.3.2 | The adjustment required is material – we have estimated it at £240m

In valuing the cost adjustment claim, we considered the implicit allowance. We used four separate methods[10] and took an average of these to determine the implicit allowance for water and wastewater network reinforcement. We deducted this implicit allowance from our AMP8 forecast. The value of exceeds Ofwat's materiality threshold of 1% of totex for both the water and wastewater price controls. This calculation is summarised in Table 11.13.

£m	Water	Wastewater	Total
AMP8 network reinforcement capex	185.9	123.9	309.8
Implicit allowance	29.1	40.9	70.0
Value of cost adjustment claim	156.8	83.0	239.8

Table 11.13: Summary of water and wastewater network reinforcement cost adjustment claim

If we fail to invest in network reinforcement on time, it will impact upon our D-Mex score as well as potentially incurring ODI penalties for Performance Commitments such as interruptions to supply, internal and external sewer flooding, pollution incidents and storm overflows.

Customers do not pay for network reinforcement for water and wastewater, as all costs are offset by Infrastructure Renewal Charges paid for by developers. Provided that our determination includes the revenue that we expect to receive from developers (as has been included elsewhere in our plan), we consider no additional customer protection (such as a PCD) is needed for this claim.

Further detail on our cost assessment claim is provided in Appendix TMS20: Cost Adjustment Claim: Network Reinforcement.

11.3.4 | We consider Ofwat needs to revise its materiality threshold for cost adjustment claims

In the Final Methodology, Ofwat set out its materiality levels for cost adjustment claims. These levels are the same as applied in PR19. The thresholds are measured against business plan totex levels even though cost adjustment claims relate solely to botex costs.

In PR24, business plans will include enhancement cases which are likely to be significantly greater in value than they were PR19. As a consequence, the effective threshold for cost adjustment claims is higher – a botex issue that was considered material in PR19 may not be material in PR24, which would add to the downward skew to potential returns that, if not corrected, should be adjusted through the cost of capital.

We think it would be appropriate for the thresholds to be stated as percentage of botex or for the threshold to be adjusted downwards to reflect the much higher level of enhancement expenditure in PR24.

9 ISO 9001 – the international Standard for Quality Management.

10 Method 1 uses our best view of the PR24 models (improving on PR19). We removed all network reinforcement capex for all company historical datasets and then compared this with the models with network reinforcement capex included. Method 2 is an extrapolation of a moving average of our historical expenditure on network reinforcement capex based on the last five years. Method 3 takes the historical percentage of network reinforcement across the industry and we apply this to our econometric base allowance of all Botex. Method 4 is the unit price using the media, mean scaling by water mains and properties or sewage load.

11.4 | We are requesting additional funding to cover the costs of managing our accumulated asset health deficit, and to start addressing it

In this section, we explain what we mean by our 'asset health deficit', how this deficit has arisen, and the actions we plan to take to start improving the health of our assets. We also explain how we propose to protect customers in the event that we are unable to undertake the planned work. Further details are provided in Appendix TMS15: Asset Health Deficit.

11.4.1 | The scale of our asset health deficit

We have an ageing infrastructure and the health of our assets has been declining over many decades. This decline is one of the reasons for our performance challenges. We use the term 'asset health deficit' to refer to the value of the investment needed to address asset health issues. While it is normal for asset intensive companies to carry on asset health deficit, ours is substantial and is acting as a drag on our performance, which in turn impacts our financial position through performance penalties. The cost of managing our ageing assets and dealing with failures are increasing.

We have calculated the deficit as the modern equivalent asset replacement value of:

- Assets which pose a risk that is above a defined risk threshold ('risk').
- Assets no longer capable of reliably performing their function ('performance').
- Non-critical assets in very poor or failed condition and beyond their useful life ('condition').

We have conducted detailed analysis of our asset base to determine the size of the asset health deficit. This analysis has been independently reviewed by our third-party assurers. Our asset deficit will take several regulatory periods to address. We estimate that over many years, we would need to invest around £19.3bn to fully repair the health of our assets, as detailed in the table below.

	Type of deficit (£m)			
Asset Group	Risk	Perf	Condition	Total (£m)
Raw water assets			18.59	18.59
WTW	1,694.85		153.43	1,848.28
Network Pumping Stations	153.83		23.54	177.38
Service Reservoirs	214.03		263.52	477.55
Water Operational Technology		87.81		87.81
Trunk Mains and TWRM	6,411.72			6,411.72
Distribution Mains			2,530.45	2,530.45
Customer Meters	1,586.50	358.79		1,945.29
Sub-total Water	**10,060.93**	**446.60**	**2,989.54**	**13,497.08**
Gravity sewers		1,374.17	194.00	1,568.17
Sewage Pumping Stations	110.09		154.44	265.53
Rising mains		651.19		651.19
Waste Operational Technology		136.98		136.98
STW	109.96	1,322.97	796.73	2,229.66
Bioresources		814.52	119.99	934.51
Sub-total Wastewater	**220.05**	**4,299.83**	**1,266.16**	**5,786.03**
TOTAL	**10,280.98**	**4,746.43**	**4,255.70**	**19,283.11**
PERCENTAGE	**53.3%**	**24.6%**	**22.1%**	**100%**

Table 11.14: Summary of Asset Health Deficit by asset cohort and category, 22/23 prices

Note: The numbers in the table do not include central overheads.

Also note: Our Operational Technology asset cohort includes all of the infrastructure needed to monitor and control our assets (such as Programmable Logic Controllers, Remote Terminal Units and Human Machine Interfaces). These all allow our operators to control assets in the field and relaying information back to our control room, so that we can deliver service to customers and manage incidents.

About 70% of our asset health deficit relates to our water business. Over 53% of the asset deficit relates to situations where the assets give rise to unacceptable risks.

11.4.2 | The origin of the asset health deficit

Questions may be asked as to why we have a substantial asset health deficit and about whether customers provided us with funds that we should have used to address it in previous control periods. We strongly believe this is not the case.

Our bill levels have been at or below industry average for 30 years, and yet we have the oldest asset base (see section 7.5). We do not believe Ofwat's benchmarking models adequately reflect our circumstances and consequently consider these models understate the extent of capital maintenance interventions required.

The allowances that are set through base expenditure are intended to provide sufficient funding for a portfolio of assets with a broad spread of asset lives. Ofwat calculates these allowances using historical, sector-wide trends. We believe the models are limited by the data available from the small sample of companies, and they do not take direct account of the condition or age of a company's assets. While Ofwat's approach works for the 'average company', we do not have 'average assets' – our assets tend to be older than the rest of the industry and we believe are in a worse condition.

Many of our assets are no longer capable of reliably performing their function, have already passed the defined risk threshold, or are non-critical assets which are in a very poor condition.

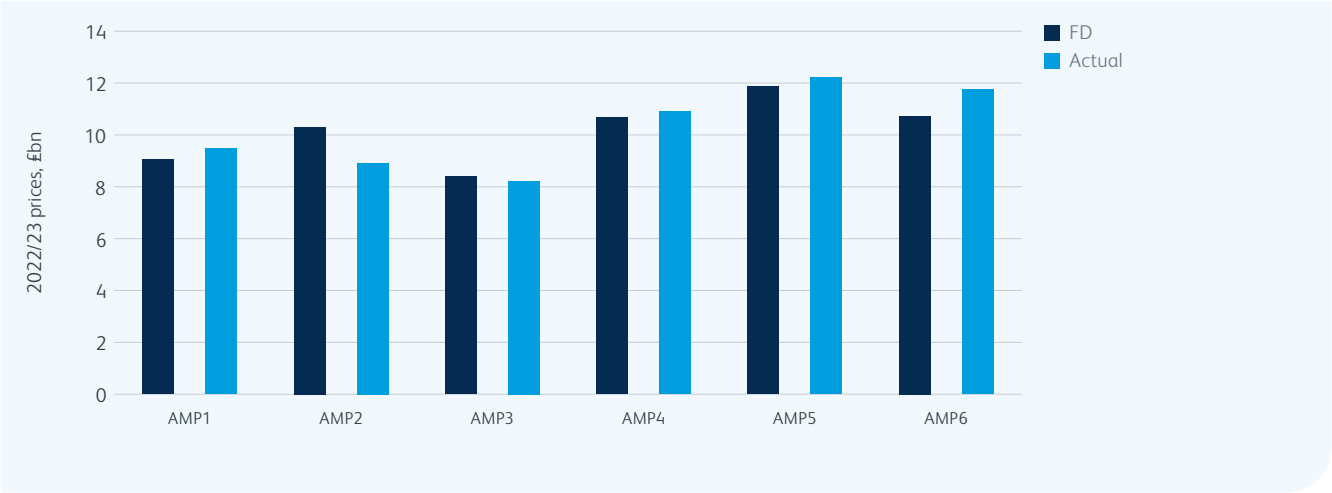


Figure 11.6: Historical allowance and expenditure, AMP1 – AMP6, Final Determination vs Actual

Note: AMP5 and AMP6 figures are inclusive of the Thames Tideway Tunnel.

While it could be argued that levels of replacement and hence asset age is under management control, we consider that this is only partially true. This is because management's objective is to operate an economic and efficient network, which maximises the full expected life of the asset to minimise cost and allocate resources efficiently across the business. Levels of replacement are therefore a function of the condition of the network inherited at privatisation, our operating conditions and costs to replace or refurbish assets.

Two sources of evidence give us further confidence that our views are correct:

- First, we have always invested in line with our regulatory allowance – our historical expenditure has been consistent with the level funded through the regulatory regime.
- Second, there are reasons to believe that our funding needs to be higher than the industry average given our assets tend to be older than the rest of the industry which we believe are in a worse condition.

We say more about this evidence below.

Our historical expenditure has been consistent with our funding

Figure 11.6 compares our expenditure and our allowances since privatisation.

We have underspent in only two AMP periods – AMP2 and AMP3. However, the bulk of that underspending was capex (to a lesser extent in AMP3) and we caught-up the shortfall in subsequent AMP periods.

11.4.2 | The origin of the asset health deficit continued

During AMP6, we overspent our allowance across both wholesale price controls. This overspend was significantly higher in water where the need is largest. We are also on track to overspend our allowances in AMP7. The table below illustrates this point.

Business	AMP6	AMP7 (forecast)
Water		
Allowance	£3,725	£4,504
Spend	£4,420	£5,260
Difference	18.7%	16.8%
Wastewater		
Allowance	£4,205	£4,500
Spend	£4,376	£4,683
Difference	4.1%	4.1%

Table 11.15: Comparison of allowances and spend (2017/18 prices, £m)

A similar picture emerges when we compare our expenditure on capital maintenance with the level of expenditure in other companies. Since PR14, explicit allowances for specific activities within Botex+ (including capital maintenance) have not been published by Ofwat. However, we are able to compare our spend on capital maintenance as a share of total botex expenditure, compared to other companies. Since 2012, across water and wastewater, we have spent a larger share of expenditure on capital maintenance than the industry average, particularly in water.

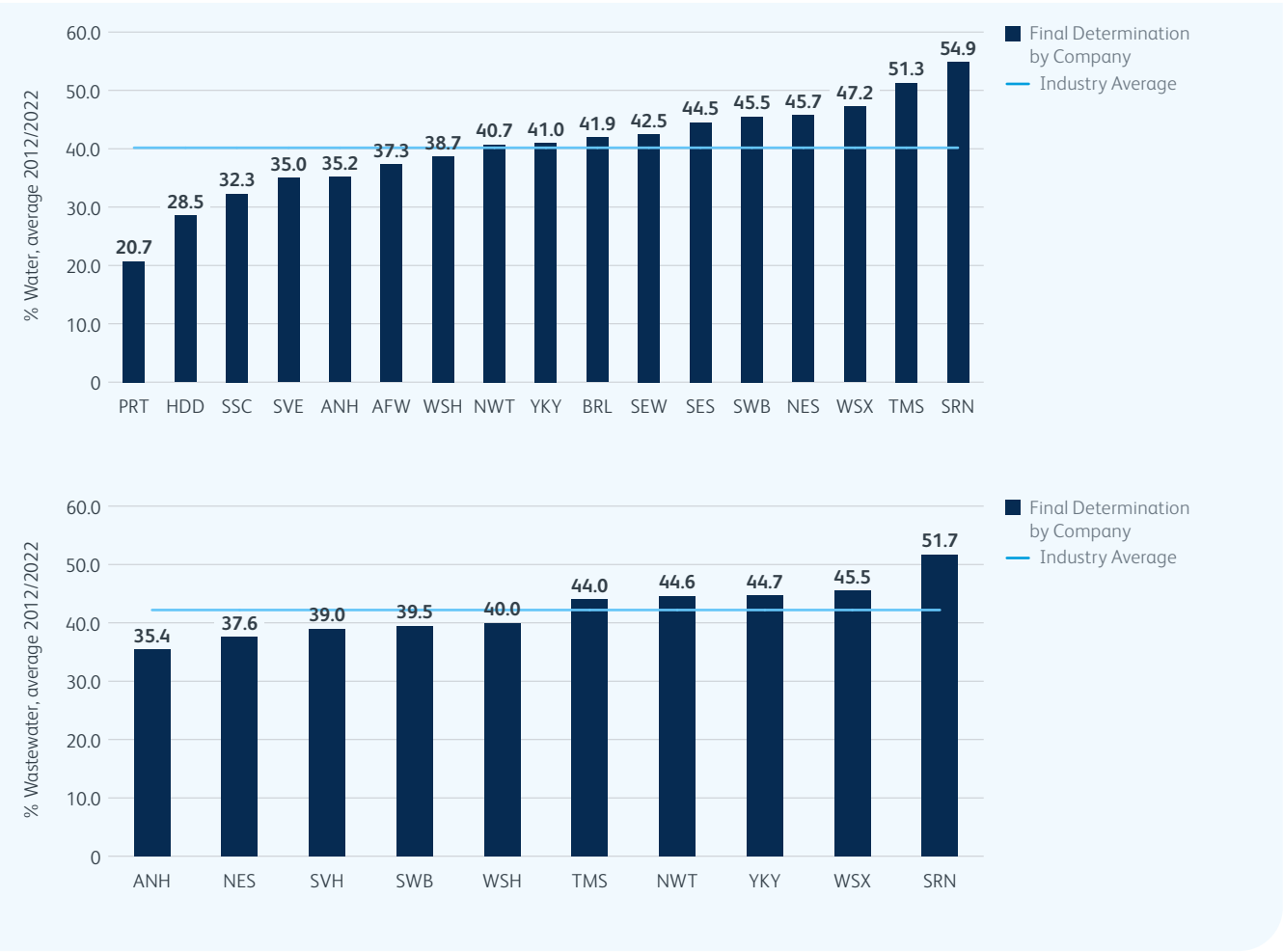


Figure 11.7: Industry proportion Capital Maintenance in Botex+ (2017/18 prices)

Source: Economic Regulation, Thames Water

11.4.2 | The origin of the asset health deficit continued

Moreover, our share of spending on capital maintenance has been consistent during the last ten years, as shown in Figure 11.8.

Figure 11.8: Thames Water – Proportion (%) of Capital Maintenance in Botex (2017/18 prices)

Source: Economic Regulation, Thames Water

11.4.2 | The origin of the asset health deficit continued

Our funding needs to be higher than the industry average

At privatisation, we took on responsibility for some of the oldest assets in the industry. Figures 11.9 and 11.10 illustrate this point.

The figure below compares the weighted age of our network assets to those of other companies. It demonstrates beyond question that our assets are significantly older than that of any other company.

We are also the only company in the industry where almost 40% of our assets predate the 1920s, as illustrated by Figure 11.9.

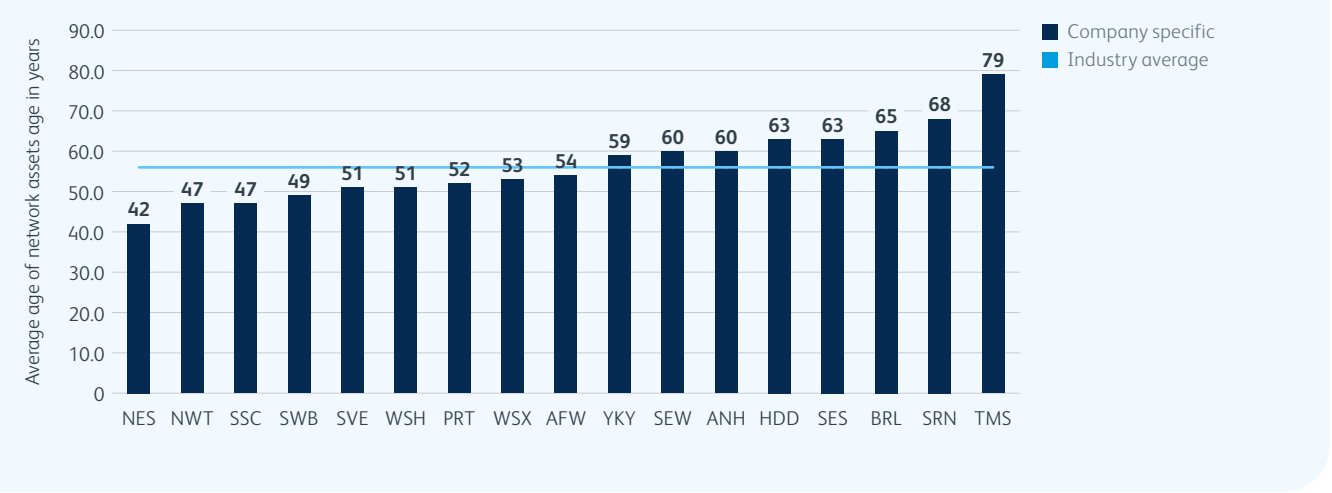


Figure 11.9: Weighted age of network assets, Average age of network assets in years

Source: Economic Regulation, Thames Water

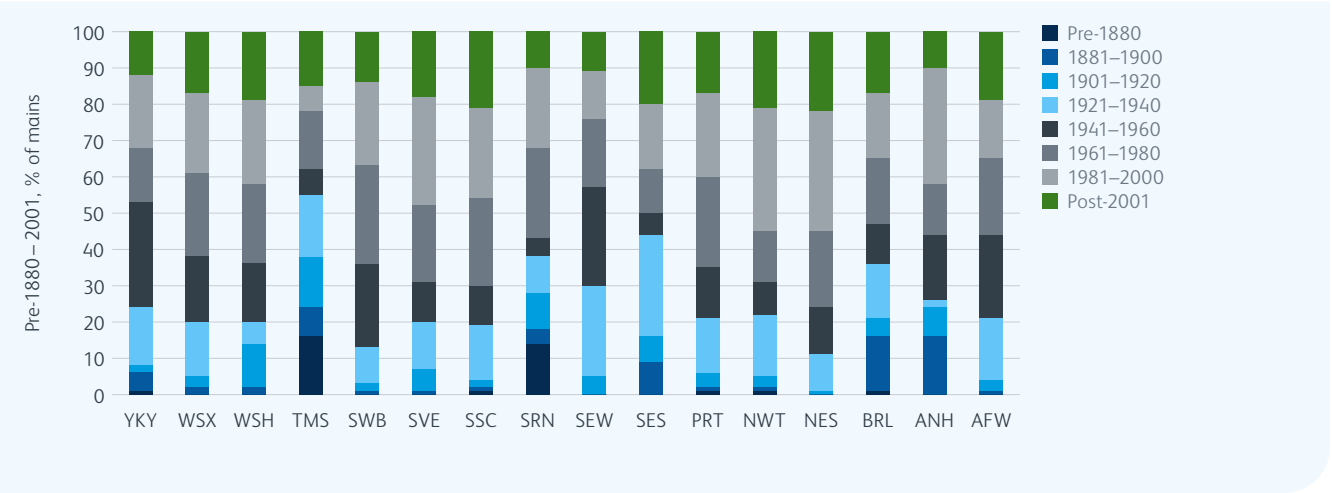


Figure 11.10: Mains laid or structurally refurbished by age, company comparison Pre-1880–- 2001, % of mains

Source: Economic Regulation

11.4.3 We have a plan to start to address asset health issues

We estimate that we need to spend around £4.7bn (2022/23 prices) in AMP8 to maintain the level of asset health.

With the increased focus on performance, the environment and resilience and with the challenges of climate change and ageing assets, now is the time to improve our asset health. We need to deliver a programme of interventions that have been identified through 'bottom-up' analysis. We summarise that programme in the table below and further details can be found in Appendix TMS15: Asset Health Deficit to address our asset deficit over the long-term. In Table 11.16, we have adjusted our AMP8 cost by a measure of the implicit allowance which is already built into Ofwat's economic models. We have estimated the implicit allowance by using our average expenditure over the last five years.

Asset cohort	Description of the intervention	AMP8 cost	Average last 5 years x5 (£m)	Asset deficit improvement (£m)	Current Asset Health Deficit	Asset Health Deficit end AMP8
Service reservoirs	Several service reservoirs have reached the end of their life and require replacement.	220	28	192	478	286
Water Operational technology*	Our operational technology cohort is ageing and needs to be replaced.	94	31	73	88	14
Waste Operational technology*	Our operational technology cohort is ageing and needs to be replaced.	133	12	129	137	8
Customer Meters	We need to replace the old analogue meters with digital ones to allow us to start monitoring customer usage in near real-time	169	43	118	1,945	1,827
Gravity Sewers (including Critical assets)	Many of our wastewater assets, particularly across London present a risk to public safety were they to fail. We need to address deficit in our critical assets.	638	438	189	1,568	1,379
Rising Mains	We need to replace sections or entire mains where the likelihood and consequence of a pollution is high or very high and there is previous history.	204	24	179	651	472
Wastewater Asset Assurance Programme	We have a number of sites (157) that we have shared with our regulators that no longer treat the required 'flow to full treatment' before storm discharges occur. This is unacceptable and we will invest in these sites to reduce the risk of this non-compliance.	677	n/a	677	2,128	1,451
Find & Fix	Our network has poor asset health, with the highest levels of leakage and mains repairs compared to other companies. Consequentially, we spend significantly more on reactive operating cost activities to maintain leakage levels relative to other companies.	348	n/a	n/a	n/a	n/a
Total				**1,557**	**6,995**	**5,437**

Table 11.16: Summary of proposed interventions to reduce asset deficit (2022/23 prices, £m)

11.4.3 We have a plan to start to address asset health issues continued

Overall, these interventions will cost £1.9bn in AMP8 (£1.6bn in 2017/18 prices). This is in addition to the £4.7bn we will spend as part of our regulatory allowance to hold our asset deficit constant over the period.

We are asking for funding to be treated outside of our botex and enhancement expenditure because our plan to address our asset health deficit goes beyond what any company has done historically, and we therefore believe would not be accurately captured in Ofwat's econometric models.

11.4.4 | Customer protection

We recognise that customers will need to be protected against circumstances where we are provided with additional funding to address our asset deficit, but then do not invest in the expected manner. We would welcome engagement with Ofwat on suitable measures.

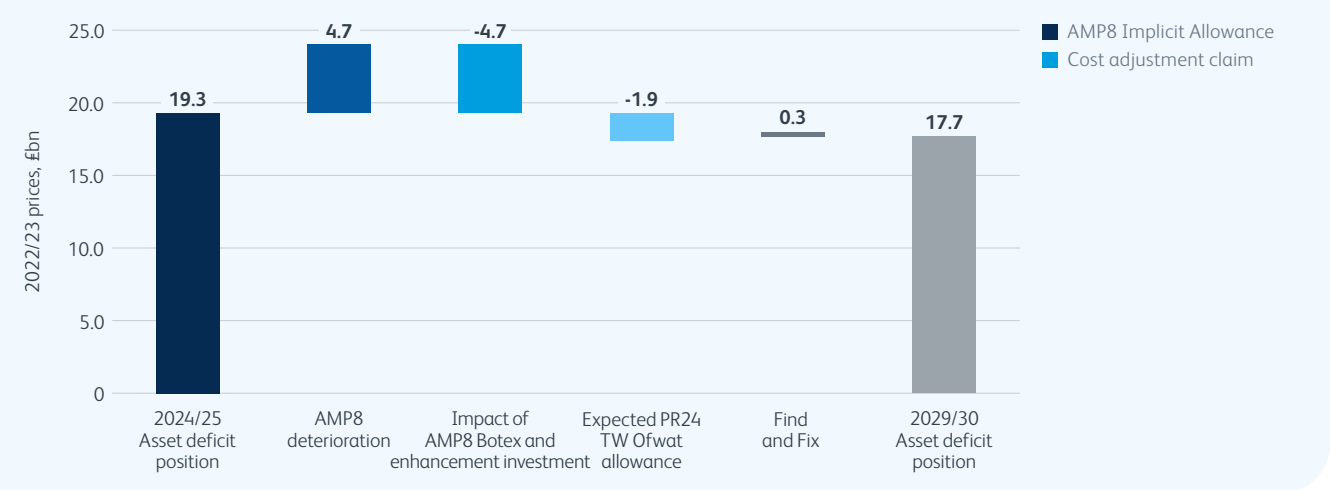


Figure 11.11: Impact of AMP8 on our asset health deficit

11.5 | We have scrutinised the efficiency of our plan

When Ofwat considers the efficiency of a business, it does so from two perspectives: how the costs of the business compares to benchmark costs ('cost efficiency') and the extent to which the business delivers the required level of service ('performance efficiency'). A business is only considered to be efficient if it simultaneously delivers on costs and performance.

Thames Water is like no other company in the water sector. All companies face pressures due to climate change, population growth, technological developments, changing customer expectations and statutory requirements. But we face a number of challenges which are specific to our circumstances. These challenges mean we will struggle to achieve the levels of cost and performance efficiency Ofwat expect from other companies.

Many of our specific challenges arise from the fact that we have the oldest network in the country with a relatively poor asset condition, and that our business operating area diverges from that of a typical company. We explained our specific circumstances in section 7.5. In summary:

- Our customer base and the properties we serve have unique characteristics:
  - We have the highest population density of all companies in England and Wales.
  - On average, London has the highest levels of poverty seen in the UK.
  - Our patch has a high proportion of occupied basements, which increases the risk of flooding.
- We experience high level of population transience (customers moving between addresses).
- Our infrastructure is different from the average water company. In addition to having the oldest assets:
  - We maintain and operate some of the largest assets, not only in the UK, but in Europe.
  - We have high pumping costs because our banked reservoirs are above ground.
- Our business operating area has a geology and density which create specific risks and challenges:
  - London Clay (which is susceptible to shrink-swell behaviour and is corrosive to our iron-based mains) is the predominant geology in our London operating region.
  - London has a high proportion of non-permeable surfaces, thereby increasing the risk of flooding.
  - Traffic congestion in London makes it difficult to access our assets.
  - We have to manoeuvre around a unique concentration of other critical infrastructure (railways, stations, the London underground and gas mains). This means it can often be difficult and expensive to access our assets.

These specific challenges mean that it is difficult to make appropriate comparisons between our performance and cost efficiency, and those of the average water company. We do not believe we can achieve the same levels of 'performance efficiency' for the same costs as another company.

As a consequence, any econometric benchmarking that uses historical sector-wide trends to calculate allowances cannot reflect our specific circumstances

Nonetheless, we have challenged the efficiency of our plan using Ofwat's econometric benchmarking. When we did this, we excluded the additional costs we face as a result of our asset deficit and the costs of our enhancement expenditure. Whilst the analysis highlights positive results, they should be interpreted with caution for all of the reasons explained above.

11.5.1 | We have used Ofwat's benchmarking models

To benchmark our historical efficiency, we have used a selection of the proposed PR24 econometric models, presented in Ofwat's econometric consultation published in April 2023. Ofwat has published 60 models covering water, wastewater, bioresources and retail. In PR19 Ofwat used a total of 20 models and we assume it will not use all 60 potential models in PR24.

As set out in our response to the cost modelling consultation, we consider that a subset of the models are objectively stronger and more robust than others. We have used this subset of the models, some of which we have adjusted in line with our consultation response, which we describe as 'improved models'.

We have triangulated the output from the econometric models within each area of wholesale and retail in a similar way as Ofwat did at PR19. This triangulation consists in applying weights to the econometric models, so an average or single efficiency is produced for water, wastewater, and retail.

To assess efficient costs, we have used the same catch-up efficiency frontier using the 4th and 3rd best ranked companies in water and wastewater network plus, respectively. In the case of bioresources and retail we use the 4th best ranked company. In our analysis, we used these companies to define the efficiency frontier which is the starting point for our consideration of efficient costs.

Our AMP8 plan includes a significant step-up in capital maintenance as explained in section 11.4, which is not reflected in the botex modelling and is therefore excluded from the efficiency analysis. Our analysis also does not address enhancement cost efficiency which is addressed in Appendix TMS33: Capital cost, efficiency and assurance, and in the individual enhancement case documents.

11.5.2 | At face value, we appear to be low cost

In the water and wastewater wholesale price controls, our costs are in the upper quartile of efficient companies, based on historical data. We have found that:

- We rank 4th for wholesale water.
- We are the frontier company for wastewater.
- We rank 4th for bioresources unit cost, and 3rd for bioresources total costs.
- We rank 13th in retail, and this is despite significant reductions in retail costs.

Our comparison of historical costs reflect both changes in benchmarking models for PR24 and improvements in underlying performance. Figures 11.12 and 11.13 below show how the assessment of our costs changes depending on the way benchmarking is carried out. We show three approaches:

- 2015–2019 (PR19-FD) shows, in the dark blue column, the analysis based on the PR19 suite of models using data for 2015–2019 and, in the light blue column, the analysis using the same data but using our 'improved' model suite.
- 2016–2020 (CMA) refers to the models used by the Competition and Markets Authority during the appeal of PR19 final determinations by four water companies (in the dark blue column) and uses the same data and our 'improved' model suite (in the light blue column).
- 2018–2022 (CA). The dark blue column refers to the CMA models using the latest cost assessment data published by Ofwat covering 2018–2022 and the light blue column uses the same data with our proposed suite of 'improved' Ofwat models that we consider are the most appropriate to use.

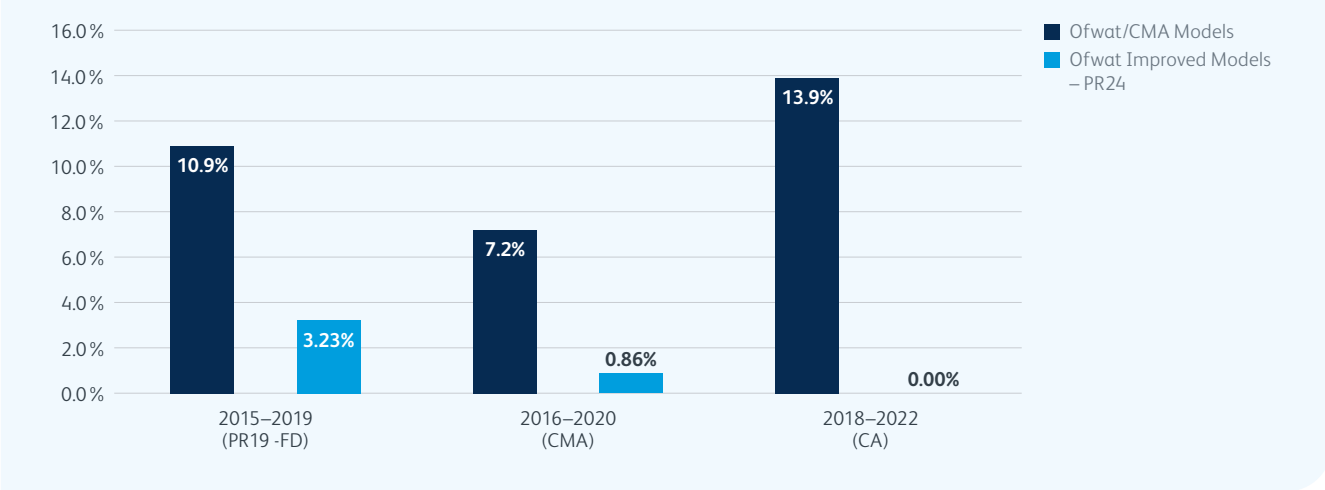


Figure 11.12: Alternative assessments of our water botex efficiency gap

Source: Economic Regulation, Thames Water

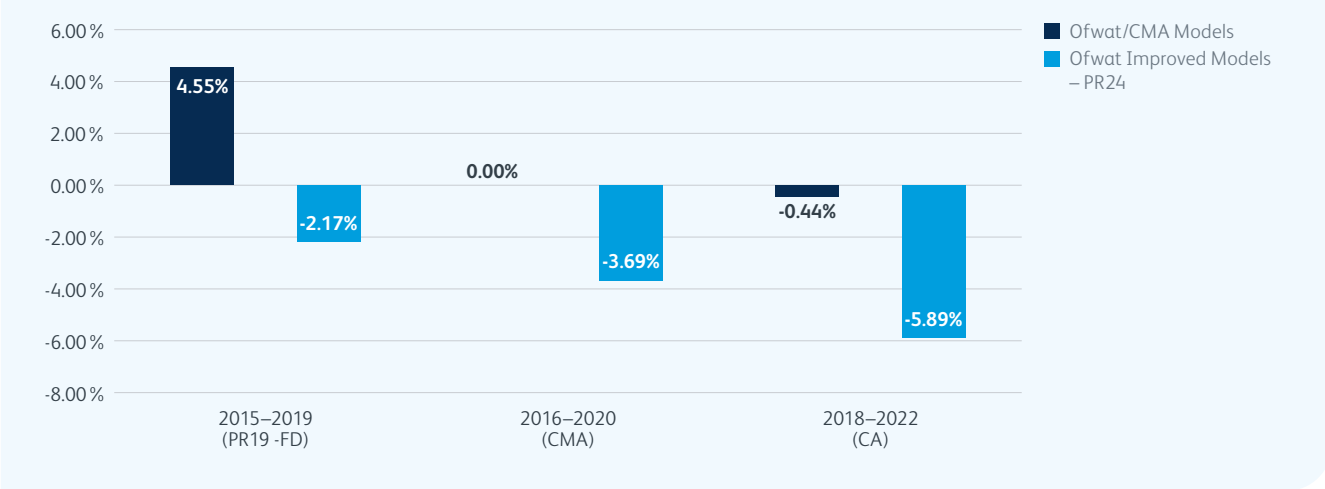


Figure 11.13: Alternative assessments of our wastewater botex efficiency gap

Source: Economic Regulation, Thames Water

11.5.2 | At face value, we appear to be low cost continued

From the charts above, it can be seen that using the Improved Models, our cost gap in wholesale water from the upper quartile position would have been 3% at the time of PR19 using 2015–19 data, 1% using the 2016–20 data and now 0% using 2018–22 data.

As with the equivalent wastewater chart, our costs compare favourably under the improved models.

In retail, we have found that we rank 13th in terms of cost efficiency, and this is despite significant reductions in retail costs over AMP8. Our retail costs have remained broadly level apart from the increase in 2019–2021 which was due to the impact of COVID on bad debts and our customer service costs. This increase in costs in 2019/20 can also be seen in the total industry costs. Customer service costs were also higher than average in 2020 and 2021 as we were in the final stages of operationalising and optimising our new billing system.

Finally, we note that we have consistently overspent our allowance. During AMP6, we overspent our allowance for both water and wastewater across the wholesale price controls. This overspend was significantly higher in water where the need is largest. We are also on track to overspend by £1.7bn on our allowances in AMP7. We believe that if the 'improved models' had been used to determine the AMP7 cost allowances, our base expenditure would have been broadly in line with those adjusted allowance.

11.5.3 | AMP8 efficiency

Water and wastewater

In order to test our AMP8 costs for efficiency we have extended our analysis using the improved models, together with projections of cost drivers. We have used Ofwat's PR19 approach for estimating future values of these cost drivers. We did this to arrive at the best estimates of what Ofwat was likely to determine. However, this approach is not the same as the approach we have used to complete the data tables. The values will not therefore be the same as in our business plan.

In our assessment of efficient costs we have also included our wholesale cost adjustment claims as set out in Appendix TMS16: Cost Adjustment Claims Overview. However, we have not made a separate correction for our transience cost adjustment claim as our Improved PR24 suite of models already includes transience as a cost driver and it would be double-counting to include both.

We have incorporated a frontier shift of 0.45% p.a. and an energy uplift and real price effect (RPE) as set out in our TMS42: Macroeconomic environment, real price effects and other cost modelling issues.

In addition, we have removed the step up in capital maintenance expenditure as set out in our TMS15: Asset Deficit and the unmodelled costs as these are outside the econometric models.

The table below compares our AMP8 plan to the expected allowances.

£m 2022–23 prices	Business Plan	Modelled Botex+	% difference
Water Resources	311	381	-18.4%
Water Network+	4,392	4,377	0.3%
Wastewater Network+	4,101	4,051	1.2%
Bioresources	908	933	-2.7%
Retail	1,007	1,061	-5.1%
Total	10,718	10,804	-0.8%

Table 11.17: Comparison of our AMP8 plan to the expected base allowance

Our business plan costs are on a consistent basis with the modelled botex costs. This suggests that we are indeed cost efficient, albeit not 'performance efficient'.

11.5.3 | AMP8 efficiency continued

Retail

We are aware that Ofwat currently do not intend to index the retail control and may assume that the 2022/23 costs are unaffected by inflation, or that any inflation can be offset via efficiency improvements. However, our business plan forecast in 2022/23 prices already includes both company specific efficiency and frontier shift efficiency. Even though our costs are falling over AMP8, without indexation of the price control, we would be unlikely to recover our costs. We face a similar situation in AMP7 as companies are also currently not able to recover their costs within the allowances provided for AMP7, due to the current levels of inflation.

We consider that the retail price should be indexed to inflation in the same way as the wholesale controls, to avoid an asymmetrical downside risk that will otherwise need to be compensated through a higher cost of capital.

£m Retail costs	2025/26	2026/27	2027/28	2028/29	2029/30	AMP8
2022/23 prices	227	217	199	187	177	1,007
Outturn prices	252	245	230	221	213	1,161

Table 11.18: Comparison of our retail costs and outturn prices in AMP8

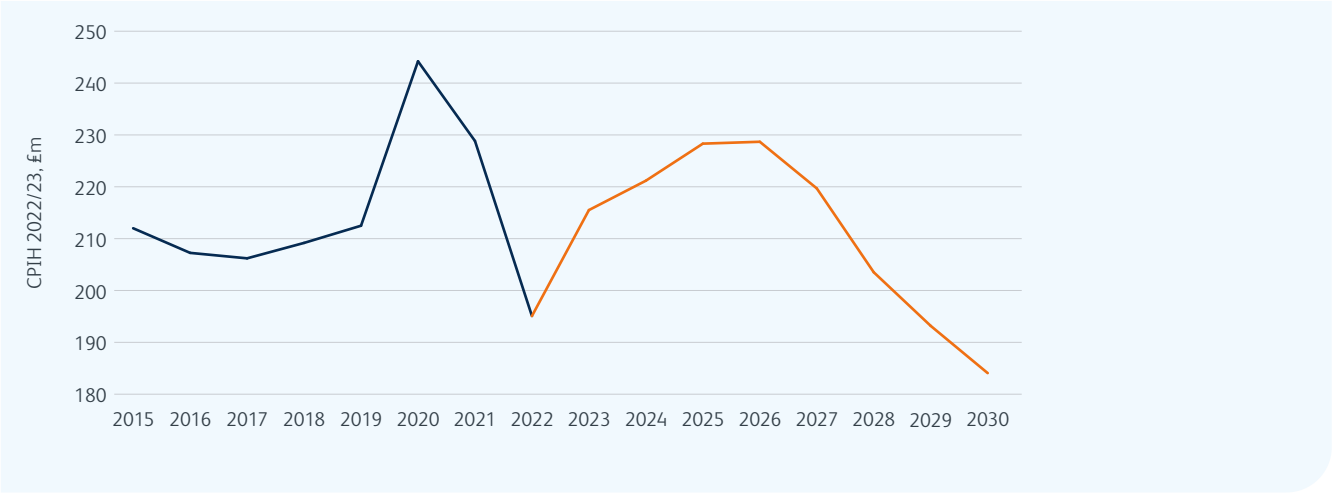


Figure 11.14: Alternative assessments of our water botex

Source: Economic Regulation, Thames Water

11.5.4 Innovation will help us deliver greater efficiency

Innovation is helping us today to deliver in an efficient way, and will continue to do so.

We highlight some of our work on innovation below.

11.5.4.1 | Customer-side leakage

Situation: Reflecting an increased focus on customer-side leakage, we wanted to be able to identify and differentiate between leakage and wastage in a customer property and we wanted to do so in in a way that involved minimal interventions. Our Innovation team looked to exploit the static pressure reading in a customer's system to determine the (vertical) location of water loss.

Solution: The Static Pressure Leakage Indication Tool (SPLIT) was developed and implemented early in AMP7 by us. It can accurately indicate where a leak is in a property, without requiring access to the property.

Benefits: The SPLIT enables us to identify customer-side leakage with minimal customer interactions. On an enduring basis, this minimises the impact on the customer, but also has the benefit (as was the case during lockdown due to COVID) of protecting technicians and customers from unnecessary contacts. The SPLIT supported our customers by helping them to reduce water usage, and would also avoid repairs where no leakage reduction could be identified through poorly targeted interventions. Added to this, the operations team also saw improvements to equivalent service pipe burst (ESPB), which is a measure of water loss.

11.5.4.2 | Smart waste – sewer level monitors

Situation: Pollutions or flooding originating from the waste network often start with a blockage. Of these blockages, c90% are on our 100mm/150mm pipework. Our smart waste initiative sought to provide early warning of potential blockages. Until recently, our attempts to do this were constrained by a shortage of sewer level monitors that could reliably work in small diameter sewers.

Solution: Accelerated testing of sewer level monitors using bespoke equipment at Arborfield sewage treatment works.

Benefits: We were able to select the most suitable technological solutions and install 264 sewer level monitors in a Smart Waste Field Trial in Henley which helped to direct proactive blockage clearance using an in house developed system – the Sewage Level Alert Monitor (SLAM) tool. This tool provides us with previously unavailable levels of insight and foresight for blockages and allows us to respond in a more timely manner rather than, for example, being reliant upon customer or community reporting.

11.5.4.3 | Slow sand skimmer

Situation: We operate slow sand filters in the Water Treatment Process. In London, we have 102 filters on four sites which treat c2,000Ml/d. When in use, the filter beds have an outage time of c20% to account for drain down, cleaning (skimming when dry) and recovery. Reducing down-time would increase output and potentially avoid expensive capital schemes required to increase production.

Solution: We have been working to develop a skimmer that will operate without having to drain the bed. This has led to the development of the underwater skimmer. Trial results from the skimmer are due in 2024.

Benefits: We hope that the results of the trial (which are due in 2024) will validate our estimates that the underwater skimmer will increase treatment capacity of slow sand filters to a maximum annual benefit of 90Ml/d by reducing the outage on 81 filters while also maintaining the microbiological integrity of the filter bed.

11.5.4.4 | Transforming the energy balance of wastewater treatment

Situation: Currently, medium to large sewage works use a technique that involves bubbling air through wastewater to support the growth of bacteria that cleans the water so that it's safe to discharge to the environment. While this is a technique that's been applied globally for over 100 years: it takes a lot of energy to pump air through the wastewater (c55% of our energy use is attributed to this process), and the bacteria, good as they are, emit nitrous oxide, a greenhouse gas which is 300 times worse than carbon dioxide. Indeed, activated sludge makes up c30–40% of our operational carbon emissions. We have been exploring ways to upgrade this process to help us achieve our net zero carbon aims.

Solution: This c£7m project will assess anaerobic bacterial treatment processes for mainstream sewage flows.

Benefits: The project will assess what proportion of the following benefits are achievable when implementing anaerobic treatment:

- Energy consumption reduction of up to 80%.
- Greenhouse gas emissions (eCO_2) reduction of up to 98%.

11.5.4 Innovation will help us deliver greater efficiency continued

11.5.4.5 | Incentivisation for Community Centric Rainwater Management

Situation: It is a well understood fact that Sustainable Drainage Systems will play a significant role in rainwater management given increasing pressures such as population growth, climate change and urbanisation.

Solution: We have partnered with Anglian Water, South West Water, Indepen, Isle Utilities and Our Rainwater to encourage communities to adopt rainwater capture tools and solutions. The project will test and measure how communities can be incentivised to take up these measures, explore installation opportunities and challenges, and will provide a framework for building participation for future solutions.

Benefits: The project will inform us and our partners and the wider industry about methods to prevent rainwater from entering the sewer network using a range of innovative frameworks to develop a smart and community-led resilience strategy.

11.6 | We will continue to use markets to deliver better services to customers at lower costs

We use markets to help us deliver what our customers need. We summarise our approach below and, in particular, the way we propose to use Ofwat's Director Procurement for Customers framework.

11.6.1 | We continually review our approach to working with suppliers

We regularly turn to the market to secure materials and services and it is a priority to ensure that we secure value for money through these agreements.

In the last two years, we have fundamentally adapted our procurement model to ensure that we continue to deliver value over the lifetime of agreements and to build stronger, and more collaborative relationships with suppliers.

Our Bid Assessment Framework sets out the policies and processes that we apply when assessing bids from third parties. This gives confidence to third parties that their bids will be treated fairly and equivalently when compared to our in-house solutions.

Our procurement team now delivers a 'category' model which involves closer engagement with internal stakeholders and a granular knowledge of the external supply chain. This has led to a team which is now better placed to identify step change opportunities in cost, service and delivery. Additionally, we have built in a new supplier management model to ensure better alignment with our key supply chain partners, a more robust approach for performance delivery and a mechanism for which suppliers can bring new ideas and innovation to the table and which can be quickly executed by the business.

These changes have meant a refocus of some of our major commercial relationships. We have now exited the eight$_2$O arrangements, building an intelligent client model internally and creating a framework of capital delivery contractors which have been successfully deployed in AMP7. We have made the decision to extend these agreements into AMP8. We believe this brings benefits. It allows us to secure capacity in a challenging marketplace for the next AMP, provides the ability to ramp up activity quickly as the new AMP starts and creates the opportunity to extend a series of successful commercial relationships that have delivered strongly.

We have also exited our Infrastructure Alliance agreement which spanned our Water Networks and Developer Services activity. We have taken the decision to insource non-complex repair and maintenance activity while building new commercial relationships for larger and more complex work. We believe these refreshed arrangements provide better accountability and delivery.

More broadly, we have reviewed a significant number of other large-scale relationships across the organisation to make sure they are fit for the future. In 2022, we appointed a Head of Supplier Management who is now driving the change programme through the organisation and creating a consistent 'Thames Way' to managing our major relationships. Performance is now reported in a consistent approach and monthly reviews held internally for all our top tier suppliers. This brings both issues and good practice to the surface quickly and identifies issues which may be common across the business as a whole.

Our focus is to continue to deliver this approach over AMP8 and to work closely and collaboratively with our supply chain to drive efficiency, quality and continuous improvement that continues to deliver for our customers.

11.6.2 | We will support the expansion of the New Appointments and Variations (NAVs) and Self-Lay Providers (SLPs) market

Some elements of the provision of connections and changes to network infrastructure are open competitive markets, and can be provided by us, or new appointees (NAVs) or a self-lay provider. SLPs and new appointees may provide faster and cheaper services.

The NAV and SLP market have been growing nationally and this success has been mirrored in our area. As a result, the connections for 30% of properties in our area in 2022/23 were made by SLPs or NAVs rather than by us, and over 70% of new water mains were laid by SLPs – one of the highest levels in the sector.

We support the use of competition, and we want to support the development of the market. In AMP8, we have set a target of achieving a NAV and SLP market penetration to 50%.

We intend to support this increase by helping Developers and Infrastructure Providers understand their choices, making it easier for customers to compare alternatives while maintaining our compliance with competition regulation. We also plan to further improve our service provision to NAVs and SLPs by removing barriers to compete. We will learn for other wholesalers and identify opportunities to promote choice and make it easier for SLPs and NAVs to compete throughout AMP8. Further detail on our strategy is presented in Appendix TMS12: Developer Services.

11.6.3 | We will continue to develop the bioresources market

Prior to PR19, Ofwat concluded that bioresources activities could help to create increased economic and environmental value and the use of markets could drive a step-change in performance and a significant cost reduction. We believe that a competitive market for bioresources will provide better value for customers and more market choice. We welcome Ofwat's support to facilitate its development.

As part of our vision for 2050, we aspire to be a leader in the bioresources market. We want to be seen as an exemplar organisation in using and developing the market, we want to work with suppliers to adopt new technologies and explore opportunities to collaborate with others in cotreatment.

In AMP7, we have undertaken a number of activities to stimulate interest in the development of the market. Examples include:

- Working with universities and equipment suppliers to find innovative solutions to recover resources such as microplastics.
- Our involvement in the Ofwat Innovation fund project with BMA, Anglian Water, Southern Water, Yorkshire Water and Northumbrian Water to build a model to look at trading and investment opportunities across the eastern region.

We have already started a process to assess further opportunities. Our conclusions are that:

- We are in the upper quartile of companies in terms of operational unit rate, haulage costs and overall botex investment. Therefore, it appears sensible to continue to operate our current asset base at optimal performance.
- We have looked at opportunities to trade sludge with our neighbouring companies. Approximately 4% of the total raw sludge production across the industry has the potential to be traded. This is most likely where there are closer treatment locations outside the incumbent's region.
- We have looked at options to export over the longer term to our neighbours and a small amount would be viable (1% of the sludge that we transport), with the majority of this export opportunity with Southern Water (69%) and Severn Trent (26%). While this would give some marginal benefits around transport cost it relies on those companies having capacity, and following inter-company discussions it doesn't appear viable at the moment.
- There are opportunities to offer sludge treatment solutions around the UK, where there is a lack of local treatment facilities (ie the sludge is hauled significant distances to the current sludge treatment centres (STCs)). These 'corridors of opportunity' could be considered for a new sludge treatment facility accepting sludge from several other companies via a gate fee mechanism (a charge levied upon a given quantity of waste received at a waste processing facility).
- There are potential opportunities for us to offer a treatment service to other organic waste producers due to our expertise in operating digestion facilities.

Further work will be needed to explore the opportunities in more detail and any benefits that may arise.

We are also planning on carrying out a market engagement exercise by the end of AMP7 into the provision of sludge treatment and disposal activities. We will set out what key activities we need to deliver, what additional capacity we require and where these are needed. This market engagement will invite potential suppliers and investors to contribute to the exercise and allows us to better understand market capability and appetite and shape any subsequent tenders. We will use our Bioresources bid assessment framework to assess how we deliver work.

11.6.3 | We will continue to develop the bioresources market continued

Finally, we have explored market opportunities where it is possible the market could deliver activities more efficiently than our in-house service. We have identified five market opportunities:

- **Headroom trades** – short-term renting of spare capacity within our or other companies' existing assets.
- **Joint capacity** – for example, shared investment in new capacity with other water companies.
- **Co-Treatment/co-location with other waste processing**.
- **Project finance** – for example non-regulated funding routes through either our shareholders or a third-party.
- **Outsourcing** – leasing some or all of our STCs to a third-party which would invest in, build and operate all of the bioresources assets in return for a gate fee over the whole life term).

Further detail on our strategy is presented in Appendix TMS10: Bioresources and AMP8 Market strategy.

11.6.4 | We have carefully assessed the potential for using Direct Procurement for Customers

The Direct Procurement for Customers (DPC) framework was introduced by Ofwat in PR19. We welcome this model that brings efficient investment and provides further opportunity to enhance service while being good value for customers. It involves a water or wastewater company competitively tendering for services in relation to the delivery of certain large infrastructure projects. DPC is still nascent, but Ofwat is envisioning a significant expansion in AMP8, with policy of 'DPC by default' for eligible projects above the size threshold.

We have followed the guidance set out in Ofwat's Final Methodology and in subsequent publications when we have assessed candidate projects that might be suitable for DPC. As per 'DPC by default' policy, all projects that have a total lifetime cost of more than £200m have been assessed for their suitability for DPC delivery. Where the project meets the size requirements, Ofwat set out three tests to assess the discreteness of a project, which are summarised below.

Applying Ofwat's criteria, we have completed a review of all of the programmes of work within the potential portfolio of PR24 projects. In doing this, we built on our PR19 submission and our experience in developing Strategic Resources Options. Our assessment has been externally assured by Turner and Townsend to validate the methodology used and the summary of the assurance report can be found in the Appendix TMS38: Direct Procurement for Customers (DPC).

We have concluded that four programmes of work could be suitable for DPC. All four programmes are in our Strategic Resources Options portfolio and are included in our revised draft Water Resources Management Plan (and are being progressed through the Regulators' Alliance for Progressing Infrastructure Development (RAPID) gated process). Details are provided in section 11.2.3. In summary, they are: Beckton water recycling scheme, South East Strategic Reservoir Option (SESRO), Severn to Thames Transfer and Lower River Thames to West London Reservoirs.

Test area	Test question
Programme scalability	For individual projects or assets, is the sum of such system of assets or similar small projects proposed by a water company over one or more successive control periods such that the whole life totex for all those projects or assets combined into a programme is less than £200m? When looking at bundled projects, companies should also take into account minimum criteria for individual assets, which are: • Cost of individual discrete asset in a bundled project should be at least £5m-£10m; and • Average asset life of the project as a whole is not materially less than the average expected life of a CAP agreement (ie 25 years plus construction).
Construction Risk	Is there any significant reason why most construction risks cannot be effectively transferred to the Competitively Assessed Provider (CAP) and/or managed or mitigated through contractual arrangements, or by adapting the project scope for delivery by DPC?
Operations and Maintenance Risk	Is there any significant reason why the maintenance, and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

Table 11.19: Ofwat's PR24 discreteness test criteria

11.6.4 | We have carefully assessed the potential for using Direct Procurement for Customers continued

In addition, we have identified three schemes that either might be suitable for DPC delivery at a later date or would benefit from an alternative competitive delivery route:

- **Sustainable Urban Drainage** – This scheme looks to deliver Sustainable Urban Drainage (SuDS) solutions across Thames Valley and London to help address spills (river health) and flooding. It currently does not meet Ofwat's latest minimum criteria for individual asset value and duration and therefore fails scalability. We still believe it could be delivered via competitively procured route, potentially a future DPC as individual assets become larger.
- **River water quality monitoring** – The Environment Act 2021 requires us to install river water quality monitoring equipment in rivers, access the land to complete the works, collect data and maintain the new asset base. It is a multi-AMP programme, with completion by 2035 and maintenance running beyond. It does not meet Ofwat's minimum criteria for individual asset value and duration and therefore fails scalability. However, we still believe it could be delivered via competitively procured route and will continue to investigate alternatives.
- **Net Zero Carbon, gas to grid** – This is a programme of work to upgrade seven sludge treatment centres to allow for biomethane export to the grid. Heat pumps are planned to be installed on the sites to replace gas boilers. For this programme to be suitable for DPC, all seven sites would need to be approved and, even then, they would still not meet the whole life cost threshold of the scalability test. An existing market is in place for Finance, Design, Build, Operate and Maintain and we plan to engage with the market to assess the appetite for this type of contract and undertake a value for money assessment to determine the most appropriate delivery route.

We have developed a process for assessing new programmes in the future, in line with Ofwat's 'DPC by default' stance and will not wait for this appraisal for the next business plan, should any potential new schemes be identified.

Further detail about the schemes and our assessment of DPC suitability is presented in Appendix TMS38: Direct Procurement for Customers (DPC).

12.0
We are confident we can deliver our plans

In this section

Key messages

- We have identified nine consistent root causes which have impacted our performance.
- We are refocusing our performance improvement efforts. Over a three-year time-frame, we will build a water company that delivers targeted outcomes for customers and the environment in a way that enables the continued support of our investors.
- Overall, we will deliver a record level of investment over AMP7 – £2.7bn in capital delivery. In AMP8, we plan to more than double this.
- We have carefully assessed our internal and external delivery capacity, including an external review from Jacobs and assurance from Deloitte.
- We are spending £500m to enhance our digital capabilities. We will insource our development and operations capabilities and focus on developing digital products which have a direct impact on customers.
- Our Skills Strategy, which we launched in AMP7, is putting us on track to secure the skills we need for our business to be successful, now and in the future.

Delivering what our customers and communities expect will require us to turn our business around and implement robust workforce, supply chain and digital plans. This chapter explains what we aim to do in each of these areas.

12.1 | We understand the root cause of our shortcomings

We have examined what is driving our performance to find the right solutions to recurring problems, prevent new problems from occurring, and to ensure that we consistently deliver customer and environmental outcomes.

We used both bottom-up analysis (for example, drawing on the information contained in Annual Performance Reports, Board and Executive reports) and top-down analysis, supported by interviews with senior management from across the business, to identify root-causes for underperformance.

We have identified nine consistent root causes. The table below explains the root causes and provides an update on our actions to mitigate the impact of each cause.

Root cause	Description and status
Long Term Performance Processes	**We did not have mature processes in place to deliver long-term improvements in performance.** Key recovery programmes are underway (including our leakage recovery plan, pollution incident reduction plan and smart metering rollout). We also have defined plans in place for other critical areas.
Governance & Investment decisions	**We did not have the appropriate governance & control processes to optimise capital investment decisions.** We have introduced key governance boards (including Executive and Board governance overseeing drought plans), with strengthened accountability, ownership and empowerment. We also have clearer routes of escalation to create better oversight of risks.
Tactical Risk Management	**Our approach to monitor, manage and mitigate business critical risks was immature.** We have implemented a wide range of tools to identify high risks which are then managed through targeted interventions. This includes focusing on high risk/high consequence District Metered Areas and trunk mains, management of pressure variation and elimination of sewer interceptors (which capture built up fats, oils and grease). Risk management is also a core pillar of the Public Health Transformation, as part of which we have launched a hazard review process to optimise our understanding of asset risk.
Systems, data and reporting	**We did not always have the right systems and tools in place to drive insight and inform decision-making.** This is the area which shows the greatest level of improvement, with the installation of smart tools to monitor different aspects of the network to proactively identify blockages, leaks and water quality issues before they become incidents. Examples include sewer depth monitors and event duration monitors. Smart tools also provide data to monitor the health of above ground assets. Our smart meter rollout will provide demand management and tailored stakeholder communications or interventions. We've identified that unplanned outages, where data is currently processed manually and refreshed twice a year, requires improvement.

Table 12.1: The root causes of our performance

12.1 | We understand the root cause of our shortcomings continued

Root cause	Description and status
People and Skills	**Not having the right people, with the right skills, in the right role.** We have made a significant investment in upskilling and raising professional competencies including: customer service agents and front-line operational staff upskilling and as part of the Public Health Transformation (through which we have focused on the development of a competency framework and on Licence to Operate compliance for technicians and controllers). We also have specialist teams to support vulnerable customers, with all employees required to take mandatory vulnerability training. We have increased coverage to respond to sewer blockages and supply interruptions.
Culture	**Unclear ownership & accountability frustrates processes which resulted in siloed working. Our company values were not well embedded across the organisation.** We have reviewed our culture around compliance breaches to redevelop accountabilities and prioritise our response. A 'customer service first' culture is being driven right across the company underpinned by corporate values. We have clarified accountabilities to foster a coordinated response to leakage and pollutions. A new process for customer education has been launched, including a focus to tackle blockages caused by fat, oil and grease.
Asset health deficit	**Our aged network has many assets still in service way beyond their originally designed life, resulting in reactive 'events', higher repair/maintenance costs and suboptimal performance.** We have identified this as an area needing significant improvement. Further detail on our strategy to address asset deficit is presented in Section 11.4: We are requesting additional funding to cover the cost of our asset health deficit, and to start addressing it.
Resilience	**Our aged network lacks resilience, such as dual feeds or adequate cross connections, which results in a suboptimal response to operational or climate-related events.** As with our asset health deficit, we remain vulnerable to high consequence, low probability events. We have identified known single points of failure and defined multi-AMP investment to mitigate risks.
External	**We are exposed to external factors such as climate, economy, etc that can negatively impact our performance or our ability to recover from events.** Increasing extreme weather events are exacerbating asset and resilience vulnerabilities. We have begun to forecast potential impacts through our Long-term Delivery Strategy, Drainage and Wastewater Management Plan and Water Resources Management Plan. However we are facing unique challenges in areas such as London.

Table 12.1: The root causes of our performance (continued)

12.2 | We are refocusing our turnaround

In 2018, we conducted a radical assessment of our company strategy, our delivery plans and our internal governance. We focussed on learning from our operational issues; understanding our customers' expectations; and how future challenges may affect our ability to deliver for our customers.

In March 2021, we embarked on an eight-year plan to turnaround our business.

Over the last 12 months, we have restructured the business in a way that has brought us closer to customers. We have moved to a regional operating model with two separate operational teams (covering London and the Thames Valley and Home Counties). We onshored all customer-facing telephone teams back to our region creating 200 local jobs, and insourced the repair and maintenance of our water network. Our insourcing focus has also included our sludge tanker drivers (which has led to improved compliance at sewage treatment works) and clean water tanker drivers (allowing us to respond to supply interruptions more quickly). We have also moved to a new intelligent client and capital delivery model. Under this model, we will use our own resources to undertake early engineering of project solutions, programme and project management and construction assurance. We are capable of specifying our requirements to external participants and managing the delivery of outcomes. All of these changes bring us closer to customers and will help deliver improvements in our performance.

12.2 | We are refocusing our turnaround continued

At the same time, we have continued our record levels of investment, expending £2.7bn in capital delivery in AMP7. Through this expenditure, improvements and upgrades have been delivered at sites across our region, including Beckton, Coppermills, Kintbury and Speen (in London, Buckinghamshire and Oxfordshire).

However, despite making significant improvements, driven largely by a record investment in our network, our progress has not been as fast as we all want. The combination of inflation, which caused major cost increases for energy and chemicals, and severe weather events have created considerable headwinds. That is why we are now refocusing our turnaround plan towards a smaller set of priorities over a shorter three-year timeframe. Together, these will enable a sustainable improvement in performance more quickly in our focus areas and will build confidence in the deliverability of our PR24 plan. Our plan continues the task of addressing our ageing network. It will improve our readiness to meet the twin challenges of climate change and population growth while continuing to deliver life's essential services.

We will continue to take an uncompromising approach to health and safety, protecting public health and the safety of our colleagues and the contractors working in our business. We are committed to building a more resilient business that delivers positive outcomes for customers and the environment, by establishing strong foundations for the journey ahead. Our areas of focus are:

- **Foundational capabilities** – Building and deploying strong capabilities that are essential for the delivery of future turnaround activities. We will establish strong financial controls, planning and management. We will improve organisational accountability which will enhancing our ability to improve our processes and develop our digital capability.
- **Improving and maintaining operational performance** – Stabilising and improving customer and environmental outcomes, focused in the near-term on leakage and pollutions that are important to our customers and stakeholders, where we have set challenging goals based on our current performance.
- **Improving our resilience now and for the future** – We will do this by enhancing our asset management capabilities, improving our business resilience (including incident response) and reinforcing our disaster recovery. Key to this will be managing our asset health deficit and investing to replace ageing IT and in cyber security.
- **Improving financial efficiency** – We will build a more stable business with greater financial predictability and ongoing sustainable efficiency, allowing us to create better outcomes for customers and the environment alongside being more investible.

12.3 | We have been working to considerably expand our capital delivery capacity

Our capital programme comprises business-as-usual capital maintenance activities and work on large capital projects. While critical to our business, we do not expect a material change in the volume of business-as-usual activities in AMP8. In contrast, our expenditure on large projects will double in the next regulatory period.

12.3.1 | We have considerably increased our delivery capacity in AMP7

At the beginning of AMP7, the eight$_2$O Alliance partner arrangement[1] was phased out and replaced by an 'intelligent client' delivery model. Under this model, we have the capability to specify our requirements to external participants and manage the delivery of outcomes. We made this change for the following reasons:

- Programme development and decision-making was remote and resulted in a lack of control.
- The eight$_2$O Alliance created a barrier to sharing asset knowledge which resulted in business planning difficulties.
- The arrangement was not efficient due to the way it encouraged management fees at multiple layers within the supply chain.
- The eight$_2$O arrangement did not remove all of the delivery risks – certain risks remained with us, despite this outsourcing approach.
- We experienced problems closing projects which were embedded in complex joint venture arrangements.

1 The eight$_2$O Alliance was a special purpose arrangement (Joint Ventures) consisting of construction, Engineering and Innovation partners for the delivery of Thames Water's capital programmes; eight$_2$O predominantly delivered larger complex infrastructure and non-infrastructure projects

12.3.1 I We have considerably increased our delivery capacity in AMP7 continued

Under our intelligent client model, we are using our own resources to undertake early engineering of project solutions, programme and project management, and construction and technical assurance. Our aims are:

- To build and retain a team of programme management, project management, engineering and construction assurance staff.
- To establish framework agreements for design and construction projects.
- To build direct delivery capability for lower-value simple work – this is a more efficient commercial arrangement.
- To adopt the industry best practice benchmark (the Portfolio, Programme, and Project Management Maturity Model) to support development of a world class delivery organisation by end of AMP7.

The introduction of our new model has already produced significant positive results. We have ramped-up our delivery from £110m in the first year of AMP7 to over £630m in the third year. We are on track to deliver in excess of £750m in the fourth year and further increase to over £800m in the fifth year. Overall, we will deliver a record level of capital delivery over AMP7 – at £2.7bn.

In AMP8, we will deliver more than twice the expenditure levels in AMP7. Given the c.500% increase in annual capacity through AMP7, we have demonstrated our ability to successfully increase our throughput, although we have further work to undertake to deliver the growth required for AMP8. Our AMP8 capital delivery profile is summarised in the figure below.

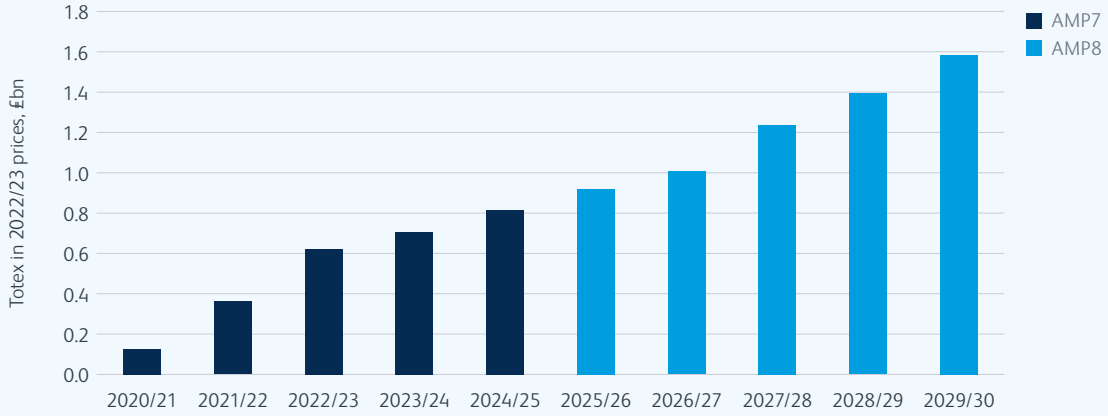


Figure 12.1: Our capital delivery totex in AMP7 and AMP8

We are continuously reviewing and improving our delivery model. Our capital delivery team operates an ongoing improvement plan cycle that is refreshed every six months. We are currently transitioning between phase four and phase five of that improvement cycle and have already delivered around 300 improvement actions. The focus of the plan for the fourth year includes:

- Reducing the time to get to contract award through improved interdepartmental collaboration.
- Reviewing the adequacy of our capital delivery processes and systems – which will help us better manage the increasing level of expenditure and number of projects.
- Engaging with our Framework contractors to optimise solutions and agree contract terms through earlier involvement in the delivery processes.
- Improving our day-to-day administration of the Framework Contracts from ourselves and our contractors.
- Recognising the need to improve the speed of Commissioning and Handovers – this will help to realise benefits and get new assets into operation earlier.

12.3.2 | We continue to ramp-up our capacity for AMP8

12.3.2.1 | Our internal capacity

Our capacity to deliver depends on our ability to understand our assets and risks, set priorities and develop solutions in a way that creates a steady, visible programme of work for efficient construction delivery.

We estimate that we will require approximately 200 new colleagues (net of attrition) over the next seven years in our capital delivery team to support our forecast AMP8 expenditure levels. This assumes a further 2.5% year on year internal efficiency driven through our capital delivery Improvement Plan.

We have been able to recruit just over 150 new colleagues in the past two years. This success has been partly driven by our targeted efforts to attract talent with transferable skills from other industries.

In addition, we have been working to improve capability within our capital delivery team:

- We have assessed our maturity using the P3M3 model (Portfolio, Programme, and Project Management Maturity Model), an accepted industry benchmark measuring an organisation's current performance in portfolio, programme and project management. On the 1–5 scale, our capital delivery was independently assessed by Hackett as part of their benchmarking exercise as approximately 2.5 during the second year of AMP7. We are targeting to be 4 out of 5 in Year-1 of AMP8. This is being driven by our Improvement Plan.
- We are piloting professional project management training through the Association for Project Management (APM) with our first cohort of colleagues completing their qualifications in early 2023 as part of a programme to establish and reinforce technical competence in our teams. In parallel, we will have a programme to support Professional Membership through to Chartered Project Professional of those having completed the training and meeting the requirements of the APM for full membership.
- We have active apprentice project management and graduate development programmes. 16 apprentices joined our capital delivery team in 2022 and are currently engaged in project management facing roles. In 2023, eight apprentices joined us in project management and three in project controls. We also have four on placements with our delivery partners.
- Our framework agreements for project management, engineering and PMO roles all contain the requirement for the transfer of knowledge and expertise to us.

12.3.2.2 | External capacity

Delivery of our capital programme is dependent upon access to contractors to undertake detailed design, procurement and construction work. Our supply chain will face increasing pressures in AMP8 given the scale of work required and we will compete with others to secure external capacity.

Water UK commissioned a review of supply chain challenges in the water sector in AMP8.[2] This recognised that total capital expenditure is jumping from £28.3bn in AMP7 to over £47.2bn (2022/23 prices), a 70% increase largely driven by the WINEP programme. The review also identified stark constraints in the supply chain including:

- The supply chain is already stretched – There has been a 50% reduction in Tier-1 (management contractors who take on the detailed design and delivery of a project or programme scope, including the management of sub-contractors) contracts since the start of AMP5. There are skills shortages in water quality process engineers, hydraulic modelers and professional water engineers. In addition, there is high demand for specific equipment (including water treatment valves, odour control, compressors, large water and wastewater pipes).
- The supply chain needs novel skills to support the adoption of new technologies, the development of nature-based solutions and the enhancement of digital capabilities.

2 Stantec, 2023, Report for Water UK on AMP8 deliverability

12.3.2.2 | External capacity continued

We have the largest capital programme in the water industry which will draw heavily on our immediate framework agreements, and the wider supply chain of subcontractors, plant and equipment suppliers and trades. It is crucial that we secure appropriate commitments from our supply chain. We have rolled over our AMP7 supply chain which will allow us to continue to develop relationships and ways of working and gives the supply chain visibility and confidence in our future investment plans.

We have a comprehensive suite of framework agreements providing a range of delivery routes depending upon the type of work and risk profile. We can deliver smaller, simpler projects directly or with subcontractors. Larger projects can be delivered with management contractors (Tier-1 contractors), where we have a further option to directly negotiate with our framework partners or to run tenders.

We engage with our supply chain partners to ensure levels of activities that are sustainable and efficient, and that future workloads can be managed.

Our procurement strategy provides stability and flexibility. We regularly assess allocations against supply chain capacity as part of our continuous improvement approach. Early this year, we undertook a more in-depth commercial review including making required adjustments to commercial and/or contractual arrangements including:

- Sourcing additional framework agreements specifically for directly managed delivery of smaller schemes (up to £5 million in value) by Tier-2 or Tier-3 suppliers (sub-contractors).
- Reallocation of projects from geographic to competitive tender (Thames Wide), and between contractors, to optimise available capacity.

We are aiming to put additional frameworks in place to support delivery of the AMP8 plan; the addition of lower tier frameworks will support the increases in AMP8, and on current assessment this should provide the required capacity.

We are confident that we are in a good place to deliver the increased programme. Our Board and Executive team regularly challenge our preparedness.

12.3.3 | We commissioned Jacobs to review our Capital Delivery readiness for AMP8

In summary, Jacobs concluded that:

- Our delivery strategy for AMP8 is appropriate.
- Factors being considered to underpin the ramp-up in capital delivery are sensible and good progress has been made to date as reflected in the underlying numbers.
- Extending our AMP7 frameworks and suppliers into AMP8 is appropriate.
- There will be deficiency in supplier capacity in the latter years of AMP8 but there is time to address this.
- Our recruitment strategy, plan and channels are appropriate, but the challenge of recruiting staff will get increasingly more difficult due to external factors.

12.4 | We are enhancing our digital capabilities

We summarise below our plans to enhance our digital capabilities.

12.4.1 | Our ambition

Our ambition is to become a digitally-enabled and data-driven company that provides better performance for our customers and safeguards the environment. We see a future where we are leveraging technology as a strategic resource to achieve our goals.

Our digital transformation is an ongoing journey. Our ambition is a future where:

- We really know our customers, communities and stakeholders and can anticipate, or even predict, their needs to deliver a personalised, interactive experience where customers will be able to, for example, pay their bill or view data insights to support how they manage their impact on our network and the environment.
- Our control room operators have full visibility of and control over our whole system. They will be able to predict and prescribe how we want our system to operate end-to-end from behind a desk.
- Our assets are digitalised and coupled with asset health and external data (environmental, societal), is turned into insights to manage the flow in our network.
- Our office and field-based colleagues have digital workplace tools that augment their day-to-day tasks and improve their productivity.
- We publish our data openly to the benefit of our stakeholders, our communities and the environment.

Digital capabilities will be a key enabler to delivering the significant improvements in our operational and financial performance required to deliver our vision for 2050.

12.4.2 | In AMP7, we have been working to take back control of our digital estate

In 2017, we established the 'Technology and Transformation Alliance' which completely outsourced our IT estate to an alliance of suppliers. While the initial intent was to leverage a 'best of class' model, it actual resulted in:

- An increase in the number of business applications and many environments which created complexity and cost.
- A situation where we had over 200 suppliers, all of which required commercial management.
- Lack of clarity around roles and responsibilities.
- Ageing applications with end-of-life software that resulted in high cost and risk.
- An excessive use of storage, c1950 Terabytes, devoted to structured data (databases).

During the first three years of AMP7 we have taken steps to improve the situation, for example:

- Working to ensure we pay fair prices for services and that solutions are designed with our customers' best interests in mind. Our permanent staff will play a major role in designing and owning the intellectual property.
- Developing our capabilities through internal recruitment and by consolidating onto standard industry platforms. Customers will also benefit from our use of industry best practice through these platforms.
- Creating strategies, principles and polices to ensure controlled development.

During the remainder of AMP7, we will focus on four things:

- We will prioritise the removal of legacy servers that are at or coming close to the end of their lives.
- We will create and maintain a view of all our IT assets. This will enable us to run our services for frontline staff more effectively and securely.
- We will continue to recruit permanent staff. These will support the definition and streamlining of business processes which are innovative and deliver against a more enduring cost model.
- We will reduce the amount of equipment we have in our data centres to save costs and provide a more reliable service. We will continue to develop our Azure Cloud capability by automating tasks and taking advantage of new technology developments and continue to expand our integration platform to exchange data with more externally hosted services.

12.4.3 | In AMP8 we will focus on insourcing and building our base digital capabilities

Our focus in AMP8 will be on building our digital capability. Our priority will be to set up our in-house development and operations (DevOps) capabilities to insource the development work currently done by our third-party suppliers. Through this, we will achieve a more cost-effective operation than a fully outsourced model, reduce our total dependency on third-party suppliers and, importantly, own our intellectual property.

The DevOps teams will develop and operate our key platforms and solutions and will do the design work so we will own our intellectual property. We will be able to continuously improve the way we operate and work to deliver the required benefits without the constraint of supplier contracts or renegotiations. In addition, developing our own digital engineering capability, will enable us to attract better talent, reducing employee churn and ultimately having a positive impact on the team.

We will invest in our underpinning infrastructure and platforms to develop our base digital capabilities, with a focus on capabilities which have a direct impact on customer experience. We will invest in:

- Our digital portal to deliver a simple, intuitive experience for our customers, stakeholders and communities as well making security enhancements.
- Our infrastructure to develop and scale our capability, as well as creating access to 'best of class' digital technologies, including:
  - A platform that will support/scale our data science practices, digital twin capability and connected assets strategy.
  - Our intelligent automation platform.
  - A secure data storage platform.
- Developing our enterprise resource planning solution.
- Extending our customer relationship management and case management platform.
- Developing a master data management solution.

Overall, we will spend £500m to enhance our digital capabilities in AMP8 across our business areas. This includes £430m of capex and £70m of opex.

12.5 | We have clear plans to develop the workforce we need to succeed

12.5.1 | Our success will be underpinned by our people

When it comes to our people, one of our biggest challenges is securing the core skills we need now and for the future – particularly those that are industry-specific, or in high demand and short supply. We have a number of skill gaps across key roles including, for example, civil engineers, mechanical engineers, electrical engineers, quantity surveyors and IT experts. Moreover, our workforce is ageing and also not reflective of the diversity of the communities we serve.

The challenge of securing core skills is made harder for two reasons. First, some skills, for example in construction and engineering, are in very high demand, and we compete with other sectors in our region to secure them. Second, our geographic area covers some of the most deprived areas in England, which means many people face barriers to education and employment.

In AMP7, we launched our Skills Strategy which will play a key role in ensuring that we secure the skills our business needs to succeed. Our Skills Strategy also aims to create a diverse workforce and to provide opportunities to our people and communities – this aspect of our strategy is covered in Section 9.

Read more

12.5.1 | Our success will be underpinned by our people continued

Our strategy is based on four core principles which are set out below.

Skills strategy principles

Skills strategy to support Thames Water to deliver its ambition and ensure the business has a diverse and inclusive pipeline of skills required today and in the future.

Figure 12.2: The key principles of our Skills Strategy

Purpose, values and behaviours

Principle 1	Principle 2	Principle 3	Principle 4
Improve the diversity of our workforce, by building a pipeline of skills from local communities and the education sector	Create careers not just jobs through investment in our people and fostering a culture of life long learning	Establish sustainable strategic skills partnerships	Adopt a leading position in the industry and with our supply chain on the development of skills
This will help us to…	**This will help us to…**	**This will help us to…**	**This will help us to…**
Increase productivity	Increase employee engagement	Gain more influence to achieve our goals	Build our reputation
Increase people performance	Strengthen our skills base	Provide significant benefits and cost savings across the business	Demonstrate our positive impact on economic prosperity to the government and local authorities
Reduce recruitment costs	Build an experienced and flexible workforce	Support local and national economies	Pioneer education initiatives
Promote socioeconomic diversity	Spend our apprenticeship levy more effectively	Build a positive brand association through our Thames Water Academy, which will support learning and development	
Support the development of STEM and digital skills	Empower our experienced workforce to educate future generations		
Our principles will be underpinned by three core pillars:	1. Creating a strong support structure to deliver our strategy	2. Creating a long-term view of skills through strategic workforce planning	3. Equipping our leaders with the skills, knowledge and behaviours they need to be effective

We elaborate on these principles and the key actions we are taking to deliver our ambitions below.

12.5.2 | Principle 1 – Improve the diversity of our workforce

To help us build a future-ready skills pipeline, we need to expand and enhance our education programme. We want to go beyond educating young people about what we do and why we do it, which means introducing Careers Education, Information, Advice and Guidance (CEIAG)[3] into the classroom to prepare students for life in modern Britain by providing the knowledge, understanding, confidence and skills they need to make informed choices and plans for their future learning and career. This will help us to promote the full range of opportunities across our business and give us the chance to empower a future generation of workers.

As well as making sure students develop the knowledge, attitude and practical skills they need to succeed, we want to support the development of STEM and digital skills, which are essential for the water industry. We need to offer clearly defined career paths and highlight how individuals can develop and grow their skills with us. We also need to build a more extensive talent pipeline for vacancies, including apprenticeships.

While we're delivering a more extensive careers programme from primary school to university, there will be a chance to provide support to schools with a higher than average pupil premium.[4] We can also do more to attract people from our local communities by removing barriers and offering everyone equal opportunity to seek sustainable employment.

Key actions we are taking include:

- Setting ourselves targets for the recruitment of specific groups (eg people in long-term unemployment, care leavers, prison leavers, minorities) and skills.
- Doubling our commitment to help unemployed young people aiming to kickstart their careers following the pandemic. We doubled our 50 Kickstart placements under the government's £2bn Kickstart scheme to 100 opportunities.
- Removing barriers to recruitment and changing the way we recruit to ensure we can access a wider talent pool. For example, we no longer ask for criminal records, we only require a candidate to provide references from the past three years, rather than five years, and we have made the application process easier.
- Revising our approach to reach out to candidates for our vacancies so we actively reach out to local people including those that are unrepresented.
- Delivering employability training to help people to build confidence and prepare for an interview.

12.5.3 | Principle 2 – Create careers, not just jobs

Not everyone has the same opportunity to develop the skills our business needs. All sorts of challenges can act as barriers – including lack of opportunities, financial pressures or a poor educational experience. And, if our people lack confidence in their skills, they may also be prone to low morale, which can result in under-performance.

We believe providing every individual with an opportunity to develop and enhance their current skills will do the opposite, driving positive employee engagement. Removing barriers and setting clear career paths will also help. It's up to us to show our people that we care about their progress as part of Team Thames. Our business environment is always changing. To grow, our people need to be kept up to speed with the latest in-demand skills, whether this be through organic or more formal training.

Key actions we are taking include:

- Employing around 25 graduates every year through our graduate programme.
- Launching our first ever T-level placements in engineering and digital. We are hosting five students on 45-day placements, an approach which feeds into our apprenticeship programmes.
- We aim to have 5% of our employees in 'earn and learn' roles by 2025, which includes 223 external recruits onto an apprenticeship and 104 internal recruits onto an apprenticeship, across 28 active apprenticeship qualifications; we also widened apprenticeship opportunities for existing colleagues who wish to develop their skills or specialise in a particular area.
- Creating bespoke in-house training to cover essential topics.
- Supporting all colleagues by offering literacy, numeracy and digital skills training as well as chartered and degree level qualifications.

3. CEIAG is designed to prepare students for life in modern Britain by providing the knowledge, understanding, confidence and skills they need to make informed choices and plans for their future learning and career.
4. The pupil premium is a grant given by the government to schools in England to decrease the attainment gap for children disadvantaged by income or family upheaval. Evidence shows that children from disadvantaged backgrounds generally face extra challenges in reaching their potential at school and often do not perform as well as their peers. For each pupil who is eligible for free school meals, the school receives funding. This allows schools to support disadvantaged pupils and improve their progress and exam results. Publicly-funded schools in England get extra funding from the government to help them improve the attainment of their disadvantaged pupils.

12.5.4 | Principle 3 – Establish sustainable strategic skills partnerships

We expect strategic partnerships will have a major impact on how quickly and easily we can achieve our goals and objectives. Working and collaborating with like-minded businesses will also help to provide significant benefits and cost savings.

By working together, we can address key skill gaps and build an experienced, flexible workforce that's adaptable to future skill requirements, including automation and technology. This will help to make sure our people gain the skills, qualifications and experience they need to progress on their chosen career path, which will also boost productivity levels.

We exceeded our year-end target of 120 hires from community partners by March 2023.

Key actions we are taking include:

- Building partnerships with specialist referral partners to help us engage directly with care leavers (young people who have spent time in care) including Drive Forward Foundation, Unite Foundation, Social Mobility Foundation, Care Leaver Leads across the London Boroughs, as well as the department for work and pensions leads locally.
- Signing up to the Care Leavers Covenant (a national inclusion programme that supports care leavers aged 16–25 to live independently) and 10,000 Black Interns Project (which offers 2,000 internships to black students and graduates each year across more than 25 sectors), as well as the Ban the Box campaign to help ex-offenders access career opportunities in the water industry.
- Joining the 5% Club, meaning we committed to five per cent of our workforce being apprentices and graduates in the next five years.
- Becoming a London Living Wage and a Cornerstone Employer[5] and championing issues such as social exclusion, in-work poverty, and fair pay.

12.5.5 | Principle 4 – Adopt a leading position in the industry and with our supply chain

We want to work closely with our partners on a clear agenda for change and establishing a collaborative way to create learning opportunities for people across the industry. We need to lead the way on key initiatives such as our untapped workforce (people who are normally excluded from a recruitment process due to perceived barriers related to one or more demographic characteristic), apprenticeships, care leavers, ex-offenders and adult skills. We can also use our position as the UK's largest water provider to lobby for responsible employment practices and tackle unemployment, underemployment and in-work poverty.

Key actions we are taking include:

- Launching in 2021 our shared apprenticeship scheme, the first of its kind in the UK's utility sector. The shared apprenticeship scheme allows us to collaborate and share skills and talent with our supply chain. It offers people in London and the Thames Valley, with an interest in working in the water sector, the chance to learn and get involved in the company's infrastructure projects while gaining a nationally recognised qualification. We welcomed the first group of 20 apprentices onto the scheme in March 2022.
- Co-sharing the Greater London Authority's hiring and skills anchors group and chairing the West London Green Skills Academy. We use these forums to share our learnings and encourage others to do more to develop skills in our industry.
- Considering our procurement contracts to better embed social value in our procurement processes from 2024.

5. Cornerstone Employers are flagship community of more than 300 businesses across England which support world class careers education at scale in their local region.

13.0

We will integrate the Thames Tideway Tunnel and start realising its full benefits

In this section

Key messages

- The Thames Tideway Tunnel is on track to be in service by 2025. It represents the culmination of a three-phase strategy spanning 25 years to improve London's ageing infrastructure.
- This third and final element following the upgrade of five STWs and completion of the Lee Tunnel, will in combination reduce the total volume of discharges into the tidal River Thames by 95% in a typical year.
- We have identified four workstreams in AMP8:
  - Integrating the Thames Tideway Tunnel within our broader network.
  - We will maximise the value from any surplus land.
  - We will use the newly created public spaces to engage with customers and stakeholders.
  - We will seek opportunities to deliver enhanced benefits beyond the original scope of the system.
- We will spend almost £87m in AMP8 to conduct these activities.
- This activity is aligned with the goals of our London Strategy, which in turn is underpinned by our Drainage and Wastewater Management Plan, that sets out how the city's drainage systems will be improved over the next 25 years.

We describe in this chapter our proposals for integrating the Tunnel into the rest our assets and operating it in an optimised way. Further detail is presented in Appendix TMS47: Thames Tideway.

13.1 | The Thames Tideway Tunnel will address customer needs

We know our customers and stakeholders are concerned about the discharge of untreated sewage and other pollutants into rivers and waterways, and the impact this can have on the environment, public health, and on recreational activities such as swimming and fishing.

The Tunnel will deliver a step-change in the capacity of London's ageing infrastructure to manage sewage. The current sewage system in London was designed in the 19th century to serve a population of around four million people. Today, it serves a population of over nine million, resulting in frequent sewer overflows that discharge untreated sewage into the river during heavy rain events. These overflows can have a significant impact on water quality, marine life, and public health.

The Tunnel is on track to be in service by 2025. On its own, with an investment of £4.6 billion, it represents the largest and most significant wastewater project since Sir Joseph Bazalgette created London's sewage system in the 1860s. The Tunnel is 25 kilometres long and up to 75 metres deep, running beneath the river from Acton in West London to Beckton in East London.

The long term programme to reduce discharges into the tidal River Thames has been delivered in three phrases, two of which have already been delivered:

- Expanding the five sewage treatment works discharging into the tidal River Thames. This was delivered in AMP4 and AMP5 and allowed them to intercept 40% of the Combined Sewer Overflow (CSO) discharge volumes.
- Delivering the Lee Tunnel to intercept the Abbey Mills CSO, the largest CSO in the tidal River Thames system. This was delivered in AMP6 and it allowed the site to intercept 15% of the CSO discharge volumes.
- Delivering the Tunnel to intercept the remaining CSO in the Beckton and Crossness catchments. This is our focus in AMP7 and AMP8. We expect it will intercept a further 40% of the CSO discharge volumes.

Once completed, the Tunnel will intercept overflows from the Crossness and Beckton catchments and transport the sewage to the plant at Beckton, where it will be treated before being discharged into the river. It will therefore prevent millions of tonnes of untreated sewage, mixed with rainwater, from entering the tidal reaches of the River Thames via storm overflows each year. The three phases in combination will reduce the total volume of discharges to the tidal Thames by 95% in a typical year and overall spills into the river by 90%. It will also create new public spaces and amenities.

13.2 | We have worked hard to commission and optimise the Tunnel in AMP7

During AMP7, we facilitated the construction programme, co-created the new regulatory environment with the Environment Agency, prepare the plan to commission the Tunnel and recruited and trained the new operational team. We will also manage the return of surplus land from Tideway and, with the correct legal and commercial arrangements, will pass this land back to land owners or prepare the land for commercial sale from which customers will benefit.

Ofwat is measuring our performance in AMP7 with both reputational and financial metrics. Apart from one metric where we have not met our target by a short margin, we have met or exceeded Ofwat's targets. This is summarised in the table below.

Ref	Performance Measure	Description	Forecast
ET01	Readiness to receive flow at Beckton (delivery of new inlet works)	Financial penalty if we are not ready before System Commissioning Commencement Date	We are on track to be ready and we do not expect financial penalties.
ET02	Effective Stakeholder management	• Judgement by key stakeholders of how well we are working on the Tideway Project • Reputational incentive, based on a survey score	We have so far met the target in all years but one (by a small margin).
ET04	Critical Asset Readiness	Financial penalty if assets are not ready before System Commissioning Commencement Date	We are on track to be ready and we do not expect financial penalties.
ET05	Establish an Effective System Operator	Reputational incentive, based on a percentage completion measured through eight measures	We are on track to deliver this commitment.
ET06	Maximising the value of land sales	Reputational incentive – we have to demonstrate to Ofwat that we maximise value of land	As explained below, the completion of this commitment is dependent on the Tideway programme and market values for property. Property disposal options are discussed with Ofwat prior to final decision.
ET07	Managing early land hand back	Financial reward to accept land hand back early	

Table 13.1: Our AMP7 performance for Thames Tideway Tunnel

Note: An 'ET03' performance commitment was initially created but was considered too complicated and replaced with ET06 and ET07.

The Thames Tideway Tunnel is being financed, constructed and will be owned by Bazalgette Tunnel Limited, known to the public as 'Tideway'. Our aim has been to complete our own work and support Tideway with all reasonable endeavours such that it may start commissioning as soon as possible. We continue to work with the Tideway team to manage programme risks and optimise the delivery, commissioning and system acceptance phases as and when programme issues have arisen.

Our combined aim is to successfully pass through the system commissioning period such that system acceptance is achieved ahead of the planned acceptance date, August 2027. Importantly, this will mean greater benefits to the environment from reduced outages of the system (to allow its connection and inspection) and an earlier ending of the government support package.

We will also be able to undertake an assessment at handover of the data gathered during commissioning, which may reduce the overall system acceptance duration. This work involves:

- **Contingencies for low rainfall scenarios** – Our tests for commissioning and system acceptance have minimum rainfall requirements. We have a contingency plan to complete appropriate tests in case of lower rainfalls (ie use smaller storms and lower set points).
- **Streamlining of silt removal and testing protocols** – We are working to complete our testing protocols and silt removal within two weeks to minimise the disruption caused (eg potential interruption).
- **Revising the system acceptance tests** to align with the current population and flow characteristics of the network.

13.3 | Our plan for AMP8 is to integrate the new asset and start considering opportunities to enhance the way we use it

Our primary focus will be on the integration of the new asset within the broader trunk sewer network to enhance the way the overall system operates, making it both more effective and efficient. We have also identified further capital works that will be required to reinforce our infrastructure, based on knowledge gained as the project has progressed.

Beyond the existing project, we believe there are opportunities to re-imagine or enhance Bazalgette's original trunk sewer network to deliver enhanced benefits beyond the Thames Tideway Tunnel scope of work. This will involve the use of technology to optimise system operation and reduce electricity use in our pumping stations, and reduce the risk of sewer flooding.

> Our primary focus will be on the integration of the new asset within the broader trunk sewer network to enhance the way the overall system operates, making it both more effective and more efficient.

13.3.1 | Our primary focus will be to integrate the new asset

During the commissioning phase, which will span AMP7 and AMP8, the system must pass performance tests specified in the formal project documents. Our team will work with the Tideway team to determine if the tests have been successfully passed. For example, a successful set of commissioning tests will enable the project to move into the systems acceptance phase and a successful set of systems acceptance tests will enable us to accept the system as fit for purpose and meet the required standards.

The construction of the Tunnel has taken many years, during which time we have continued to develop our understanding of overall system needs. Alongside this, customers' expectations have increased. This led us in AMP7 to invest beyond the initial scope; to deliver an upgrade at Beckton sewage treatment work to improve the resilience of the existing inlet works. However, not all the required work could be funded or delivered in parallel with the Tideway project. As a result, additional reinforcement activity has been included in the AMP8 programme of works, which will then deliver the full environment benefits that customers expect. Delivering this latter work in AMP8 allows the main commissioning phase to progress in an optimal manner in AMP7 ensuring the Tunnel is delivered into service on time.

The identified reinforcement needs require an additional investment of £38m in AMP8 and will result in:

- Improved control room facilities – to make them resilient to future pandemics and health and safety needs (eg providing safer exit points).
- Improved cleaning and debris processing facilities – to deal with non-screened flows in the tunnel, and therefore reduce tunnel outage frequency and reduce odour risk at Beckton.
- Enhanced asset resilience and reliability at the Tideway pumping station – additional asset maintenance regimes will be introduced at the station to improve pump availability and reduce pump downtime. Overall resilience will be improved by making operational changes to facilitate the maintenance and replacement of the pumps. The pumps are bespoke items with long lead times and therefore resilience will also be improved by purchasing two additional pumps and to ensure redundancy during maintenance or outages.
- Supervisory control and data acquisition (SCADA)/ Instrumentation, Control and Automation (ICA) – investments will be made to align and integrate the Tideway SCADA system into the TW Information System (IS) infrastructure.

13.3.2 | We are committed to disposing of our surplus land and engaging with our local communities

The handback and disposal of Tideway land is now planned to happen later than the original programme, with eight of the 12 land disposals occurring in AMP8. This delay is largely a result of the COVID pandemic. As a consequence, we will incur costs for staffing, compensation and lease extensions.

We are committed to returning surplus land value back to customers. However, since the COVID pandemic, the value of the surplus land has fallen. We are therefore exploring whether it is in customers' interests for us to retain the land, until we can secure a better price in the market. This is the subject of ongoing discussion with Ofwat.

13.3.3 | We will use our new public realm spaces to conduct stakeholder engagement

We are creating new public realm spaces as we complete and start operating the Tunnel. The benefits for the public will be significant. By providing additional recreational spaces, these sites in the River Thames and its surroundings will improve access to green spaces and will enhance the quality of life for residents and visitors alike.

To maximise this opportunity, we plan to use the spaces to engage with our customers and stakeholders on issues which can only be managed through collaborative partnerships. This can take a number of forms.

Firstly, the spaces will be used in conjunction with associated local authorities to build relationships through community events. These can often link communities back to the importance of the river in their lives, but also represent a link to the history of the area through the bespoke artworks installed at each location.

Alongside this, some of the spaces will present job opportunities, either in maintaining the site or through running community retail spaces, such as cafés or coffee shops.

13.3.4 | We will seek opportunities to deliver enhanced benefits beyond the original scope

Customers and stakeholders' expectations have grown since the start of the project, and all sewer discharges are viewed as unacceptable. Whereas the project had targeted five combined sewer overflow (CSO) discharges in a typical year, (2.35 million m^3 volume of discharges), most customers will not tolerate any at all.

We have identified three opportunities we want to explore further in AMP8, to re-imagine how we may use the existing Bazalgette Trunk Sewer network which is connected to the Tunnel:

1. Exploring new smart technologies and approaches to support better monitoring within the sewer network, which, when linked to hydraulic models and predictive tools, will act as a foundation for the interventions described in the following areas.
2. Exploring the role of dynamic assets, ie automated valves or control structures such as weirs, to improve the overall efficiency and performance of the system. Dynamic assets could allow us to:
   - Keep sewage at higher (topographical) levels in the trunk sewer system and avoid the need for pumping prior to arrival at the sewage treatment works. This will reduce power usage when sewer capacity is available.
   - Proactively cascade sewage through the system, moving sewage from higher to lower level Trunk Sewers and potentially into the Tunnel itself. We believe this proactive cascade could create volumetric capacity to deal with high intensity, localised storms and therefore help to reduce flooding risk in affected areas.
3. Creating a digital twin to provide enhanced control. The Tunnel is already a highly sophisticated piece of infrastructure, but there may be opportunities to further optimise its performance. Smart networks and advanced sewerage control systems are seen as a key part of improving sewerage systems. By using sensors and real-time data, smart networks can help to identify problems in the sewerage system before they become major issues. This allows for more efficient maintenance reducing the likelihood of sewer overflows and other problems. Advanced sewerage control systems can also help to optimise the treatment of wastewater. By using real-time data on flow rates, pollution levels, and other variables, these systems can adjust the treatment process to ensure that the wastewater is treated as efficiently and effectively as possible. This can lead to cost savings and improved environmental outcomes.

13.4 | AMP8 performance commitments

We propose that, once the commissioning phase is completed and there is clarity about land disposal strategies during AMP7, all but two of the existing performance commitments should be discontinued. We propose to continue ET02 (effective stakeholder management) and ET07 (managing early land hand back). In addition we propose a new incentive for us to accelerate System Acceptance activities to maximise the chance that System Acceptance can be completed within the 18 month period (Refer to Technical Appendix TMS47: Thames Tideway Tunnel).

14.0
Risk and return

In this section

Key messages

- Returns need to be competitive to secure capital and fully reflect changing market conditions.
- Shareholder support is essential for a financeable plan, through new funding and the retention of any available income stream from dividends in AMP8.
- Our plans assume £2.5 billion of shareholder funding in AMP8; in addition to £1.25 billion assumed for AMP7 including the £0.5 billion already received in March 2023.
- A downside skew in risk needs to be acknowledged and considered when setting the PR24 allowed return to ensure financial resilience and to attract capital to fund investment.
- Our PR24 plans are financeable for notional and actual capital structures.
- In contrast, application of Ofwat's methodology and a refresh of the early view of allowed return does not produce financeable outcomes.

14.1 | Overview

A plan containing the level of ambition set out in this document cannot be delivered without an injection of new financial capital. In keeping with the long-standing principle that new investment should be paid for by customers in instalments over the life of built assets, our plan provides for £12.8 billion of our £18.7 billion of proposed expenditure to be funded through AMP8 bills. The remaining cost of our plan will need to be financed from debt markets and by our shareholders ahead of reimbursement by customers in future regulatory periods.

We have had constructive discussions prior to submission with our regulators on the scope of both our plan and proposed regulatory arrangements, which include the scale of log-up to CPIH-real RCV for totex overspend in AMP7, allowed totex relative to actual spending in AMP8, and the maximum level of penalties that we can incur under Ofwat's Outcome Delivery Incentive regime. We are looking forward to continuing these discussions – which could influence the scope of our plan, the bill impact and bill profile – and securing a price control that, in the round, allows us to both deliver record levels of investment for the benefit of the customers, communities and environment we serve, and offer investors an opportunity to earn the returns required to finance it.

Based on a positive outcome to these constructive discussions, our plan assumes shareholder funding of £2.5 billion indicated in July 2023, when Thames Water published its annual results for the 2022/23 financial year. This is in addition to £1.25 billion assumed for AMP7, including £0.5 billion received in March 2023.

Given this unprecedented level of funding, it is important to note that no provider of financial capital is forced to invest in the privatised England & Wales water industry. There are thousands upon thousands of other places that an investor can invest their money, and almost all these alternative investments are nowadays paying significantly higher returns than was the case prior to 2021, following a marked rise in global interest rates. It follows that if we are to obtain the finance that we require in order to proceed with our planned programme of activity, and if other water companies are to proceed with the work that they are setting out in parallel with our plan, PR24 must offer investors an opportunity to earn returns that are competitive with the returns that can be earned on investments of similar riskiness elsewhere.

This entails a material move up in the allowed rate of return. The regulatory arrangements that Ofwat put in place for the 2020–25 regulatory period were calibrated on the assumption that water companies could borrow at an interest rate of 2.54% per annum and needed to make a return on equity capital of 6.27% (both in nominal terms).[1] Table 14.1 shows that the returns investors are able to obtain by putting their money into safe UK government gilts and investment-grade corporate bonds has moved up very significantly since Ofwat fixed these numbers. This material change in market conditions means that current returns in the sector are now a good way out of line from prevailing market rates.

	November 2019	June 2023
20-year gilts	1.3%	4.5%
A rated corporate 10+ year bonds	2.4%	5.5%
BBB rated 10+ year corporate bonds	2.7%	6.3%
Ofwat PR19 return on equity	6.3%	6.3%

Table 14.1: Available returns for investors

1 Throughout this chapter we assume that annual CPIH inflation over the period April 2025 to March 2030 will be 2% per annum.

14.1 | Overview continued

In December 2022, Ofwat issued an 'early view' methodology for estimating the cost of capital and asked water companies to use this framework when calculating the allowed return for the period 2025–30. Table 14.2 sets out the 'early view' allowed levels of return using data as at June 2023.

	% return
Allowance for embedded debt	4.6%
Cost of new debt	5.8%
Cost of equity	6.5%
Weighted average cost of capital	5.6%

Table 14.2: Refreshed Ofwat early view of returns

A simple comparison of the numbers in Tables 14.1 and 14.2 indicates that the 'early view' calibration of the return on equity is likely to be too low. If investors can lock in returns of 4.5% by buying gilts and up to 6.3% by buying investment-grade bonds, it is highly unlikely that they could be persuaded to take on the extra risk involved in equity investment in exchange for a return of just 6.5%. For the reasons set out in more detail iin Section 1.3 of TMS41 Aligning risk and return, we do not consider that Ofwat's 'early view' methodology is financeable.

We have therefore had to consider how best to balance risk and return over the next five years, in the interests of our customers.

14.2 | Risk

Ofwat's published PR24 methodology provides, among other things, for:

- 50:50 sharing of any under- and over-spending over the period 2025–30 between companies and customer in fixed percentages.
- Volume-based reconciliations for changes in customer numbers and sludge volumes.
- Indexation of the allowed cost of debt.
- Adjustment mechanisms for changes in tax rates.
- Financial penalty and/or reward incentives around 21 performance metrics.

We also propose four additional uncertainty mechanisms. They cover:

- An end-of-period true-up to totex allowances for unforeseen changes in input prices (ie wages, electricity prices, chemical prices and material prices).
- An end-of-period true-up for bad debts.
- A price control reopener for bioresources compliance costs.
- A reopener provision for any additional expenditure that is required to comply with the Industrial Emissions Directive (IED).

Further information on these mechanisms is set out in Appendix TMS42: Macroeconomic envornment, real price effects and other cost modelling issues, and TMS46: Uncertainty Mechanisms.

In all four of these areas, any changes in costs against the baselines that we lay down in this plan will more likely than not lie outside of companies' control. In our view, it is not in customers' best interests to ask companies to bear the full risk of changes in these expenditures in exchange for the payment of an annual return, particularly when addressing long-term asset health challenges that will span multiple price reviews. Rather, we think it is to customers' benefit to cover companies' efficient out-turn costs and to pay a lower rate of return, and lower upfront bills, than would otherwise be the case.

We are proposing refinement to Ofwat's broader incentive framework, including a maximum level of penalties that we can incur under Ofwat's ODI regime. This is needed to ensure that the overall distribution of possible returns during the 2025–30 period is not unduly wide and not unnaturally skewed towards the downside, with an expected return that sits far below the cost of capital.

14.2 | Risk continued

Figure 14.1 shows our modelling of the potential variability in equity returns after accounting for our risk allocation and our proposed additional uncertainty mechanisms.

Our modelling assumes that an efficient company could see upside of up to 3.5 percentage points of additional return on regulatory equity and downside of up to 4.8 percentage points of RORE within a P10:P90 confidence interval.

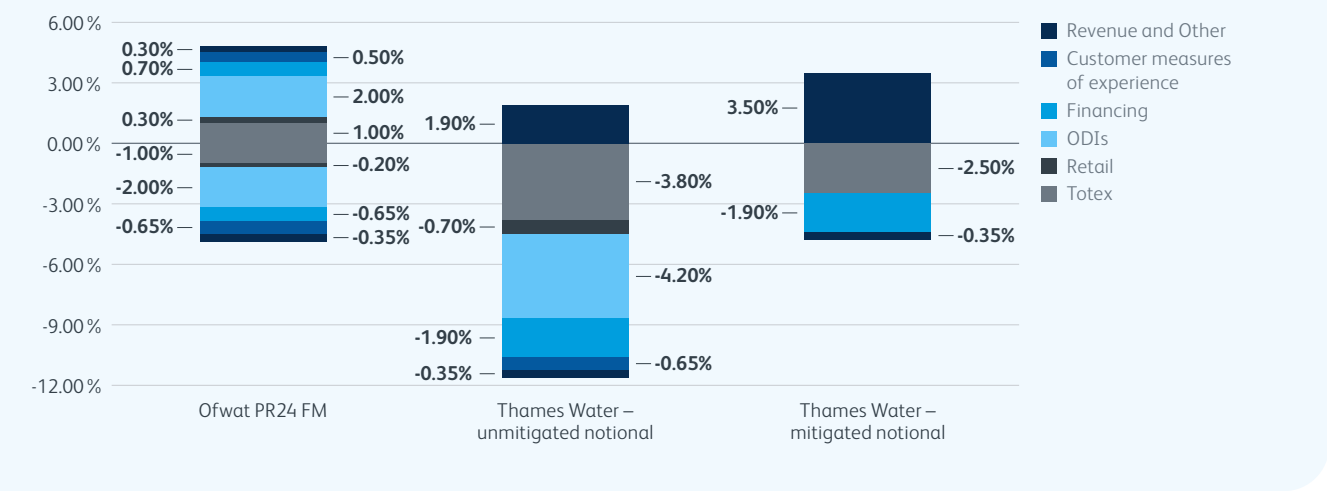


Figure 14.1: Regulated equity returns

14.3 | Return

To help us calculate the return that investors should receive in exchange for bearing this level of risk, we were one of a number of water companies who commissioned an independent report from the experts at KPMG on the cost of capital across the sector. We have also considered recent regulatory precedents, especially as regards the views that the Competition & Markets Authority ('CMA') expressed in its March 2021 redeterminations of four water companies' PR19 price controls.

For the most part, we agree with Ofwat's approach to calculating the allowed cost of debt. Based on the advice received from KPMG, we do, however, set the forecast cost of new debt in line with market benchmarks for the cost of investment-grade debt rather than apply a 'haircut' below benchmark rates proposed by Ofwat.

The cost of equity capital is not something that can be observed directly; hence we have sought to approach the calibration of the allowed return on equity from a number of different directions.

The first principle we apply is that the cost of equity must be clearly higher than the cost of debt, given the greater priority that lenders have over shareholders. Going into a period when the cost of new debt is forecast to be above 6%, a sensible starting assumption is that the cost of equity must, in turn, be a clear distance above 6%.

14.3 | Return continued

We have then used the capital asset pricing model (CAPM) to refine our estimate still further. CAPM says that the return sought by equity investors will be equal to the risk-free rate in the economy plus a premium calculated as the market-wide equity-risk premium multiplied by a firm-specific measure of riskiness, beta. For all three of these parameters, KPMG presents compelling evidence that Ofwat's 'early view' parameters have been set too low:

- **Risk-free rate** – Ofwat's estimate of the risk-free rate relies solely on the observed yields on index-linked gilts. KPMG finds that a wider basket of suitable proxies for the riskless assets points to a somewhat higher risk-free rate value.
- **Expected market return** – KPMG identifies several technical faults in Ofwat's analysis of historical stock market returns which cause Ofwat to arrive at a range for the expected market return that is incorrectly lower than the CMA's range from its PR19 redeterminations.
- **Beta** – KPMG identifies that the step change in water industry investment makes the forward-looking industry beta higher than backward-looking water company beta values.

These observations together largely explain the incongruence between Ofwat's 'early view' of the return on equity and the level of return available elsewhere.

After making appropriate corrections to Ofwat's arithmetic, KPMG finds that the cost of equity over the period 2025–30 will likely sit in the range 7.2% to 7.8%. This range, in our view, sits much more logically with prevailing market interest rates and with the benchmarks identified in Table 14.3.

Combining the cost of embedded debt, the cost of new debt and the cost of equity in line with the mix of capital that a notional company will require over the next regulatory period gives an overall cost of capital of 6.0% to 6.3%.

	Low	High
Gearing	0.55	0.55
Cost of debt	5.0%	5.1%
Risk-free rate	4.0%	4.0%
Expected market return	8.5%	9.1%
Unlevered beta	0.31	0.33
Debt beta	0.1	0.1
Equity beta	0.68	0.72
Aiming up for estimation uncertainty	0.15%	0.15%
Cost of equity	7.2%	7.8%
Weighted average cost of capital	6.0%	6.3%

Table 14.3: Elements of weighted average cost of capital

We provide in this plan for a return on equity of 7.8%, at the top end of KPMG's sector-wide range. The next five years of investment are of paramount importance to customers, and it is essential that we have access to the capital that we need to finance our plan. This necessitates paying adequate returns and, during a period of higher interest rates, we consider that applying the figures in the right-hand column of Table 14.3 ensures that the returns that investors obtain by putting their capital into water companies are in line with the returns that can be obtained from other similar investments.

Our proposed allowed return, calculated as a weighted average of the return on equity and the return on debt, is therefore 6.3% in nominal terms or 4.25% in equivalent real, CPIH-stripped terms.

	Nominal	Real CPIH-stripped
Gearing	0.55	0.55
Cost of debt	5.0%	3.1%
Cost of equity	7.8%	5.7%
Weighted average cost of capital	6.3%	4.25%

Table 14.4: Proposed allowed return

We have sense-checked these numbers in two ways:

- First, we note that an allowed return on equity of 7.8% sits broadly in line with the returns that Ofgem is allowing energy networks as they carry out a major programme of investment under a very similar-looking regulatory framework with a broadly similar allocation of risks, albeit there are notable differences in the risk profiles of the Ofwat and Ofgem regulatory models, such as the incentives regime.
- Second, a return on equity of 7.8% is around 1.5 percentage points higher than the return that is factored into current price controls. After a period in which global interest rates have increased by 3–4 percentage points, we can therefore be confident that such an increase in the return that we are factoring into our plan is not excessive against the broader change in market conditions.

14.4 | Financeability

'Financeability' is the ability of a water company to finance its functions through debt, equity or retained earnings. As the CMA noted in its March 2021 decision, a financeable plan will be one in which "*a water company that is operating efficiently is able to earn a reasonable return and therefore to cover the cost of financing both existing and new investment*".

The key test of financeability for the 2025–30 period is our ability to offer a competitive return to equity providers and, hence, our ability to retain and attract equity capital into our business. Our proposed level of return combined with the other building blocks described elsewhere in this plan – including, inter alia, our proposed totex allowances, ODIs, risk allocation, and regulatory treatment of 2020–25 performance – have been deliberately calibrated to come together into what we believe is an investable equity proposition.

As part of this proposition, it is important that we have confidence that a notionally efficient company can comply with our licence obligation to maintain an investment-grade credit rating on our debt. Section 1.6 of TMS41 Aligning risk and return sets out the financeability assessment of our submitted plans, including proposed regulatory arrangements, for a notional company that maintains a 55:45 debt:equity capital mix. Our conclusion from this assessment is that the credit ratios would normally be compatible with a BBB+/Baa1 rating. Based on the above projections, and the overall level of return for shareholders factored into the plan, we can submit a Board assurance statement alongside this document certifying that our plan is financeable.

We have also considered the financeability of the notional company following Ofwat's published methodologies with only a refresh of the early view of the allowed return in line with the returns shown in Table 14.2. The results of this analysis demonstrate clearly that this construct is not financeable as it indicates a weak financial profile and ratings below investment grade.

14.5 | Financial resilience

Our actual company will begin the next regulatory period with higher gearing than Ofwat's notional company. It is also important that this actual structure complies with our licence obligation to maintain an investment-grade credit rating, including in the event that we encounter unforeseen headwinds as we deliver our plan.

Our financial resilience testing is set out in Section 1.7 of TMS41 Aligning risk and return and reviews the impact of downside scenarios on our plan, including proposed regulatory arrangements, and our actual capital structure. The downside scenarios considered are eight scenarios defined by Ofwat and an additional scenario defined by Thames Water. Financial resilience is assessed by the impact of these downside scenarios on specific financial covenants, where a breach would result in an event of default.

The results of our analysis, before considering any mitigating actions taken by management, indicate that these downside scenarios would substantially consume covenant headroom but not to the extent of resulting in an event of default.

Based on the above analysis, we can submit a Board assurance statement alongside this document certifying that our appointed business will be financially resilient on the basis of our plan submitted to Ofwat. This is also important in providing assurance on the investability of Thames Water and the £2.5 billion shareholder funding assumed to be received in AMP8.

14.6 | Dividend policy

Our plan does not provide for any dividend payments to external shareholders before 2030. Our established dividend policy requires that the directors of the company should consider, among other things, the strength of the company's performance against performance targets, long-term financial resilience, and the impact that the payment of a return to shareholders would have on our commitments and obligations to customers and other stakeholders.

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