Portsmouth Water

BUSINESS PLAN 2025 TO 2030
PRT18 LONG-TERM DELIVERY STRATEGY 2025 TO 2050

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AT A GLANCE

The document articulates our long-term delivery strategy (LTDS) which will set the direction and vision for Portsmouth Water for the next 25 years. The document outlines our ambitious goals and objectives, along with a comprehensive plan on how we will achieve them. We use adaptive planning principles to take account of future uncertainties, ensuring that we can deliver our Vision in all potential futures. By establishing a 25-year perspective, we aim to ensure sustainable, efficient, and resilient water services for our customers and stakeholders, even in the face of uncertainties and changing environments.

The elements our LTDS are as follows:

Ambition: We outline the far-reaching and ambitious objectives that we seek to accomplish over the next 25 years, which are set out in our published Vision. This Vision is based on extensive engagement with our customers, as well as consideration of the external factors that may impact the delivery of our business over the longer-term.

Strategy: We provide a detailed roadmap of how we intend to realise our goals over the next 25 years, expressed as a Core Pathway, along with alternative pathways that we may need to follow as current uncertainties such as the rate of population growth are resolved.

Rationale: We explain the reasoning behind the chosen long-term delivery strategy, emphasising why it represents the most effective and viable approach to achieving our ambitions. Our rationale is supported by analysis, scenario planning, and evaluation of various options to achieve our goals.

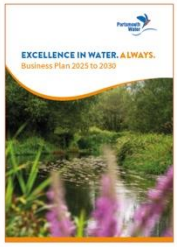
Foundation: Our long-term delivery strategy is underpinned by key assumptions and uncertainties that are outlined in this section. By identifying and understanding these factors, we can create a flexible and adaptive plan that can respond to changing circumstances and ensure continued progress towards our objectives.

Board Assurance: The role of our company's Board in overseeing the development of the long-term delivery strategy.

The LTDS provides us with a clear framework for long term planning and for managing uncertainty that is inherent in long term planning. By clearly defining our ambitions, strategies, rationale, foundations, and board assurance, we aim to build a sustainable and adaptable future for our customers and stakeholders. We will continually update our LTDS, as we learn more about some of the uncertainties that we face and develop our long-term planning capabilities.

DOCUMENT MAP

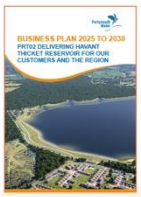
Business Plan to 2030



PRT01
EXCELLENCE IN WATER. ALWAYS.
Business Plan 2025 to 2030

For the full navigation plan and documents visit
portsmouthwater.co.uk /business-plan-2025-2030

Supporting Documents



PRT02
Delivering Havant Thicket Reservoir for Our Customers and the Region

PRT03
Engaging and Understanding Our Customers and Communities

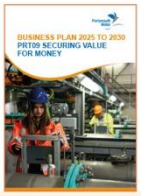
PRT04
Delivering for Our Customers and Communities

PRT05
Delivering Outcomes for Our Customers

PRT06
Managing Our Resilience in the Long Term

PRT07
Our Investment Plan

PRT08
Delivering Our Investment Plan



PRT09
Securing Value for Money

PRT10
Innovation to Enhance Our Service Delivery

PRT11
Addressing Affordability and Vulnerability

PRT12
Accounting for Past Performance

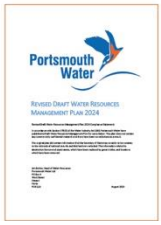
PRT13
Risk and Return

PRT14
Our People

PRT15
Board Assurance

Vision and Our Long-Term Plans

PRT16
Our 25-Year Vision (consultation version)



PRT17
Water Resource Management Plan (revised)

PRT18
Long-Term Delivery Strategy 2025-2050

EXECUTIVE SUMMARY

This LTDS sets out the challenges and the decisions we must make to continue to ensure that we can deliver our Vision and our long-term priorities on behalf of our customers.

We have developed this LTDS alongside our customers, our communities, and our regional partners, ensuring that we are able to deliver best value for the Southeast, protecting our precious resources and preparing us for the future challenges we face.

We have created our LTDS using adaptive planning, considering, and forecasting the potential challenges we may face in the future, as well as identifying the interventions and activities that we must do to ensure that we can continue to supply our customers and serve the environment for generations to come.

Our LTDS brings together the insight we have gathered and the plans we have already created for our strategic plans, bringing together our Water Resources Management Plan (WRMP) and Water Industry National Environment Programme (WINEP) with our Resilience, Raw Water Deterioration and Lead strategies into a single, holistic, adaptive plan covering the period 2025-2050. We have only just begun our journey into developing our LTDS and we will continue to review and update our plans to make sure they reflect the latest situations and our customers' needs.

This plan is the first of its kind, and its sets out the challenges that we may face from the emerging risks of climate change, demand, abstraction reductions, technology, and a change in legislation for lead. It builds upon the work we have already conducted to develop an adaptive WRMP and considers the broader needs of the organisation to ensure we can achieve our ambition.

This plan demonstrates our commitment to deliver our vision "Excellence in Water. Always" building on the four priorities we have developed:

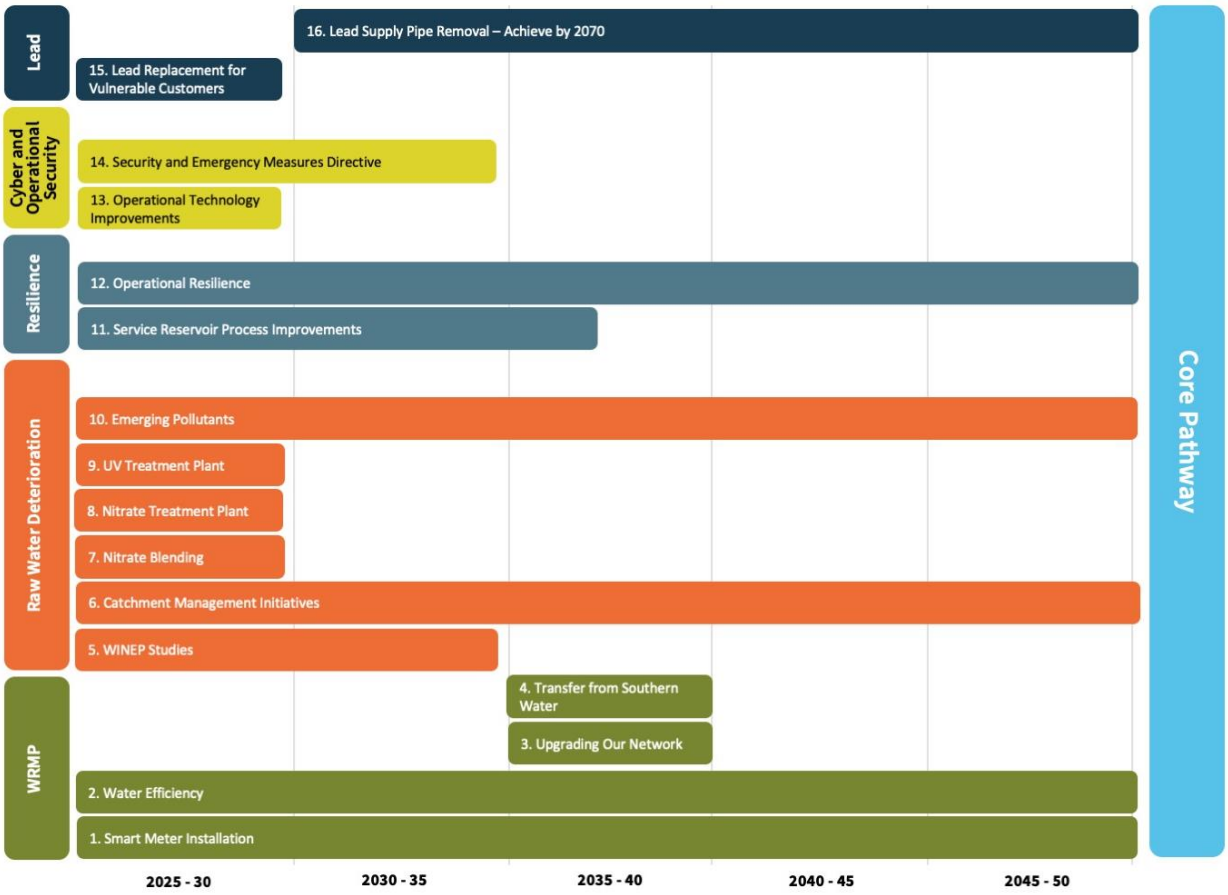
- Secure and deliver water supplies which are high quality, reliable and sustainable.
- Work in partnership with our customers, communities, and stakeholders.
- Invest in the future to meet growing environmental challenges.
- Achieve affordable water for all. Always.

This strategy sets out a Core Pathway of activities, which we must follow to provide us with a platform of no and low regret investment options to ensure we can meet the requirements of all futures. We set out the points in time at which we must decide whether our current investment decisions will allow us to deliver against the emerging challenges of the future. In those cases where we believe we require further investment we will then trigger an alternative pathway; a plan of additional investment options that we must now be undertaken to ensure that we can continue to meet our operational requirements and deliver our long-term Vision.

Each of our pathways ensure that we both align and comply with regulatory requirements and deliver in line with our customers' preferences and expectations. The first five years of our planning period do not vary between the different pathways, so we already know the investments we must make for our next business planning period so that we are able to continue to operate in all futures we see ahead of us.

Our plan sets out the following investment options as part of our Core Pathway (Figure 1):

Figure 1: Core Pathway of Investment Options



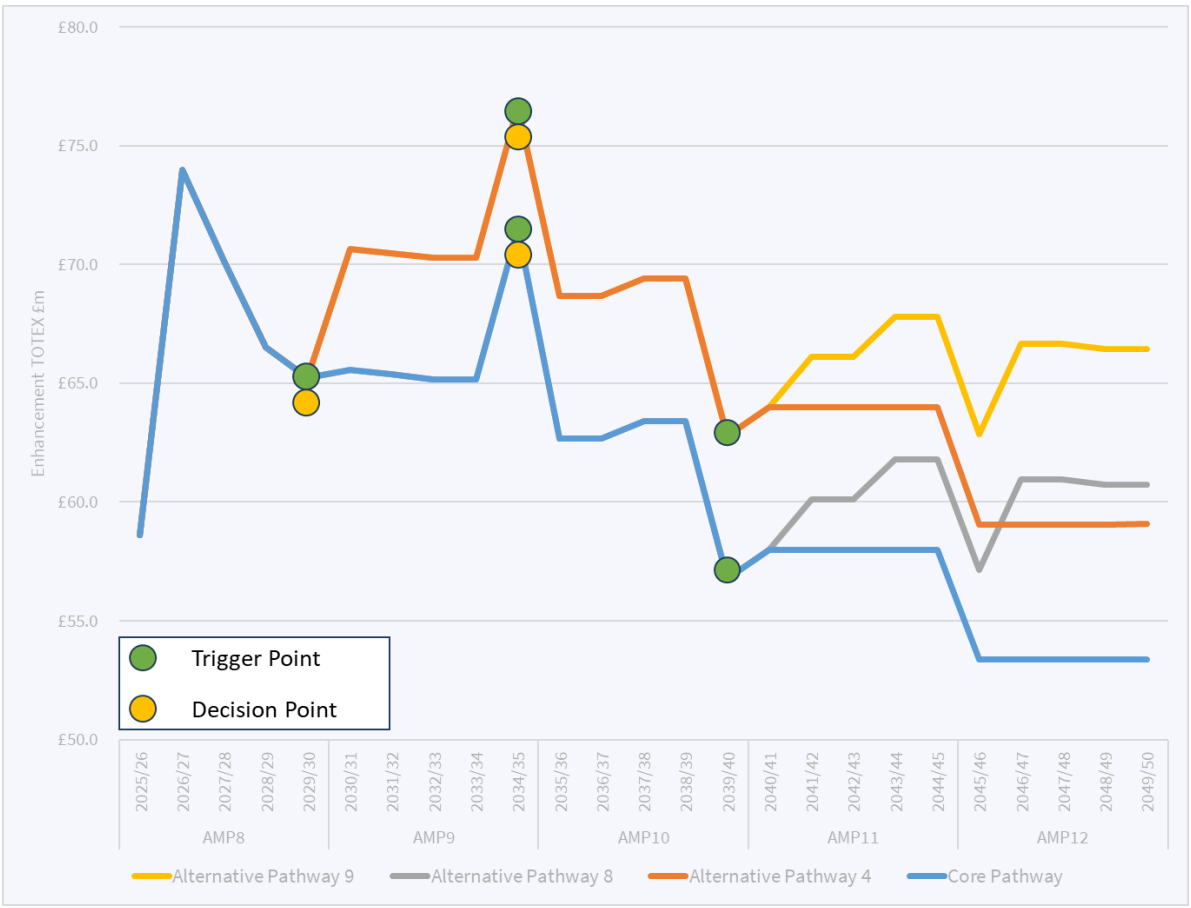
We are confident that our plans allow us to realise our ambition, achieve the stretching performance commitments we have set ourselves and ensure that we can maintain fairness and affordability for customers now and into the future.

The investment associated with our Core Pathway is shown below. We have also identified the additional investment options we require to meet our objectives in each of the nine alternative futures we have tested as part of our LTDS. As a small company operating within a small geographical footprint, we have a limited number of alternative options available to us.

In many cases, the differences between pathways relate to the timing of key investments. For the purposes of our LTDS, we therefore focus on those alternative pathways that best align with our core and preferred pathway identified within our WRMP.

Figure 2 below shows the investment associate with each of these pathways.

Figure 2: Enhancement Totex (£m) for our Core and Alternative Pathways



LONG TERM DELIVERY STRATEGY

A. Ambition

Our Vision and Priorities

Our Vision, against the backdrop of climate change, population growth and market uncertainty, is to provide an affordable, reliable, and sustainable supply of high-quality water for our customers for generations to come.

By being smart in our approach we will work with our local communities to meet our goals while protecting and enhancing the environment for future generations.

At its core, our vision means the experience our customers have will continue to lead the industry. However, the way we will collectively achieve this, will change.

Our priorities set out how we need to embrace innovative methods and technologies, collaboratively delivering solutions which will benefit everyone and give our customers and stakeholders the information they need to co-create with us.

Coupled with a deep self-assessment of where we are today, and thorough consideration of challenges and opportunities for innovation and learning from others, we developed four key priorities (Figure 3).

Figure 3: Our Priorities

They have been informed by our thinking, and our customers' thinking, on what the world could look like in 25 years' time and how much we need to change between now and then to cope with the political, economic, environmental, technological, and physical challenges ahead.

The commitments we make in our 25-year vision have guided our development of our LTDS and we plan to deliver on them by 2050.

How Customers Have Helped Shape Our Plan

Our customers views have played an integral role in developing our 25-year vision, shaping our approach and ambition for our LTDS. We've adapted and evolved from our PR19 approach to align with best practice not only meet regulatory guidance, but to embed a strategy to robustly capture insight and employ this to shape our plan and to increase engagement with our customers as we build a more active relationship to deliver this plan.

We've integrated our learning and sought expert input from specialist research companies which has enabled us to draw on their experience of other water company programmes, cross sector approaches and a wealth of expertise in developing strategies which fully reflect the views of customers.

As a result, our customers have had a much stronger voice and influence in the development of this plan than in previous years.

We have been through an engagement programme with our customers over the past two years, which is ongoing, to better understand their needs, their requirements, and their views to support us in developing our business plan. Our engagement strategy means we gather insight from a wide range of sources, including:

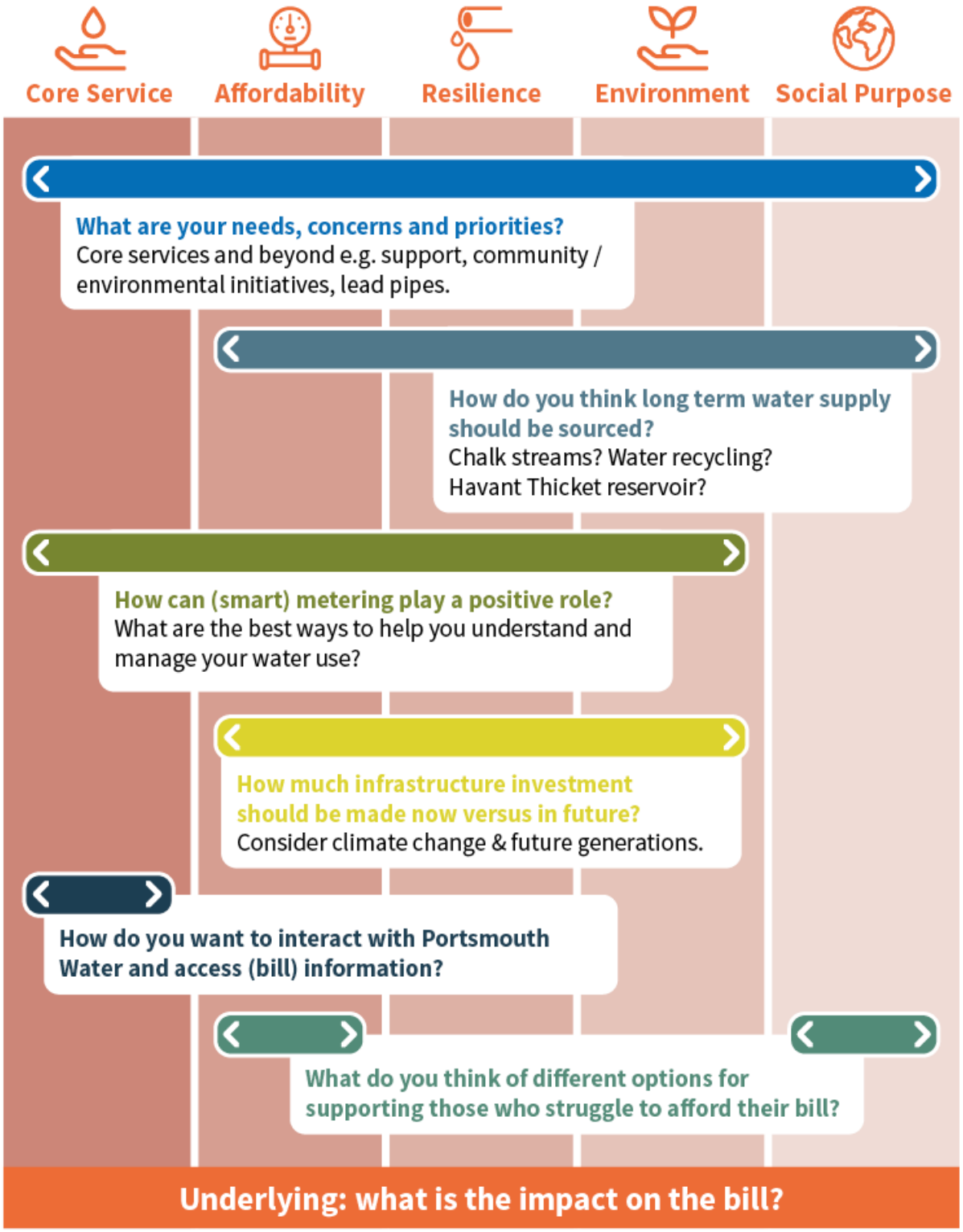
- **Ongoing business as usual** – we undertake ongoing engagement through day-to-day activities including complaints, debt analysis, our Customer Scrutiny Panel, cross sector work and direct on-going surveys of our customer base.
- **Centralised engagement** – working with regulators and the water sector, we have centralised some key research elements for consistency and efficiency.
- **Community engagement** – we work with community groups on a day-to-day basis through many of our teams, which provides a perfect opportunity to gather insight e.g. the farming communities for catchment management, local people and groups interested in the delivery of Havant Thicket Reservoir and vulnerability stakeholders, as well as housing associations and local councils.
- **Collaborative research** – we've shared research findings with regional water companies as well as at national level.
- **Bespoke research** - we've commissioned research with our partners where specific insights are needed.

Our Big Conversation Framework

To support our strategy, we have developed a set of conversations to drive understanding of our household and non-household customers. Our Big Conversation Framework has enabled us to better engage with our customers across five themes: the core service, affordability, resilience, environment, and social purpose (Figure 4).

We implemented a standardised approach to triangulating the insight we have obtained through our current business planning period to ensure consistency. We have used this information to inform and shape our LTDS.

Figure 4: The Big Conversations Framework



What Our Customers Have Told Us

We set a programme of activities designed to gather insight effectively and efficiently around these conversations. The programme of activities was shaped and challenged by our Customer Scrutiny Panel, an independent group which was established in 2012 to scrutinise both our performance against targets, but also our approach to engagement and consultation with our customers and communities. The engagement programme that has informed our plan spans a range of methods and activities that include:

- **Our Customer Advisory Panel (CAP) –** a group of 25 informed customers for qualitative deep dives every quarter.
- **Our Barometer group** – a diverse panel of 1,000 customers, segmented by age, gender and vulnerability, who undertake quarterly quantitative surveys.
- **Stakeholder engagement –** with our stakeholder database, surveys, and interviews.
- **On-going focused customer target groups –** Portsmouth University students, customers in vulnerable circumstances, minority groups, future customers, and non-households.
- **Our Future Innovators Board –** a leadership development team within our business involved in supporting the development of our business plan with a particular emphasis on community partnerships and the views of younger staff members.

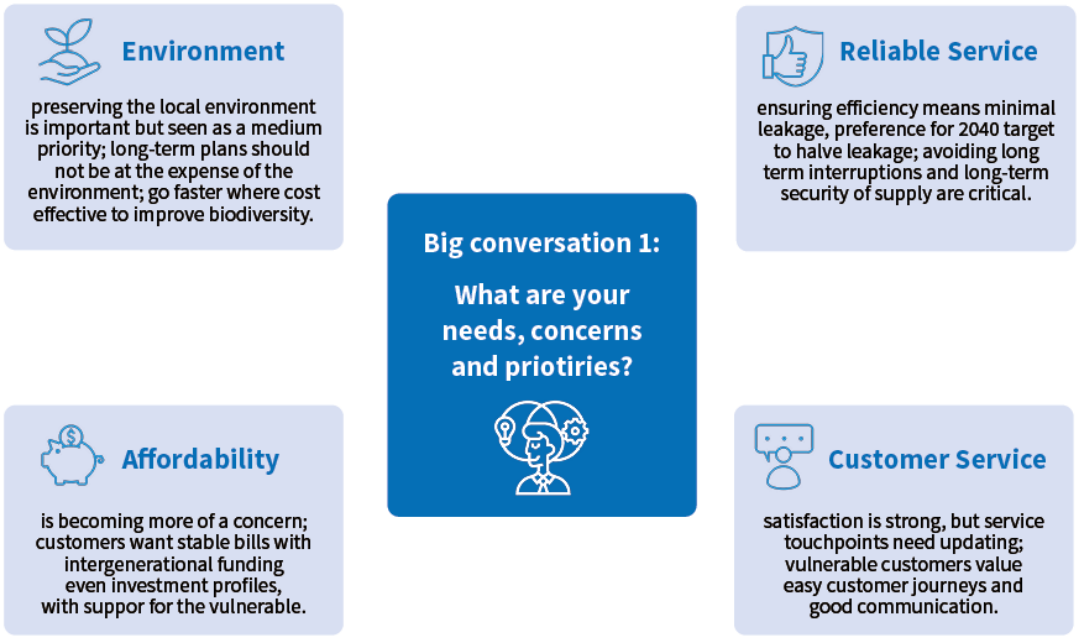
Big Conversation 1 – Customer Needs, Concerns and Priorities

We have shaped our vision and priorities by first using qualitative and quantitative research, identifying key themes that would be reflect current customer views. We then tested these through our engagement sessions and public consultations.

Big Conversation 1 allowed us to test our proposed investment into leakage, interruptions to supply, lead service pipe replacement, biodiversity and the phasing and impacts on customers' bills (Figure 5). Here is what our customers told us:

- **Environment:** preserving the local environment is important but seen as a medium priority; long-term plans should not be at the expense of the environment; go faster where it is cost effective to improve biodiversity.
- **Reliable Service:** ensuring efficiency means minimal leakage, preference for 2040 target to halve leakage; continuing to avoid long-term interruptions and long-term security of supply are critical.
- **Water Quality:** high levels of acceptability to improve performance at no additional cost to their bills.
- **Customer Service:** satisfaction is strong, but service touchpoints need updating; vulnerable customers value easy customer journeys and good communication.
- **Affordability:** is becoming more of a concern; customers want stable bills with intergenerational fairness, even investment profiles and support for the vulnerable.

Figure 5: Big Conversation 1 – Customer Needs, Concerns, and Priorities

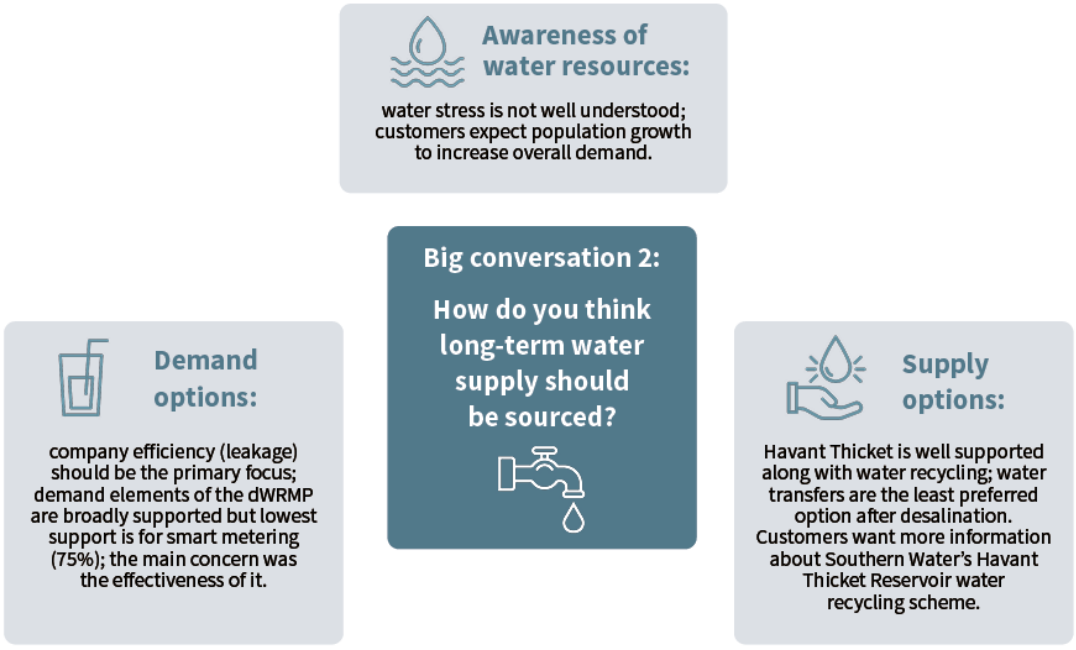


Big Conversation 2 – Long-Term Water Supply Options

Big Conversation 2 tested the options we had prioritised for our rdWRMP using both public consultation and with targeted panels that brought together our customers and stakeholders. This provided us with insight into their preferences on how we should approach securing our long-term water supply (Figure 6).

- **Awareness of Water Resources:** water stress is not well understood; customers expect population growth to increase overall demand.
- **Demand Options:** demand elements of the rdWRMP are broadly supported; the lowest support (albeit it still strong) is for smart metering; the main concern was the effectiveness of it. The majority are supportive once better informed about the rationale.
- **Supply Options:** Havant Thicket Reservoir is well supported along with water recycling; water transfers are the least preferred option after desalination. Customers want more information about Southern Water's Havant Thicket Reservoir water recycling scheme.

Figure 6: Big Conversation 2 - How do you think long-term water supply should be sourced?

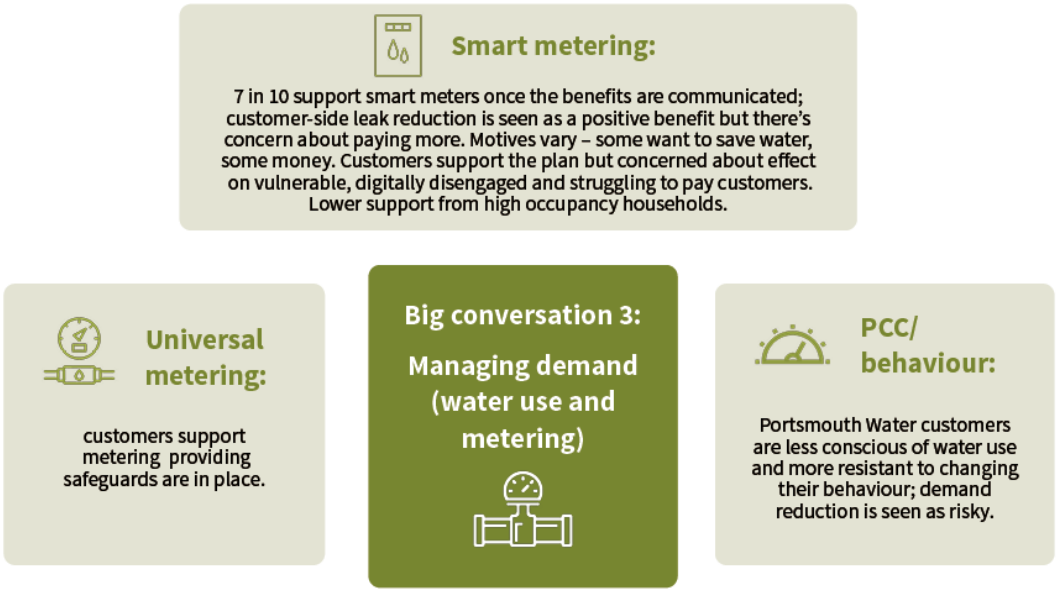


Big Conversation 3 – Managing Demand (Water Use and Metering)

As can be seen in Big Conversation 2, our customers initially have low confidence in smart metering and the benefit it will provide. However, once provided with additional information, they become more engaged. We explored the appetite for water use and smart metering in Big Conversation 3, using more quantitative engagement. This afforded the opportunity to test with vulnerable and future customers their appetite for innovative tariffs and transition periods (Figure 7).

- **Universal Metering:** customers support metering provided safeguards are in place.
- **Smart Metering:** 7 in 10 customers support smart metering once the benefits are communicated; customer-side leakage reduction is seen as a positive benefit but there is concern about paying more. Motives vary - some want to save water, some money. Customers support the plan but are concerned about the effect on the vulnerable, digitally disengaged and struggling to pay customers. Lower support from high occupancy households.
- **Per Capita Consumption/Behaviours:** Portsmouth Water customers are less conscious of water use and more resistant to changing their behaviour; demand reduction is seen as risky.

Figure 7: Big Conversation 3 – Managing demand (water use and metering)



Big Conversation 4 – How We Invest

Our ambition and the level of risk we are taking has been informed by the insight obtained from Big Conversation 1. To better understand our customer and stakeholder appetite for our approach to investment, we further explored the investment choices and the phasing we are proposing of our activity, combining public consultation with quantitative research (Figure 8).

- **General Principles:** customers prioritise ensuring reliable supplies and protecting the local environment over low bills; customers don't want large increases in bills - they want to pay for future investments gradually.
- **Environmental and Net Zero Targets:** we need to invest to provide good quality water but this is less urgent than sustainable sources; customers are wary of the impact on bills of net zero and prefer a medium investment option (net zero by 2040).

Figure 8: Big Conversation 4 – How to Invest (including sustainability investment)

Big Conversation 5 – Interacting with Us and Accessing Our Services

A key area of concern with our customers and stakeholders, is our ability to interact with our customers as we introduce new systems and technology, particularly with those who are more vulnerable and those less engaged with digital technology. We conducted bespoke research on customer interaction around smart metering with vulnerable, future and minority customers (Figure 9).

- **Channel Preference**: customers expect quick, effective, efficient channel choice; they expect our website to cater for simple issues, but phone is still the most popular channel; billing is seen by some as due for modernisation.

Figure 9: Big Conversation 5 – Interacting with Us and Accessing Our Services

Big Conversation 6 – Affordability, Including Options for Economically Vulnerable Customers

We explored affordability through bespoke research with those vulnerable, future and minority customers, with a specific focus on smart metering. We were able to assess the affordability of those customers now and into the future and ensured that we tracked any shift in the response to affordability throughout our engagement process (Figure 10).

- **Affordability**: overall affordability has worsened. Those on lower incomes are least likely to find a bill affordable, but some in middling brackets are also struggling with affordability. There are low levels of awareness of support schemes.

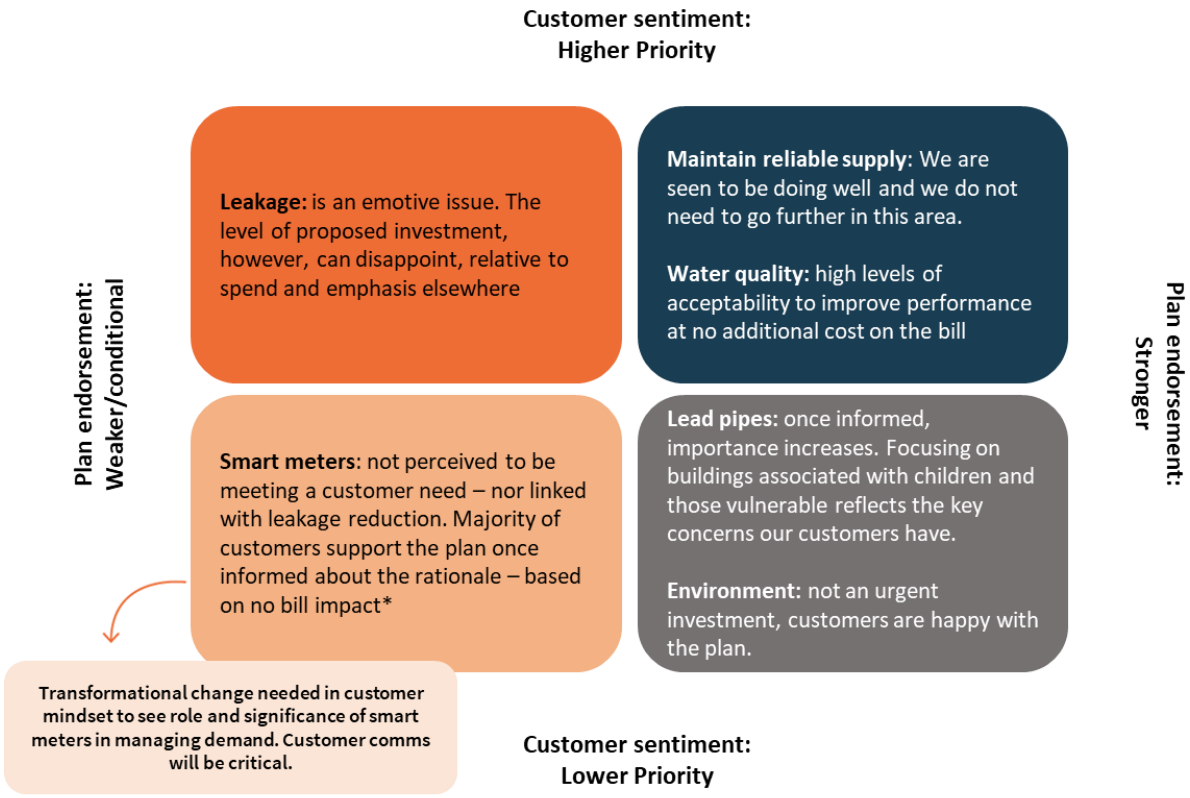
- **Social Tariffs**: the great majority support the principle of a social tariff although a substantial minority don't think this should be solely funded by other customers. There is low awareness among minority groups of the social tariff.

Figure 10: Big Conversation 6 – Affordability, Including Options for Economically Vulnerable Customers

What This Has Told Us

Overall, our customers are broadly supportive of the plans we have proposed and endorse the draft business plan. There are however a few keys areas to specific areas of our plan, particularly when focussed on the long-term, whereby our customers have made a nuanced response (Figure 11).

Figure 11: Understanding Our Customers' Priorities



Leakage continues to be an emotive issue for our customers, and they believe that we must maximise the benefit from our investments to reduce leakage as much as possible. They see this as one of the most important performance commitments and are therefore supportive of an ambitious and stretching leakage target. Leakage is seen as the best way to manage demand over the long term, and an issue that will only worsen, so it makes sense to address this as soon as possible.

Smart metering is a contentious area of investment. The benefits that smart metering provide are well-recognised within the industry to effectively manage supplies, reducing usage, identifying leaks, and providing a more accurate understanding of usage. Our customers, however, see this as a low priority when initially engaged, and they are concerned about having to pay more and were unclear of the benefits they would provide.

This however changed, when informed of the benefits, such as financial savings over the longer term, support for finding and fixing leaks, and providing better understanding of the water they use. However, there was still concern that these meters would provide a similar experience to energy smart meters, most of which was negative, and there were concerns that with the introduction of new digital technologies many would be left behind.

We believe that smart metering is an essential activity to helping us to better manage water usage in our region as well as to meeting our leakage targets. We recognise that it is imperative that we support our customers as we embark on this journey, educating and informing them about the benefits, communicating to them the improvements that are being observed as our programme progresses, and supporting them as we integrate new technologies to enable our delivery.

These initiatives are essential in enabling us to secure our future supply - the highest priority for our customers. We need to ensure that we can meet the supply demand challenges that we may face in our future. Furthermore, the resilience and reliability of our supply, whilst being highest priority, is viewed as an area where Portsmouth Water are doing well, and one where we should maintain our level of performance and not invest any further.

Customers are also expecting us to maintain the high quality of the water we are supplying, but don't expect to see improvements. To maintain current standards, we will need to invest to address deterioration of our raw water sources.

We do however recognise the emerging risks of lead in our supply and the potential impact this could have on water quality. Our customers see this as a high priority, once aware of the risks, more than improving the environment and our need for smart metering. Our customers want to see lead removed, particularly when in proximity to young children and those more vulnerable.

The environment is a medium-level priority for our customers, similar to that observed with the Ofwat Willingness to Pay Research. Our customers see the importance of enhancing and protecting the environment. However, they are frustrated over the lack of urgency from the Government and the industry to address the issues. While they do not see the urgency, customers are willing to support us to invest to improve key sites.

Finally, when presented with the affordability of our plans, 67% of customers said an increase of 22% would be very easy, fairly easy or neither easy nor difficult to pay. 76% of customers said our plan overall was acceptable. Since this research was conducted we have further challenged our own plan to reduce the average bill increase from 22% to 19%.

There is however concern that those more vulnerable will need additional support to achieve this. Given that only 14% of our customers were aware of the financial aid schemes that we offer, we recognise that we must do more to support and engage those more vulnerable to help tackle water poverty.

What Our Customers Can Expect

We have used this insight along with the UN Sustainable Development goals and Ofwat's public value principles to guide our vision, help develop our priorities and inform the plans we have created.

It is essential for us to measure how we deliver against our customer priorities. We've considered a range of long-term commitments – all of which will help us achieve our vision.

Below are just a few examples of our ambitions we aim to achieve in our 25-year vision that will allow us to deliver on our priorities, ensuring that we can meet the expectations of our customers:

- Be at the centre of water resilience as a regional supplier.
- Roll out universal smart metering to help customers make better decisions about their water use, while supporting those with no or limited access to IT.
- Help good water management become second nature for customers.
- Put the natural environment at the heart of our decision making.
- Achieve net zero.
- All pipes will be free from lead (customer and Portsmouth Water pipes).
- Water poverty won't exist (all customers in water poverty will have support options available to them by 2030).

We plan to deliver all these commitments by 2050, however, the speed at which we deliver them, and the trade-offs we make, will be informed by what we've heard from our customers and stakeholders, ensuring we balance ambition with keeping bills affordable for all. Customers will still experience the same reliable service, but with significant improvements to our resilience, responsiveness, and a lower environmental impact.

We have developed our performance commitments based on the investment pathway, our long-term ambitions, and our customers' priorities (Table 1). These show clearly what our customers can expect from us during 2025-30 and beyond. Targets have been set to maintain our sector-leading position in supply interruptions, mains repairs and water quality contacts, as well as set us on course to deliver our long-term Vision.

The one area where our performance is lagging, is per capita consumption. Reducing consumption through our smart metering programme is one of the core objectives of this plan and the targets are consistent with our WRMP. Our long-term ambition is consistent with meeting Defra targets on reducing customer use.

Table 1: Our Long-Term Performance Commitment Targets

Performance Outcome	25-26	26-27	27-28	28-29	29-30	2035	2040	2045	2050
Interruptions to Supply (hours:mins:secs)	00:02:11	00:02:09	00:02:08	00:02:06	00:02:05	00:01:36	00:01:15	00:00:41	00:00:00
Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.									
Customers told us they support spending more to keep our supply interruptions as the lowest in the country, with a service comparable to today. We will maintain our industry-leading service while maximising the benefits from base expenditure.									
Water Quality Contacts (per 1,000 customers)	0.42	0.41	0.41	0.41	0.41	0.39	0.38	0.37	0.36
Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.									
We've had the lowest number of contacts related to water quality in the industry for the past five years. We will make further improvements which will mean contacts won't increase, despite a higher population.									
Compliance Risk Index (score) (Deadband shown in brackets)	0 (2)	0 (2)	0 (2)	0 (1.75)	0 (1.5)	0 (1)	0 (1)	0 (1)	0 (1)
Customer priority: Deliver water supplies which are high quality, reliable and sustainable									
CRI is designed to illustrate the risk from treated water compliance failures. Our target is always zero failures. We include a deadband, set initially at 2 to mirror this period, with a reduction towards 1.									
Leakage (Ml/d, 3-yr avge.)	24.0	22.8	22.1	21.8	21.1	18.1	16.5	15.9	15.5
Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable. **Customer priority:** Invest in the future to meet growing environmental challenges									
We're working towards halving leakage (from 2018-19) by 2040, 10 years ahead of the Government's target. Pressure optimisation and reducing customer leaks as part of our smart metering programme will help us deliver this target.									
Biodiversity (Net change in biodiversity units / per 100 km2)	0.38	0.53	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Customer priority: Work in partnership with our customers, communities, and stakeholders									
This biodiversity metric is new, but we've performed strongly in previous measures. We've set ourselves an ambitious target, agreed with relevant external stakeholders, to deliver biodiversity gain on three of our water treatment sites.									
Discharge Permit Compliance (% of sites)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Customer priority: Invest in the future to meet growing environmental challenges									
The performance commitment measures the extent to which we meet our permits when we discharge water to the environment. We always aim to meet 100 per cent of our legal obligations and we have set the target to reflect this.									
Serious Pollution Incidents (Category 1 and 2)	0	0	0	0	0	0	0	0	0
Customer priority: Invest in the future to meet growing environmental challenges									
We aim for no serious pollution incidents from our activities and historically our performance has met this ambition. Our target is set at zero pollution incidents to reflect a continuation of this strong record.									

Per Capita Consumption (l/h/d, 3-yr avge.)	156.9	155.4	153.3	150.2	146.0	120.9	110.1	103.2	98.4

Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.

Customer priority: Invest in the future to meet growing environmental challenges.

Customer priority: Work in partnership with our customers, communities, and stakeholders.

Our PCC commitments align with our WRMP and will be achieved through our smart metering programme and associated water-saving support and engagement through audits and personalised data and gamification.

Business Demand (Ml/d, 3-yr avge.)	29.8	29.2	29.5	27.7	27.3	26.9	27.2	27.3	28.0

Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.

Customer priority: Invest in the future to meet growing environmental challenges.

Customer priority: Work in partnership with our customers, communities, and stakeholders

As part of our universal smart metering programme, all non-households will have a smart meter by 2030, to help them manage their consumption more closely. Our targets reflect the benefits of metering and ongoing water efficiency advice.

Operational GHG (Tonnes CO2e)	7,065	7,058	6,965	6,761	6,957	5,649	5,185	5,043	4,918

Customer priority: Invest in the future to meet growing environmental challenges

This operational greenhouse gas emissions metric is a new performance commitment for PR24. It forms part of our long-term ambition to reach net zero in support of the Government's 2050 timeline.

Mains Repairs (per 1,000km)	66.83	65.43	64.35	63.27	62.22	51.30	50.54	49.80	49.08

Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.

We currently have the lowest number of mains repairs in the sector reflecting our stewardship of our networks. We'll make further improvements as part of our calm networks strategy and by leveraging the benefits of our network 'digital twin'.

Unplanned Outage (% peak weak capacity)	2.30	2.25	2.15	2.09	1.69	1.42	1.14	0.87	0

Customer priority: Secure and deliver water supplies which are high quality, reliable and sustainable.

Our performance in avoiding unplanned outages at our works is among the best in the sector at under 1%. We'll maintain this excellent level of performance, making sure our customers' supplies are not impacted by unplanned outages.

We are currently industry leaders in interruptions to supply, water quality contacts, mains repairs and continue to achieve upper quartile performance for customer (CMeX), developer (DMex) and business experience (BR-Mex).

Despite this, we have challenged ourselves to achieving zero water supply interruption minutes by 2050 and to reduce the number of water quality contacts and mains interruptions by 50%. This is in line with our customers' expectations that we do not invest more into these commitments but deliver improvements from base activities.

We already have commitments to achieve Net Zero and reduce our leakage by 50% by 2050, and we are stretching ourselves to deliver on these commitments prior to that date, and in the case of leakage 10 years prior to that date.

We recognise that our commitments to PCC are challenging. We are committed to achieving the target of 110 litres per person per day, and we believe we have made the right investment decisions and ensured a robust support framework to achieve this. By doing so we will not only be ensuring

that we can meet our supply demand requirements, but we will also be going beyond what anyone has achieved in the sector historically.

Finally, we are committed to supporting our environment, ensuring that it is safeguarded for future generations. We are set to achieve our Biodiversity targets by 2030, and then maintain this performance through innovation and awareness in investment decision-making.

We have set our performance commitments that are both challenging and stretching for us however we are confident that we can achieve our goals with the plans we have created. We also recognise that to continue to deliver against these commitments, we will need to adapt to the uncertain circumstances our future may bring as delivering on these commitments would become more challenging. We identify within each of our adaptive plans key points at which we need to make decisions and change our investment plans so that we can continue to deliver achieve our ambitions and goals.

Delivering On Our Commitments

The investment options identified in our Core Pathway are a series of low and no regrets options that we need to make so that we can deliver for our customers and achieve our long-term ambitions. To ensure that we deliver on our commitments in AMP8, we have identified a series of Price Control Deliverables, covering essential investments that are critical to meeting our long-term ambition (Table 2).

Table 2: Proposed PCDs for 2025-30

Investment Case	Price Control Deliverable
Reducing Customer Side Demand	Install 172,200 smart meters by 2030
Raw Water Deterioration Protection – Cryptosporidium Treatment	Complete five UV disinfection schemes by 2030
Raw Water Deterioration and Drought Capacity Enhancement – Nitrate Treatment	Complete two nitrate schemes by 2030
Isolation and Recovery of Service Reservoirs	Complete requirements at 13 Reservoirs by 2030
Water Source Protection including WINEP	Complete nine WINEP investigations by 2030
Lead Strategy Implementation	Replace lead service pipes at 60 schools a year until 2030
SEMD and ECAF Measures	Compliance with requirements at 23 sites by 2028.

Each of these investment options and the commitments and targets we make are set out in our investment cases (see **PRT07: Our Investment Plan 2025-2030**).

The Challenges We Face

Our plan is based on maintaining and improving our high performance and at the same time increasing our rate of investment; this is because the wider set of challenges we are facing require nothing less if we are to secure high quality water services for customers into the future.

The challenges we face are local, regional, sector-wide, and global and some are already here. Without appropriate action they pose risks to our security of supply, water quality, our ability to manage shocks and stresses, digital and physical security, and our overall capability to deliver our programmes.

Collaboration, innovation, and increased efficiency will be key to us and our partners meeting many of the challenges ahead. We set out the challenges which are driving this business plan and long-term ambitions below and demonstrate how we're meeting them in the rest of this plan.

Our Environment

Potential reductions to the volumes of water we take from the environment are one of our biggest drivers for change, as identified through our rdWRMP and reflected in this LTDS.

The supplies we currently rely on from springs, boreholes and underground sources in the chalk landscape provide excellent quality drinking water but also support a rare and valuable ecosystem. Therefore, these sources may no longer be available to us in the same capacity in the future. We also abstract surface water from the River Itchen, one of the most famous chalk streams in the Southeast, which is subject to a wide range of biodiversity and ecological protections.

Taking water from these sources has the potential to impact on rivers, streams, and the associated wildlife, so we'll be carrying out environmental assessments under the WINEP on all our sources to determine if changes are required.

We already expect we'll have to adapt to 'losing' between 39 and 122 million litres of water each day from our existing sources by 2050. To put this in context, our average daily supply today is 183 million litres of water (with potential ranges from 160 in winter and up to 240 in summer). We're planning to increase our efficiency in how we treat and distribute this water as well as investigate options for alternative sources.

This is a key consideration that we have set out in our **Abstraction Reduction** scenario. We have developed a methodology as part of our rdWRMP to forecast a series of alternative futures that represent the amount of water we need to reduce our abstractions by. We have created a series of futures to enable us to model which options we would need to implement to offset the water we are no longer able to abstract, should the need to reduce abstraction become reality.

Climate Change

Climate change will continue to challenge our resources and environment as it brings changes to weather patterns. Less water is likely to be available from our current sources if there is less reliable rain, sources may become more easily contaminated during more frequent flooding and hotter, drier periods will increase demand for water. We've used updated UK climate predictions to generate our view of these effects, which we calculate could mean we need to 'find' between 2 and 14 million litres more water each day by 2075.

The impacts of this are set out in our **Climate Change** scenario. We have forecast the impacts of climate change on future water availability using UKCP18 projections. The has enabled us to create a series of futures that represent a range of outcomes in terms of precipitation and evapotranspiration.

Drought resilience

Along with all Southeast water companies, we are increasing drought resilience so we are only likely to need emergency drought restrictions such as standpipes once every 500 years on average by 2040. To achieve this, we need to find an extra 13.1 million litres of water each day.

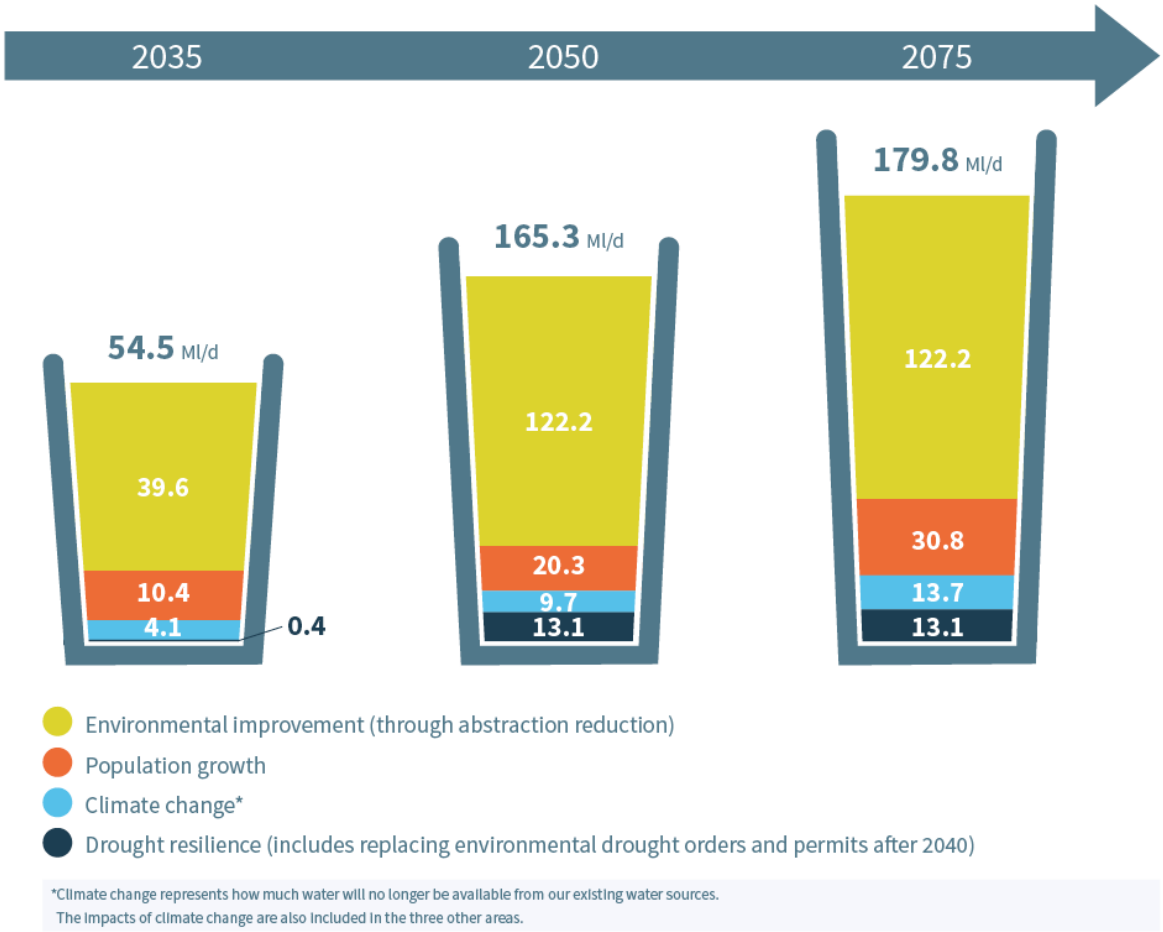
Together, these needs from the environment, climate change and increased drought resilience add up to 180 million litres each day by 2075 (Figure 12).

Population growth

We've considered a range of increases in the number of people living in our area over the next 50 years – ranging from 8.7 per cent to nearly a third (30.4 per cent). We're also expecting between 52,000 and 140,000 new homes to be built. This growth could create a need for an additional 9 to 31 million litres of water per day by 2075 and it's our legal and social obligation to meet this need.

The impacts of growth and water usage have been used to create our **Demand** scenario. We have created a series of futures to reflect the 2021 census and the growth forecasts assumptions from both the ONS 2018-based National Population Project (NPP) and local housing forecasts. This has enabled us to reflect and estimate the challenges that we would face in terms of consumption in each of the population growth futures we may face.

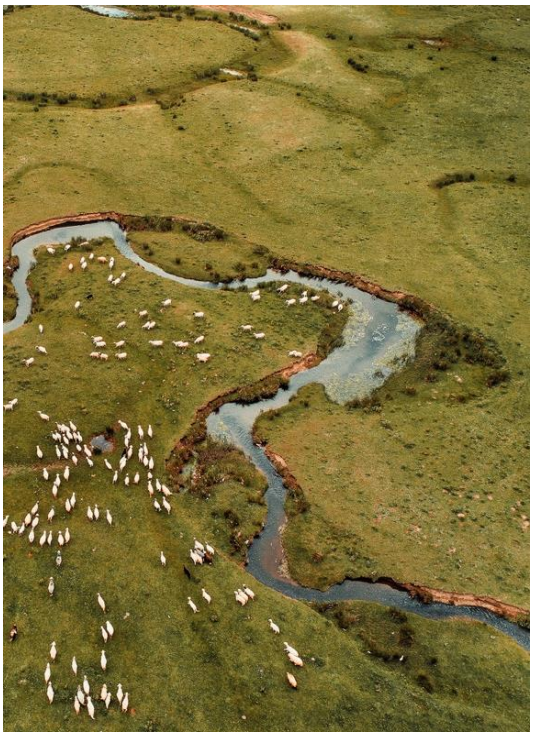
Figure 12: Drought Resilience



Water Quality

Increasing threats to water quality and emerging tighter quality standards require additional treatment and catchment approaches. We face an immediate issue with rising nitrates in the groundwater, particularly in Sussex which can no longer be managed by blending high and low nitrate sources. We need to install nitrate removal equipment to manage nitrate levels until the benefits of catchment approaches are realised. Our catchment approach works in partnership with farmers and other land users to reduce nitrates reaching water sources in the first instance. We also need to continue preparations and investigations for tighter regulation around PFAs (Per- and Polyfluorinated Substances) and lead in water.

Lead in water is one of our key concerns and an emerging priority for the water sector. The World Health Organisation's (WHO) Joint Expert Committee on Food Additives (JECFA) and the European Food Safety Authority (EFSA) agree that there is no lower threshold for adverse effects of lead on human health. Adverse health effects from ingestion of drinking water which contains even very small amounts of lead, cannot be ruled out.



This evidence has driven the reduction in the lead water quality standard from 10 µg/l to 5 µg/l in the current recast of the EU Drinking Water Directive (DWI, 2021). The reduced threshold will become law in the EU at the end of a transition period ending in 2035.

Despite considerable research, regulatory attention, and discussion within the water industry, there are no known plans to reduce the allowable level of lead below the current water quality standard in the UK of 10ug /l. However, a recent report by the Drinking Water Inspectorate (DWI) (Long-term Strategies to Reduce Lead Exposure from Drinking Water, DWI, February 2021, p.12) suggests water companies will, in the foreseeable future, be targeted with 5ug/l at the consumers tap.

We commissioned WRC to estimate the prevalence of lead within our network. Using a combination of local authority and Portsmouth Water Data, the WRC estimated that 80,288 properties were at risk of having a lead supply, ~25% of our property base. We need therefore to develop a robust strategy to tackle and replace lead within our network, as a change in legislation could have a dramatic impact on us and our customers.

Our vision, supported by our customers, is to ensure that we can continue to deliver high-quality water and for all our homes to have access to water with no lead by 2050. We have set out in our **Lead Reduction** scenario what options are available to us to achieve this, ensuring that we align with regulatory guidance as well as ensure affordability for our customers

Our Infrastructure

Responsibility as a regional supplier

We're stepping up to take responsibility as a regional supplier to support the wider Southeast, largely (though not solely) through the development of Havant Thicket Reservoir. Immediately upon construction, this will allow us to share more supplies with Southern Water and support permanent abstraction reductions on internationally rare chalk streams in Hampshire. With this extra responsibility of new supplies, comes a need to make sure our systems and networks can operate more efficiently to maintain the excellent levels of uninterrupted service our customers expect, and this includes our bulk supplies to Southern Water.

Asset Health

Some of our treatment works are at the stage in our investment cycle where they need anticipated maintenance and enhancement to continue to operate as efficiently as possible and be resilient to the changing world. Works supplying at least a third of our customers require investment, particularly as supplies become less plentiful. While keeping bills low, we have an absolute need to increase investment in a proactive maintenance cycle to manage the wider challenges outlined above.

Operational Resilience

Historically, our asset systems have been inherently resilient.

Our production, storage and distribution system has 99.7% of customers fed directly from service reservoirs, which on average hold two days water storage – twice the industry standard. In addition, Portsmouth Water's strategic spine main, as shown in the following diagram (Figure 13), has provided a highly interconnected system between our sources allowing the transfer of water around the network and into any areas with an operational issue or shortage. This has significantly reduced the likelihood of our customers experiencing an interruption to their supplies.

Figure 13: Portsmouth Water's Current Network Configuration

We have recently performed studies on all our major above-ground assets to determine their vulnerability to external, severe circumstances such as flooding and other extreme weather conditions. We have identified several areas of vulnerability to our assets where due to the impact of climate change, and the potential risk of flooding, we may need to intervene.

We will be enhancing our understanding of the risks to these assets, identifying the measures that we may need to put in place to maintain our asset resilience and mitigate against the potential risk of asset failure.

Our Customers

Customer Expectations

We pride ourselves on our long history of close contact with the communities we serve. We have regular conversations with our customers and stakeholders, both as part of paid-for insight programmes, statutory consultations and day-to-day operations and interactions. Our knowledge base includes national research projects and covers different generations, bill payers and non-bill payers, non-household customers, vulnerable and hard-to-reach customers, as well as key stakeholders. Our customers have increasing expectations of their service providers and expect continuing value for money and the maintenance of our current high standards as a minimum. As we introduce our smart metering programme, we must make sure we continue to meet our customers' service expectations, coupled with robust support around affordability, vulnerability, and accessibility.

High water use and low value

Only 35 per cent of our household customers are supplied via a water meter, the lowest in England and Wales, so, coupled with low bills, our customers have not had a strong incentive to reduce water use. We currently have one of the highest average per capita consumption levels in the UK (152 litres per person per day in 2022-23). We were designated as an area of serious water stress for metering in 2021 so we need to move forward with a universal metering programme as efficiently and quickly as possible, while supporting customers.

Making this programme smart opens the door to the associated water saving, leak detection and innovative tariffs. Key to this is to stimulate changes in customer behaviour through communication of an understanding of the finite nature of water as an essential resource and the impact of high use on the environment. Nowadays, failure to wear a seatbelt in a car or smoking in a public place are considered as taboos. Profligate water use needs to be seen in the same way. Combining water data with energy data also adds to the motivation around potential financial savings. Smart meters are the key to achieving this objective.

The Economy

Skills, People, and Supply Chains

Our business plan is ambitious and encompasses investment in areas which are newer to us i.e., smart metering and digital optimisation and security. To deliver efficiently and maximise the benefits we need to recruit a diverse range of new skills, upskill our existing workforce, secure expertise in our supply chain and access goods in time. We will be competing in an environment already limited by Brexit and the Ukraine war, as well as longer-term issues, so we need to be agile and maintain our position as a favoured client and popular employer.

Cost of living

At a time when the water sector needs to step up its investment in infrastructure, resources, and skills to maintain services in the long term, the country is struggling with a cost-of-living crisis. Our customers are already coping with increases in mortgages, rents, food, energy, and day-to-day living, as well as facing a significant increase in their sewerage bill from Southern Water. Striking a balance of intergenerational investment for the future and supporting vulnerable and struggling customers today is key and our plan demonstrates how we'll achieve this delicate balance, as well as support on reducing energy and wastewater bills through our smart metering and PCC reduction programme.

Financeability

Investment in infrastructure assets is typically funded through a combination of raising debt and investment from shareholders. We have recently secured £170 million of new equity investment from our shareholders, Ancala, as well as putting in place £325 million of new debt facilities. These investments are mainly to support the construction of Havant Thicket Reservoir.

The rate at which we can raise funding in the financial markets is affected by the wider economic environment and having emerged from a historically low interest rate environment the costs of raising finance have increased significantly. We remain confident we have the necessary financing arrangements in place and sufficient financial resilience to fund our investment programme.

Our LTDS sets out the investments we need to make to face the wide range of challenges we need to prepare for so that we can maintain the excellence in our service standards that both our customers and society have come to expect.

We aspire to become a national leader in the water sector, working with our partners to both innovate and deliver effectively and efficiently for our customers and the environment. It is essential our investment decisions consider the long-term impacts to our operations so that every choice we make today, can ensure we continue to provide our leading standards of service and continue to maintain the lowest average water bill in the country.

We are proud of the plan we have developed, and we recognise the challenges that we face are growing and their impacts uncertain over the long-term. To ensure that our vision can be realised, despite the uncertainties of the future, we have used an adaptive planning approach in our LTDS. This approach allows us to reflect the latest thinking from across the industry, creating a long-term plan that accounts for the challenges we may face in the future.

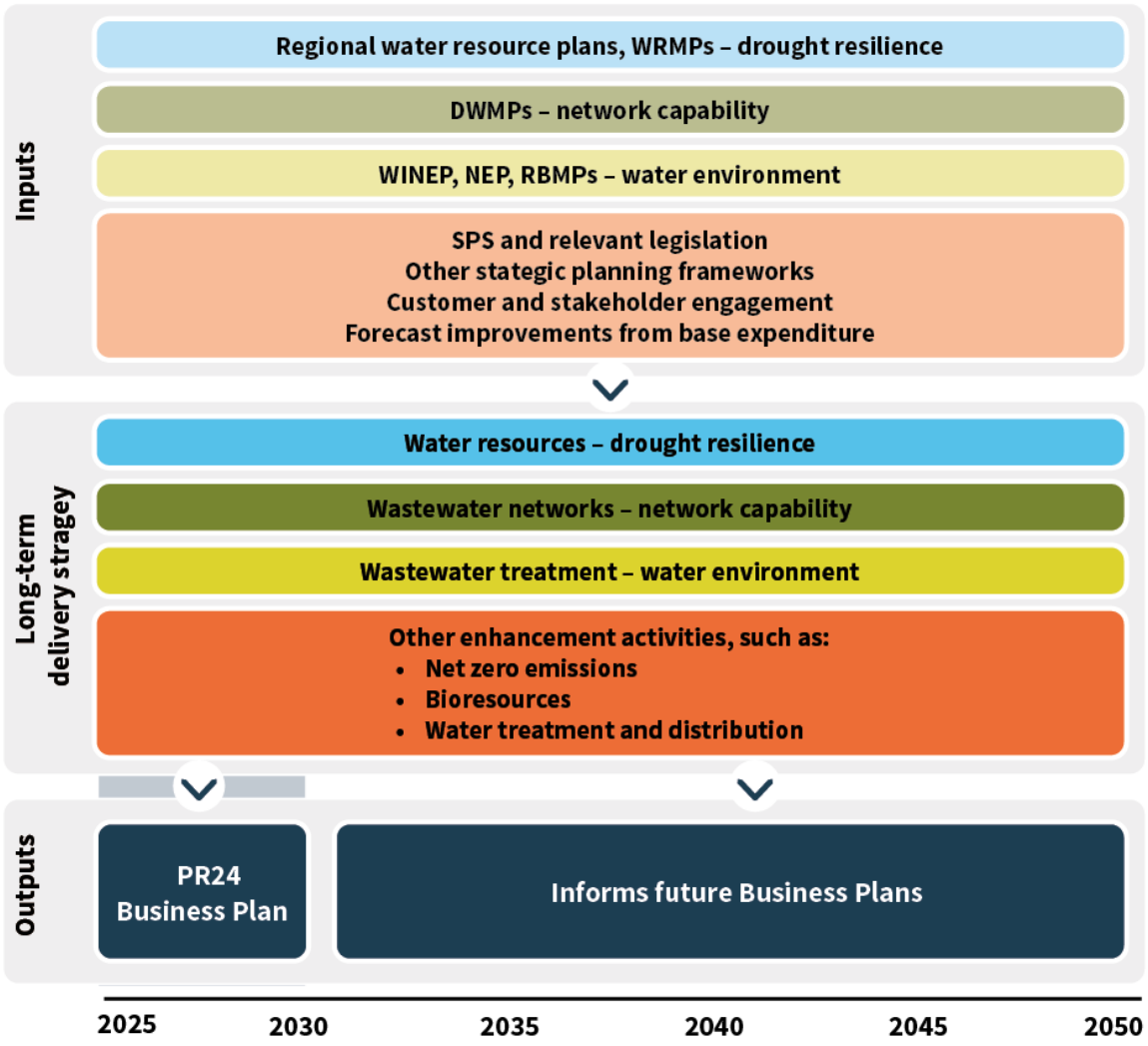
B. Strategy

Since our last PR19 business plan, we have made a step-change in the way that we carry out long term planning, and an adaptive planning approach has already been fully incorporated into the development of our WRMP, which has been created in collaboration with the six other water companies in the Southeast region. We are working with the wider region to ensure that we can navigate the future water resource and environmental challenges together and ensure that the full range of options available within the region are explored and optimised.

Aligning our aims with our neighbours allows us to balance national, regional, and local interests. By doing so we are ensuring that we can deliver best value for our customers and reflect the investment and environmental ambitions of our customers, stakeholders, and regulators. This has enabled us to develop a single, best value regional plan that sits at the heart of our LTDS.

Our LTDS also considers our contributions to the WINEP, as well as our commitment to achieving the UK Government's 2050 Net Zero target (Figure 14).

Figure 14: Key Inputs and Outputs of Long-Term Delivery Strategies



We are a relatively small water only company which limits the options and solutions that are available to us to meet the challenges our futures present. As described, one of the greatest challenges we face is the availability of water to our region. We detail the requirements of what we need to do to maintain our supply demand requirements in our WRMP, which makes up a significant proportion of our enhancement investment over the next 25-years.

The other area of enhancement activity that is outside of our WRMP, and which is critical to determining the abstraction reductions we will face, is our WINEP investigations programme. As described in our investment case PRT07.05: WINEP and Protecting the Environment, our agreed programme establishes the investigatory work to determine the future interventions we may need to make or the abstraction reductions we are required to deliver.

The activities we have identified to achieve Net Zero are all continuations of existing activities we have identified in previous business planning processes and are already included within our base level of investment.

The additional key enhancement activities that we have identified ensure that we are able to mitigate against emerging water quality risks from our sources, such as nitrate and cryptosporidium, as well as improving our resilience when isolating our service reservoirs, and achieving our statutory obligation to meet SEMD and eCAF requirements.

Our lead strategy sets out our ambition to replace lead service pipes to all our customers (both the company-owned communication pipe and the customer-owned supply pipe), maintaining our existing processes to mitigate the impacts of lead through dosing and fix on failure as part of our base expenditure. To achieve our ambition, whilst the techniques we use to replace lead service pipes can vary, the speed at which we deliver the replacement programme is the only variable we can effectively control. We will seek, through investigatory work, to identify the most efficient and cost-effective methods for replacing lead service pipes and deliver on our commitment to remove lead from schools and nurseries between 2025-30.

We continue to deliver on key activities we have previously identified and are included within our current business plan. As described in our main business plan, the successful delivery of Havant Thicket Reservoir is pivotal to all that we do and the resilience of the region's water supplies. We are making good progress with construction of the reservoir. The next steps for the reservoir are outlined in the Future Water section of our business plan and in the supporting document PRT02: Delivering Havant Thicket Reservoir for Our Customers and the Region.

Everything we do is driven by our purpose and our values, and to ensure the vision that we have set out over the next 25 years, can be achieved. Our four key priorities will guide us on this journey, and we will utilise the insight and understanding from our customers, stakeholders, and regulators to inform the future we wish to achieve.

Our adaptive pathways set out how our vision will be realised against the variety of futures we may face. They have brought together our strategic planning frameworks, our statutory obligations, and all other activities we require to ensure that we can continue to deliver the high levels of service our customers enjoy today.

To ensure our plans are both robust and resistant to the uncertainties of the future, we have created a series of plausible future scenarios that have aided us in determining and testing our long-term delivery strategy. From here we have been able to develop a series of alternative pathways that allow us to adapt our business plans and investment needs over the coming years to meet the challenges these futures may present. Our alternative pathways articulate the investment activities that have been selected to show how we will meet the challenges of the future.

Creating Our Future Scenarios

In previous business plans, we have published a plan of investment activities which represents a single future that would allow us to achieve our performance commitments and continue to deliver for our customers and the environment. This approach, whilst robust at the time, limited our ability to adequately prepare for emerging risks, forcing us to react to those risks as opposed to proactively implementing preventative measures to mitigate risk at the right time.

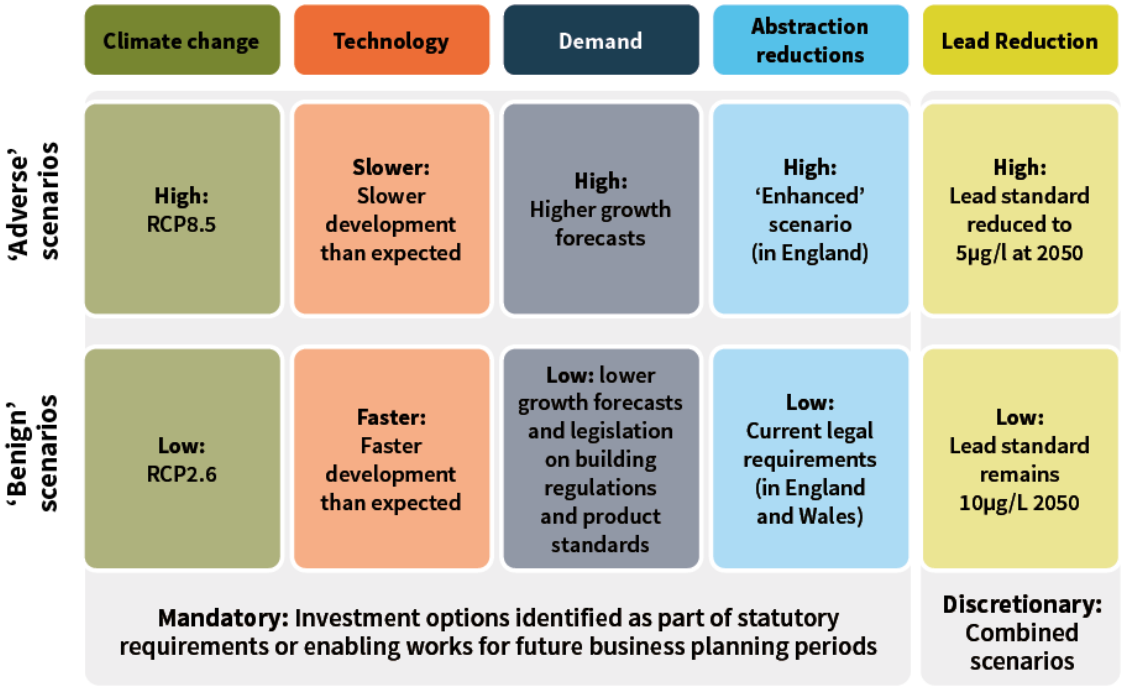
The whole of the water sector faces a range of emerging challenges, and we need to ensure that we can continue to operate and maintain our levels of service should any of these challenges be realised.

Ofwat requires all water companies to test their enhancement investment strategy against a series of industry-determined common reference scenarios (Figure 15). We are also required to plan for any local or company specific factors or any futures that could combine the different scenarios that we are planning for.

We have therefore developed a wider scenario that considers the impact of a legislative change and how this might influence our ambition to remove lead from both our communication pipes and our customers' supply pipes.

Alongside this, we have developed futures that bring together the adverse conditions set by each scenario: this has allowed us to both align with Water Resources Planning Guidelines for the WRMP as well as providing us with futures that we are more likely to experience.

Figure 15: Common Reference Scenarios



Each of these common reference scenarios present us with a range of potential futures, through which we can consider the impact each factor would have on our operations, our water security, and our environment. Adaptive planning has allowed us to develop our LTDS in a way that accounts for the uncertainty in the impacts of these scenarios on our future so that we can adequately prepare for the challenges.

Climate Change Scenario

We have considered the impacts of climate change as part of our WRMP development. In conjunction with the WRSE group, we have set out the impact climate change could have on the amount of water that is available in the future. WRSE has modelled the impacts that climate change will have on the supply capabilities across the Southeast in the period up to 2075.

This approach follows the EA Guidance for assessing climate change impact, using UKCP18 climate projections. This guidance follows the change in supply system resilience requirements to ensure systems are resilient up to a 1-in-500-year event. The impacts of climate change reduce the deployable output we have available, requiring us to either reduce our consumption or increase our supply resource or output (Table 3).

Table 3: Climate Change Impacts Identified for our WRMP

Drought Period	CC06 DYAA (Ml/d) Impact	DYAA (Ml/d) Impact	CC07 DYAA (Ml/d) Impact
1-in-2	-24.9	-17.9	-15.7

1-in-100	-19.1	-12.3	-2.1
1-in-200	-14.7	-9.1	-8.5
1-in-500	-9.03	-4.4	-3.8

CC06 represents the upper quartile of the 28 UKCP18 climate change scenarios, whilst CC07 represents the lower quartile climate change scenarios. To ensure alignment of our climate change impacts with Ofwat's LTDS requirements, we conducted an assessment to identify which of the climate change scenarios best aligned with the with RCP2.6 and RCP8.5 50th percentile projections. This work concluded that there was good agreement between the scenarios and all climate change metrics considered.

We have performed a desktop assessment of the impacts of climate change on our assets, assessing the potential impacts of sea level rise, and fluvial and pluvial flooding. The impacts of sea level rise were not identified to be a risk to our assets that would affect our operations, nor would it have an impact on our supply demand projections.

Our work did however identify several emerging risks to our site operations from potential flooding events. We will be conducting additional assessments and investigations into those locations as part of our asset management activities in AMP8.

Technology Scenario

We have considered the impact of technology on our investment choices, with many of the investments we are implementing using the latest technology available, meeting the advancements set out in the guidance. We will comply with current legislation and best practice for cyber security and utilise those technologies at the forefront of our sector, where appropriate. These advancements are already incorporated into our planning considerations and the impacts of these are reflected within our performance commitments.

We acknowledge future technological advances may improve our approach to delivery, reduce the cost of the materials we use, the overall operational costs of our assets, or even revolutionise our approach to meeting our performance commitments. To account for this, we have applied a cost efficiency to all the investment options we have included in our business plan, where we believe that through emerging innovation or effective delivery methods, we will be able to deliver the activities we are committed to at a reduced cost.

Should the technological enhancements that we have identified and incorporated into our investment cases under-deliver on the benefits, or require further investment to deliver, we will challenge ourselves to improve our operational efficiency further so that we can continue to maintain our levels of service and deliver for our customers.

Furthermore, developing our smart water supply network, achieving net zero by 2050 (including low-emission HGVs and fleet as well as a carbon-free baseload electricity) and the improvements we are making to support open data, have all been identified as part of our base activities.

Demand Scenario

There is significant uncertainty associated with the demographic components of demand, with the various factors that could influence population change, the effects of different scales of measurement and phasing of future housing growth, plus the alternative data inputs and assumptions that are made. The population and property numbers that we have used were provided by Edge Analytics, in June 2023, to ensure consistency across the WRSE region.

We have been able to create scenarios that represent the impacts of demand on three different bases: trend projections; housing-led forecasts; and, employment-led forecasts. This approach has enabled us to forecast the future demand requirements and the impacts on Distribution Input, and hence the additional water that would be required across a range of futures.

We have utilised the growth projections consistent with ONS18 forecasts to best describe the benign futures we have tested in our LTDS, whilst we use the local housing authority's estimates to calculate the impacts of our adverse scenario. The full range of futures we have developed and tested are described as part of our rdWRMP, in which additional considerations have been made to reflect the demand challenges that may face the entire Southeast Region.

Abstraction Reduction Scenario

We recognise the global importance of chalk aquifers and streams within our supply region and are committed to reducing the effects of abstraction on the environment and bringing enhancements where possible. In addition to the priority chalk habitat, our supply region also contains five Special Protection Areas (SPAs); four Special Areas of Conservation (SACs); 32 Sites of Special Scientific Interest (SSSIs); five National Nature Reserves (NNRs) and 26 Local Nature Reserves (LNRs). This is reflected in our 25-year Vision priority to secure sustainable water supplies for our customers, which protect and enhance our environment in a changing world. As a result, we have commitments in AMP8 to first, assess the effects of our current abstractions, and second, implement mitigation to protect and enhance the aquatic environment.

Our work focuses on the following drivers:

- Restore the effects of potential over-abstraction from aquifers and rivers.
- Prevent deterioration in environmental status from growth in abstraction.
- Prevent future deterioration due to environmental changes i.e., linked to climate change (moving to proactive protection, rather than reactive).
- Ensure no significant negative effects from proposed options as part of the WRMP.
- Prevent negative effects from temporary increases in abstraction (i.e., via drought permits).
- Ensure our time limited licence variations are sustainable.

These drivers can be mapped to three core workstreams for PR24 which will primarily be delivered via our PR24 WINEP and other investigations and assessments.

The EA completed a longer-term environmental water needs assessment as part of the Water Resources National Framework. This work established a view on the potential licence reductions required by 2050 for rivers to meet their Environmental Flow Indicators (EFI). Unless proven to the contrary by local data-driven evidence, the EA consider meeting EFI to be a requirement for a river achieving or maintaining "good ecological status", which will be achieved by reducing abstraction.

In conjunction with the WRSE we have developed a methodology for describing the different environmental outcomes we anticipate for our region. This has allowed us to create a series of long-

term alternative futures that represent the range of potential abstraction reductions, which in turn reduce our deployable output.

The first sustainability reductions are profiled to occur from 2029-30 onwards, gradually rising to 122 Ml/d by 2050. This represents the potential for a significant reduction in our total deployable output, which is forecast to be 213 Ml/d in 2049-50. Our adverse scenario represents the EA's high license cap, whilst our benign scenario represents our best estimate of potential license capping to address WFD no deterioration risks.

Lead Reduction Scenario

Our vision is to ensure that our customers have a lead-free supply by 2050. Whilst we recognise that there isn't a regulatory driver for this, we acknowledge the risk that lead pipes pose and we are committed to minimising the impact to our customers. We have consulted our customers on this, and whilst 71% of customers are supportive, they are divided on whether to achieve this goal by 2050 (29%), 2060 (24%) or 2070 (25%). We have therefore developed a wider scenario that represents faster and slower delivery of our lead ambition: a benign scenario that reflects the wishes of our customers and provides a more affordable investment programme over the long-term by achieving our ambition by 2070; and an adverse scenario that provides us with an understanding of our requirements and the expenditure that would be required should a lower lead standard of 5µg/L be required by 2050.

Discretionary Scenarios

Whilst we have modelled the individual impacts of each scenario and created representative futures, we believe that a more likely future will combine the adverse conditions of multiple scenarios. By producing these discretionary scenarios, we are also able to align with the requirements set out by the Water Resources Planning Guidelines (WRPG) in that our 'preferred' plan in our WRMP, is analogous of a future that combines adverse climate change, demand, and abstraction reduction.

Plausible Futures

We have developed a series of plausible futures, setting out the challenges and conditions of those futures in line with each of the common reference scenarios and additional wider scenarios. As discussed, our wider scenarios have been created by bespoke combinations of the different supply demand balance targets we have set out in our WRMP, as well as the impacts of changing legislation surrounding lead.

By defining these scenarios as modelling constraints, we have created a range of different futures that set out the targets and challenges we must address to ensure that our vision and priorities can be realised.

We have developed 10 different futures that represent the impacts of climate change, demand, abstraction reductions and lead reduction (Table 4).

Table 4: Summary of Our Tested Plausible Futures

Future	Climate Change	Demand	Abstraction Reduction	Lead Reduction
Core	Moderate	Moderate	Moderate	Benign
Alternative 1	Adverse	Benign	Benign	Benign

Alternative 2	Benign	Adverse	Benign	Benign
Alternative 3	Benign	Benign	Adverse	Benign
Alternative 4	Moderate	Moderate	Moderate	Adverse
Alternative 5	Adverse	Adverse	Benign	Benign
Alternative 6	Benign	Adverse	Adverse	Benign
Alternative 7	Adverse	Benign	Adverse	Benign
Alternative 8	Adverse	Adverse	Adverse	Benign
Alternative 9	Adverse	Adverse	Adverse	Adverse

Each of the futures we have developed, demonstrate the impact of each common reference scenario as well as combine the combinations of conditions to create a series of discretionary scenarios. This work aligns with the WRPG and ensures that we align with the approach taken by all member companies of WRSE.

For the purposes of our LTDS, we describe four key alternative futures and the pathways that we will be required to follow (Table 5). Whilst each pathway is equally likely, we present the core and the preferred pathway as determined by our WRMP, combining our wider lead scenario that we have assessed. By providing this focus we are able to demonstrate the broad range of possible outcomes and investment requirements we may be required to deliver and the impact of those investments on our customer bills.

Table 5: Summary of Plausible Futures Set Out in Our LTDS

Future	Climate Change	Demand	Abstraction Reduction	Lead Reduction
Core	Moderate	Moderate	Moderate	Benign
Alternative 4	Moderate	Moderate	Moderate	Adverse
Alternative 8	Adverse	Adverse	Adverse	Benign
Alternative 9	Adverse	Adverse	Adverse	Adverse

We have selected our Core Pathway as it includes no-regret options that we are required to do in all of our futures to ensure that we are able to achieve our short-term requirements and statutory obligations, as well as perform the necessary enabling works to inform our future plans.

In all futures we have identified, we recognise that the next five years of our plan are critical in performing the necessary work to keep our futures informed and options available. Our first trigger point, the point at which we will need to follow an alternative pathway, does not occur until AMP9.

The choices we make and the investment options we are planning are described in our core and alternative pathways.

Our Core Pathway

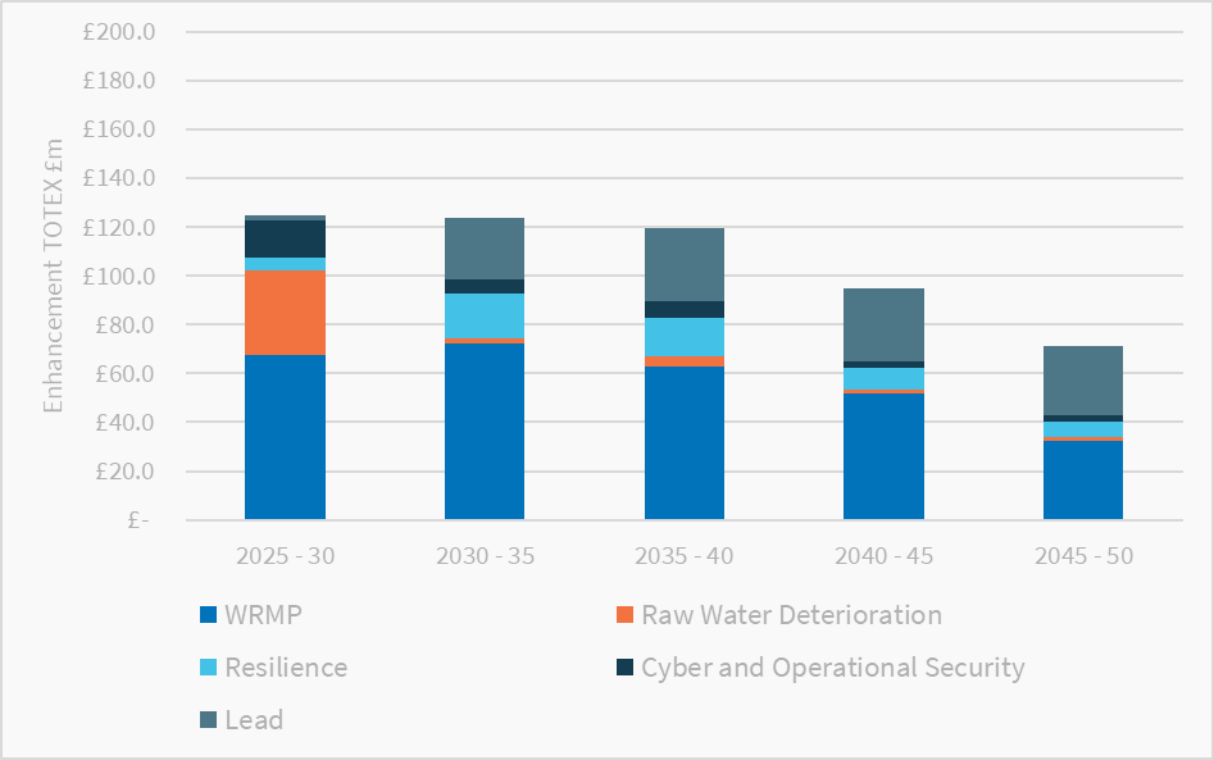
Our Core Pathway combines all activities that are no and low regret investment options that have been chosen to either keep future options open or are required to be undertaken regardless of circumstance. This pathway sets out the investment options that we must do to meet our short-term needs and our statutory obligations. It includes significant enhancement investment that will be required in most of our alternative pathways, and the investigatory and enabling activities that must take place to inform our future alternative pathways.

We have chosen this pathway by first challenging ourselves to ensure that we can maximise the benefit we receive from our base expenditure, pushing ourselves to drive efficiencies with our activities to achieve our goals. We then pragmatically assessed the needs and challenges of all our futures to understand those activities we must do, as well as those we may need to do. Furthermore, we need to ensure that this pathway aligns with those activities that we have identified in our WRMP Core Pathway, or 'situation 8'.

This pathway describes a future that represents:

- Moderate Demand: our regional population sets out following our local population growth estimates until 2030, whereupon growth slows to align with ONS18. This then continues to 2050.
- Moderate Climate Change: we continue to follow the trends consistent with the median of the upper quartile of UKCP18 climate projections, a midpoint between our adverse and benign scenarios.
- Moderate Abstraction Reduction: following our WINEP investigations, we can continue abstracting water at a rate that aligns with the EA business as usual scenario, whilst ensuring our catchments achieve 'good ecological status'.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, in line with our customers preferences, replacing 80,288 by 2070.

Figure 16: Enhancement Totex (£m) for Our Core Pathway



We have separated our activity out into the key strategic areas identified as part of our business planning, articulating the enhancement expenditure through the different programmes of activity we are proposing (Figure 16).

As can be seen, our core plan is built around the activities we must do to ensure that we can meet the supply demand challenges set out in our WRMP. We have an immediate risk regarding raw water deterioration where we must invest to protect our resources for the future, and our lead programme starts in 2030, where we begin replacing lead service pipes for our customers.

WRMP

Our WRMP forms the foundation of our adaptive planning process. We have already constructed our WRMP using adaptive planning, developing a regional plan to secure water supplies for the Southeast until 2075. It is essential that we work collaboratively with those across our region to ensure an environmentally sustainable and secure water supply is available.

Our WRMP has been created in collaboration with WRSE, utilising adaptive planning to understand the impacts of climate change, growth and abstraction reductions and identifying those investments we will be required to make to ensure that we are able to protect the environment and continue to supply water for generations to come. Our rdWRMP sets out the full list of options and further explains the choices we will be required to make over the next 25-years.

The following investment options have been selected as part of our Core Pathway through our WRMP process:

1. **Smart Metering 2025 - 2050**

We will be implementing universal household ‘smart’ metering over 10 years starting in 2025-26. Existing ‘dumb’ meters will also be replaced with smart meters, ensuring that by 2040 every household meter will be smart. By 2034-35 we expect that 94 per cent of the households we serve will have a

meter, compared with 37 per cent in 2021–22. We are then required to renew these meters in 2040, as they begin to reach the end of their asset life.

We are already accelerating our programme and we're the first water company to licence Octopus Energy Group's award-winning Kraken customer relationship platform to support our customers on individual, tailored journeys as real-time data becomes available. In addition to this, we will also be upgrading our GIS and ERP systems to ensure that we are able to maximise the benefits we can achieve from our smart metering programme.

Whilst there is some degree of apprehension around smart metering from our customers, with further insight and information a majority are supportive. Smart metering is the optimal route to achieving our commitments on per capita consumption, driving down our customer usage and supporting the drive to deliver our leakage commitments.

The installation of smart meters is critical to maintaining our supply demand requirements in the short-term until the construction of Havant Thicket Reservoir is complete. We have considered the impact that not having full smart meter penetration by 2035. We have addressed this slower technology path as part of our sensitivity tests (Table 14) and should we either be unable to achieve full smart meter penetration by 2035, or the benefits of smart metering are not consistent with what we have forecast, we will expedite additional investment options that we have identified within our Core Pathway to make available the additional water we require.

2. Water Efficiency 2025 - 2050

The data provided by smart metering and our wider evolution to smarter networks will open the door for a deeper relationship with customers on their water use, supported by water-saving advice, audits and leak repairs, links to energy and wastewater savings, community platforms and incentives and innovative tariffs.

We recognise that we must engage with and work closely with our customers to support them in realising the benefits that smart metering makes available to them (including savings in wastewater and energy bills as well as water). Our Core Pathway therefore includes an expansive package of water efficiency engagement activity. This will enable us to remain connected with our customers, helping them realise the full benefits of smart metering and supporting them as we transition into a more information-rich world.

3. Upgrading our Network 2038 - 2040

To create additional flexibility in our network we plan to upgrade our Lavant Booster. This critical network enhancement will improve the way we can move water resources around our supply area. This will unlock 25 Ml/d of deployable output and enable us to harness the additional water that we are creating for the region through the Havant Thicket Reservoir. This option is critical in all of the futures we have developed; however, it is only viable following the completion of Havant Thicket Reservoir.

Delivery of this activity will provide us with much needed capability in transferring water around our network, and is therefore considered to be low regret.

4. Transfer From Southern Water 2035 - 2040

We currently have the capacity to share 30 Ml/d of water with Southern Water. Following the completion of Havant Thicket Reservoir, this will increase by an additional 30 Ml/d. We will need to begin importing water from 2038, as Southern Water's supply is offset by new sources of water from within the region. We will need to invest in a key transfer between our companies to ensure that we are able to do this.

It is essential that we maintain a strong working relationship with Southern Water to effectively manage the transfer of water between our two companies. The interdependency of our operations and the ability to share water is a vital component in the future planning of our WRMP.

All the investments we will make as part of our WRMP, sit against the backdrop of the construction of Havant Thicket Reservoir. Its timely completion is critical in ensuring we can continue to deliver for our customers and to enable us to better support the wider region.

Raw Water Deterioration

The condition of our natural environment has become a concern for us all. And with the pressures of climate change and population growth if we do not step up our pace of evolution then it's going to get worse. We cannot do it alone, but our unique relationship with the local freshwater environment gives us an influential role to play to secure its sustainability for the future.

We have selected the following projects and programmes so that we can remain informed about the condition of our catchments and initiate preventative measures to ensure that we are able to continue to provide wholesome water and at the same time protect the environment for the future.

5. Water Industry National Environment Programme (WINEP) Studies 2025 - 2035

We are already conducting investigations into our river catchments and will continue to do so throughout the next ten years. These investigations will inform where we need to reduce our abstraction or if we are able to implement measures to protect this precious resource.

Following agreement with the EA, we are proposing to conduct 10 investigatory studies across AMP8 and AMP9. These will allow us to better understand the impact our abstraction is having on the Water Framework Directive classification of the waterbody status within those catchments, both currently and in the future.

6. Catchment Management Activity 2025 – 2050

We are continuing and enhancing the grants and collaborative practices we have been implementing with local farmers and landowners. These are preventative programmes that seek to protect our sources from pollutants, such as nitrates, through a 'catchment first' approach. We have identified several opportunities for improving our environment through nature-based solutions that we can work collaboratively on with our local communities and farmers.

7. Nitrate Blending 2025 - 2030

We have identified two sources that require additional investment to effectively manage nitrate levels. Lovedean Water Treatment Works requires a network upgrade that will enable us to manage nitrate levels through blending at our Nelson Service Reservoir. We recognise that treatment for nitrate can be a capital-intensive intervention. By utilising operational interventions such as blending we are able to manage the rising levels of nitrate more cost effectively.

8. Nitrate Treatment Plant 2025 - 2030

We are planning to install a nitrate treatment plant for our Eastergate group of sources, so that we can actively remove nitrates from our supply, having exhausted all operational solutions. This capital solution will also provide us with the opportunity to resolve ongoing process challenges that occur during heavy rainfall. By mitigating the temporary raw water conditions that occur during adverse weather conditions, we will ensure that we have access to our abstraction sources irrespective of the weather, making our supplies even more resilient.

9. Ultraviolet (UV) Treatment Plant 2025 - 2030

Our plan is to install a permanent UV Plant at our West Street Water Treatment Works and the provision of onsite facilities at our Aldingbourne, Walderton, Worlds End, Northbrook, Maindell and Slindon Water Treatment Works. This will ensure that we are able to mitigate the emerging water quality risk presented by cryptosporidium as well as improve the resilience of these assets for the long term.

10. Emerging Pollutants – 2025 - 2050

We will participate in, and learn from, on-going research by UKWIR on emerging pollutants such as microplastics and PFAS found in many common household goods.

As our customers have made clear, they want us to ensure we maintain the quality of water we provide; however, they feel it is even more essential to ensure the security of our water for future generations. Our activities are focused on doing just that, investigating and understand our catchments better so that we are able to make timely interventions to secure our supply. Furthermore, we are only intervening on water quality when we absolutely must do so, favouring nature-based and operational solutions such as nitrate blending, to ensure we are minimising the cost and ensuring best value for our customers and the environment.

Resilience

To ensure that we are operationally resilient to the emerging risks that face us, we have identified a series of investment needs that will future-proof our assets; removing single points of failure within our network, and upgrading our assets so that we can make timely and efficient interventions to maintain supplies. We plan to deliver this investment activity in the first five years of our business plan aligning with the support and recommendations of the DWI.

11. Service Reservoir Process Improvements – 2025 - 2040

We are proposing to improve the ability to bypass our service reservoirs by installing variable speed drives to existing booster pumps, enhancing our ability to control our assets and improve automation of 13 service reservoirs. This will further support our network in ensuring that we keep customers in supply during essential works such as asset cleaning and repair and maintenance activities.

12. Operational Resilience – 2030 - 2050

Many of our site operations rely on diesel pumps for their standby operations. To ensure that we can operate these pumps in case of a power outage, the sites have diesel storage. Storing large quantities of diesel on site carries a risk, either through spillage or through the risk of theft. We are proposing the removal and decommissioning of all our diesel-powered assets and associated storage facilities, and replacing them with a more environmentally friendly, reliable, and lower risk alternatives.

Maintaining resilience of our supplies is at the forefront of our customers' expectations and so, of the interventions we must make, we are prioritising those that may have an imminent impact and result in an interruption to customer supplies. The measures we propose to take are there to ensure that we can continue to supply our customers when essential maintenance is required.

Cyber and Operational Security

It is essential that our operations remain resilient to not only the physical challenges that could impact our assets, but to digital threats too. We need to ensure that we manage these risks and that we can maintain both our physical and digital security to ensure that our operations remain robust and resilient.

13. Operational Technology (OT) Improvements 2025 - 2028

We will upgrade our OT systems to make sure we can meet expected standards of digital security, including cyber, and operational security and capability. This will ensure that we are compliant with the requirements set out in the eCAF for site-based security. We are planning on delivering this by March 31, 2028, consistent with the statutory requirements.

Ensuring that we invest in our OT is a critical area for our organisation; failure to do so could result in us being exposed to cybercrime. By meeting the requirements of eCAF, we will become more resilient to the current risks presented by cybercrime. As further challenges evolve and the risk further increases, we will either identify and include the additional investment required to meet these challenges or, as with our current planning process, increase the investment through our base activities to ensure we are complaint and our assets protected.

14. Security and Emergency Measures Directive (SEMD) 2025 - 2030

We have identified a number of sites where we need to upgrade our security measures to ensure compliance with the latest guidance. These improvements are in response to the evolving security challenges that we are facing today and ensure that our site security remains safe and secure. This essential work will ensure that we can maintain security on our sites, complying with latest legislation, and aligning with our customers' expectations of a resilient supply.

Lead

Our ambition is for all homes to have a lead-free supply by 2050. We recognise that this is ambitious, however we are building on our previous strategies, developing a universal approach to addressing an important public health challenge. Following further engagement with our customers, we recognise that there is support for us to do more in protecting those most vulnerable within our community.

15. Protecting Vulnerable Customers 2025 - 2030

We plan to replace the lead service pipes for customers in the highest risk groups within our community. We will engage with local schools and nurseries where we have identified lead, to actively remove and replace their service pipes with a suitable material. We will utilise the programme as a pilot to enable us to develop our understanding and improve our processes so that we are able to deliver our proposed lead service pipe replacement more effectively in 2030.

16. Replacing Customer Service Pipes 2030 - 2070

Whilst our ambition seeks to replace all lead service pipes by 2050, we recognise that in the absence of compelling legislation, we need to ensure affordability and deliverability and align with our customers' preferences. Our Core Pathway sets out the investment that would be required to replace 80,288 service pipes by 2070, phasing our lead replacement over a 40-year period. This is a new initiative in our lead strategy, and we believe that the only way to safely guard against the implications of plumbosolvency is through lead pipe removal.

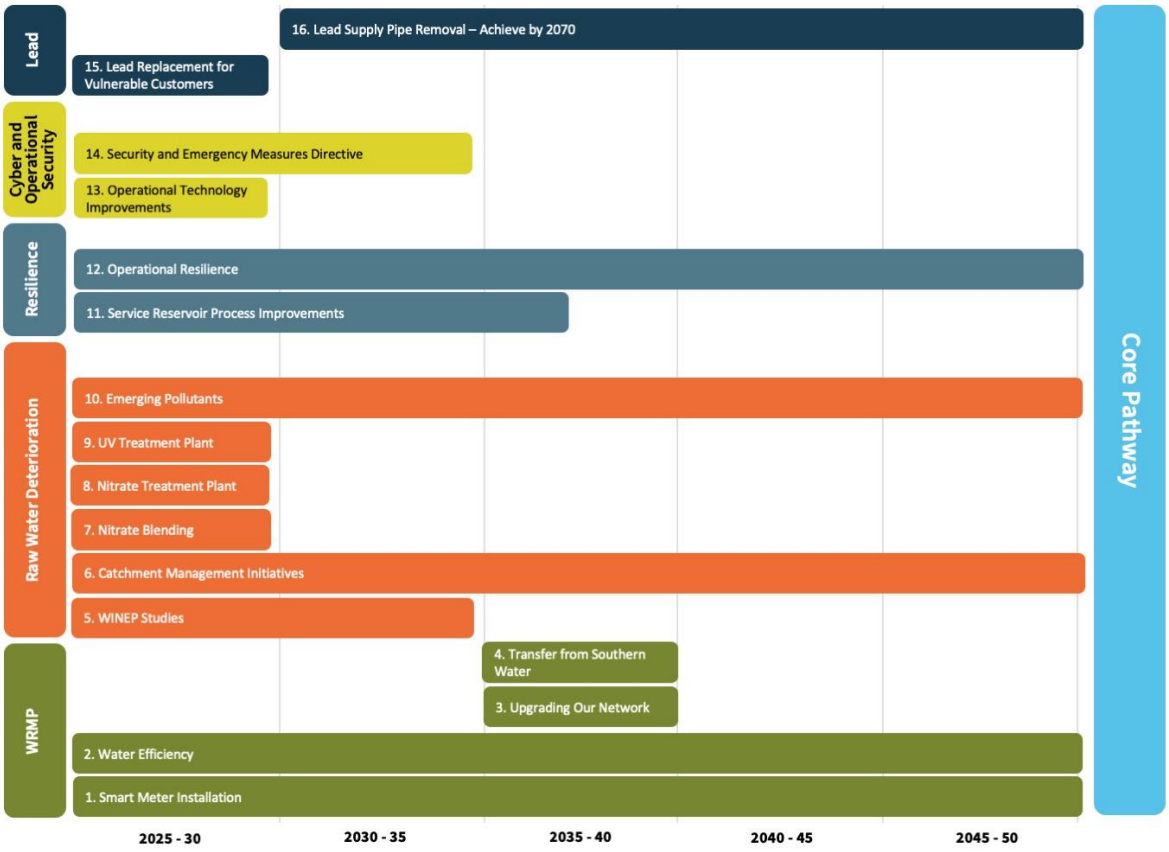
Lead removal was one of the priorities for our customers, with a preference for this investment over environmental improvements and smart metering. However, whilst they supported the replacement, they were happy for us to phase our investment to ensure affordability in the long-term. More vulnerable customers and those from younger generations are more concerned with the risk and would like to see lead pipes eradicated more quickly. The majority favoured removal for those most vulnerable, and this is why we will begin by removing lead from schools and nurseries in the first five years of our plan.

These are the areas in which we need to invest, and the solutions we must implement to ensure that we are able to maintain our supplies for generations to come. Our proposed solutions have been selected using expertise from across the industry, ensuring that the choices we make align with our customers' preferences and expectations.

The investments we are making in the next five years are a platform from which to build our investments for the long-term (Figure 17). We are on a journey to enhance our understanding of our infrastructure operations and the challenges they could potentially face so that we can make informed decisions for the future.

Many of the investment decisions we have made will enhance the level of service we are providing, and ensure the protection of our assets, our environment, and our customers for generations to come. These investments will provide us with the opportunity to better understand the emerging risks that we are facing and will allow us to better inform the investment decisions we will need to make in the coming years. Our plans are currently adaptable and flexible, centralised around by far our largest single capital expenditure in Havant Thicket. We are focussed on maximising the benefit we can achieve from this investment working with our neighbours to ensure the long-term protection of our supplies for our future.

Figure 17: Proposed Delivery Profile of Our Core Pathway



The activities we set out in our Core Pathway will enable us to achieve our short-term targets, inform our future requirements through identifying emerging risks, and provide us with preparatory activity to enable more efficient delivery of our key schemes.

These options are required in all the futures we have tested. These options also meet the requirements of alternative pathways 1, 2 and 5, but in those pathways they require adjustments to the timing of delivery. These timings will be assessed as part of our monitoring plan and be reviewed and updated as part of both our Annual Performance Report and business planning cycles.

Our Core Pathway demonstrates the level of investment we are required to make in the short-term to meet our supply demand requirements and raw water challenges that we are facing over the next five years (Table 6). Customers will observe an initial increase in bills in AMP8 of 19% (before inflation) due to this need. We have built the remainder of our long-term plan so that we ensure a steady increase in bills as we move forward, consistent with customers wishes for certainty and smooth bills.

We have phased our enhancement activity from AMP9 to ensure we can maintain affordability in the long-term.

Table 6: Totex Forecast of Our Core Pathway

Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	123.7	119.4	94.7	71.1
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	332.8	308.9	289.9	266.8

We have tested our approach to affordability with our customers. They told us that ensuring fairness in the near and short term is essential, and this is why we have phased our investment over the next 25 years so that we can maintain a balanced bill profile. We set out the customer impacts of this plan and our alternative plans later in Figure 28 below.

As described, our Core Pathway has set out the investment we require in most of the futures we have developed. We recognise, however, that we may need to invest further should the requirements and challenges of the scenarios we have assessed be more adverse.

Alternative Pathways

We have tested our plans against a range of futures, consistent with the common reference scenarios and to align with WRPG (Table 2).

In more adverse futures, we require additional investment options so that we can maintain our levels of service, meet the supply demand challenges set out in our rdWRMP and achieve the stretching performance commitments we have set ourselves (Table 1). To meet the challenges of these futures, we have developed a series of alternative pathways that represent the investment options identified within our Core Pathway, as well as those additional investment options we will require so that we can meet the challenges that each future presents.

The greatest challenge we currently face is the availability of water that we can source sustainably so that we do not adversely impact our immediate environment. As set out in our Core Pathway, the first five years of our plan are fixed, maximising the benefit from the demand management options delivered through smart metering and the leakage activities we have set out in our base expenditure. From here, we are required to improve our network connectivity by upgrading Lavant Booster (Option 3) and begin importing water from Southern Water (Option 4).

In many of the future scenarios we have modelled, it is the timing at which we begin our strategic investments that is critical. Each future we have created has provided us with a variety of supply demand deficits as described in our WRMP, as well as options to meet our ambition to achieve a lead-free customer supply for all our customers.

To determine if we require additional investment in each of our futures, we have identified a series of points where we must decide if we need to move to an alternative pathway. Our decision points are the points at which we need to decide whether we follow this alternative pathway; our trigger points are where we change pathways (Figure 18).

At each decision point we will review the monitoring criteria we have set out for each scenario and will assess whether we have exceeded a threshold for those criteria, which requires us to switch to an alternative pathway (Table 13). It is therefore essential that we ensure our planning is robust and monitoring procedures are well established so that we can make the right decisions at the right times.

Through our scenario modelling we have identified a number of additional investment options that would be required in more adverse futures. We may need to make up to four additional investments in later AMPs, should a more adverse future than that which is presented in our Core Pathway be realised. The small number of additional investments is reflective of the fact that we are a relatively small water only company operating within a constrained geographical footprint. The additional investments we may need to make are:

17. **Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 1**

    We will install a pipeline that will enable us to transfer 10 Ml/d from Havant Thicket Reservoir into our network via our Farlington Water Treatment Works. This will include expansion of Farlington Water Treatment Works to treat the additional water we abstract from Havant Thicket Reservoir.

18. **Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 2**

    We will expand the capacity and our ability to transfer water from Havant Thicket into our network by a further 10 Ml/d. This will include further expansion of Farlington Water Treatment Works to treat the additional water we abstract from Havant Thicket Reservoir.

19. **Increasing Water Transfer from Havant Thicket to Hoads Hill Service Reservoir**

    We will install a spur between Farlington Water Treatment Works and Hoads Hill Service Reservoir to enable an additional transfer of 10 Ml/d into our network.

20. **Replacing Lead Customer Service Pipes 2030 - 2050**

    We will replace 80,288 service pipes by 2050, increasing the rate at which we replace lead pipe compared to our Core Pathway (Option 16). This is a new initiative we have included in our lead strategy, and we believe that the only way to safely guard against the implications of plumbosolvency is through lead pipe removal. It aligns with our ambition and whilst our customers want us to take our time, they maintain support for this investment. We will implement this option should there be a change in the legislation around lead standards in water, and a need to achieve a lower lead standard by 2050.

To understand when we need to transition to these alternative plans and introduce the options identified above, we have identified four decision and trigger points (Figure 18).

- Our first decision and trigger point is for our lead reduction scenario in 2030. Whilst we remain an active participant in the ongoing discussions around the risk of lead in water and the surrounding legislation, we believe by 2030 a decision to reduce the regulatory standard will be made. Should this be the case, this will trigger our alternative pathway which will accelerate our lead service pipe replacement programme.
- Our second decision point will also occur in 2030 and is based on the measured and forecast population growth, and the consequential demand impact to our distribution input. Should the forecast and projected impact on supply demand deviate from that assumed in our Core Pathway, we will move to an alternative pathway. This alternative pathway will be triggered in 2035, affording us time to effectively plan, optioneer and confirm this is the correct pathway to follow, aligning with our business planning processes.
- Our third and fourth decision points occur in 2035, whereby we will assess the impact of climate change and our abstraction reduction. Should the impacts of climate change reduce our deployable output, deviating our supply demand balance from that determined in our Core Pathway, we will seek to implement an alternative pathway.

  This is also true for the abstraction reductions we may need to make: in 2035 we will have completed our WINEP investigations and be able to determine the loss of deployable output, if any, to ensure we can maintain ‘good ecological’ status within our catchments. Should the loss in deployable output deviate from that forecast in our Core Pathway, we will follow an alternative pathway.

These decisions will trigger an alternative pathway in 2040, affording us time to effectively plan, optioneer and confirm this is the correct pathway to follow, aligning with our business planning processes.

We provide further detail on the decision and trigger points below.

We have identified the additional investment options we require to meet all nine of the alternative futures we have tested as part of our LTDS. We have modelled the additional investment requirements and the timing of the interventions we must make, to achieve our strategic goals in each of these futures. For the purposes of our LTDS, we focus on those alternative pathways that best align with our Core Pathway and the preferred pathway identified within our WRMP (Figure 18).

Figure 18 - The Decision and Trigger Points of Our Core and Alternative Pathways

Whilst we are required to introduce additional investments so that we can meet the requirements of our more adverse futures, our plans also require flexibility in the timing of the construction of those investment options (Table 7).

The timing of the supply-side WRMP investments we have identified as part of our Core Pathway (Options 3 and 4) can be delayed in more benign futures, as there is no immediate need for additional water.

This is also the case for the additional investments options we have identified as part of our more adverse futures (Options 17, 18 and 19). The full list of investment options for each of the alternative plans that we have tested, and the delivery of the key investment options is set out in Appendix A.

Table 7: Construction Year of Key Investment Options

Pathway	3. Lavant Booster	4.Southern Water Transfer	17. Transfer to Racton SR Phase 1	18. Transfer to Racton SR Phase 2	19.Transfer to Hoads Hill SR	16. Lead Reduction
Core Pathway	2038	2035	Not selected	Not selected	Not selected	2070
Alternative Pathway 4	2038	2035	Not selected	Not selected	Not selected	2050
Alternative Pathway 8	2038	2035	2042	2044	2047	2070
Alternative Pathway 9	2038	2035	2042	2044	2047	2050

These investments will see us increase our expenditure as the needs our futures present will require additional enhancement expenditure (Figure 19). We set out following our Core Pathway over the next five years (2025-30) which is the same for all futures.

Figure 19: Enhancement Totex (£m) for Our Core and Alternative Pathways

Our work on developing our LTDS has enabled us to test our pathways, providing a broad range of potential futures that we might be faced with. Our plans have been developed so that we keep our bills affordable, now and in the future, as well as selecting options that align with our customers' expectations.

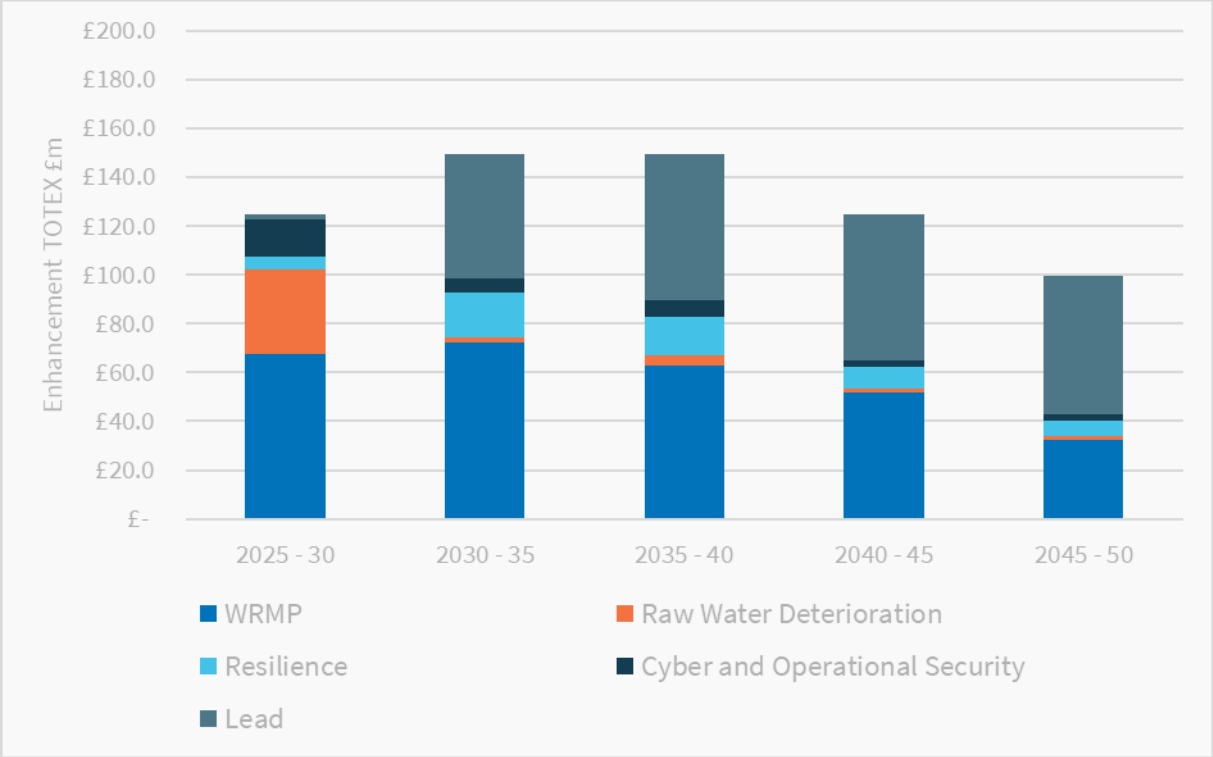
Alternative Pathway 4

Alternative Pathway 4 represents a future similar to that of our Core Pathway with the exception of the lead reduction scenario. This future represents:

- Moderate Demand: our regional population sets out following our local population growth estimates until 2030, where upon growth slows to align with ONS18. This then continues to 2050.
- Moderate Climate Change: we continue to follow the trends consistent with the median of the upper quartile of UKCP18 climate projections, a midpoint between our adverse and benign scenarios.
- Moderate Abstraction Reduction: following our WINEP investigations, we can continue abstracting water at a rate that aligns with the EA business as usual scenario whilst ensuring our catchments achieve 'good ecological status'.
- Adverse Lead Reduction: the standard for lead in water reduces and we are required to comply with 5µg/L by 2050.

In addition to the activities, we have identified in our Core Pathway, we need to introduce further investment so that we are able to deliver the requirements of our lead strategy and replace our lead service pipes by 2050 (Figure 20).

Figure 20: Enhancement Totex (£m) for Alternative Pathway 4



To ensure that we are able to deliver the requirements of this future, the timing of our key WRMP options and the additional investment of our lead programme is as follows:

3. Upgrading our Network 2038 – 2040

To create additional flexibility in our network we plan to upgrade our Lavant Booster. This critical network enhancement will improve the way we can move water resources around our supply area. This will unlock 25 Ml/d of deployable out and enable us to harness the additional water that we are creating for the region through Havant Thicket.

4. Transfer From Southern Water 2035 – 2040

We currently have the capacity to share 30 Ml/d of water with Southern Water. Following the completion of Havant Thicket Reservoir, this will increase by an additional 30 Ml/d. We will need to begin importing water from 2038, as Southern Water's supply is offset by the new sources of water from within the region. We will need to invest into a key transfer between our companies to ensure that we are able to do this.

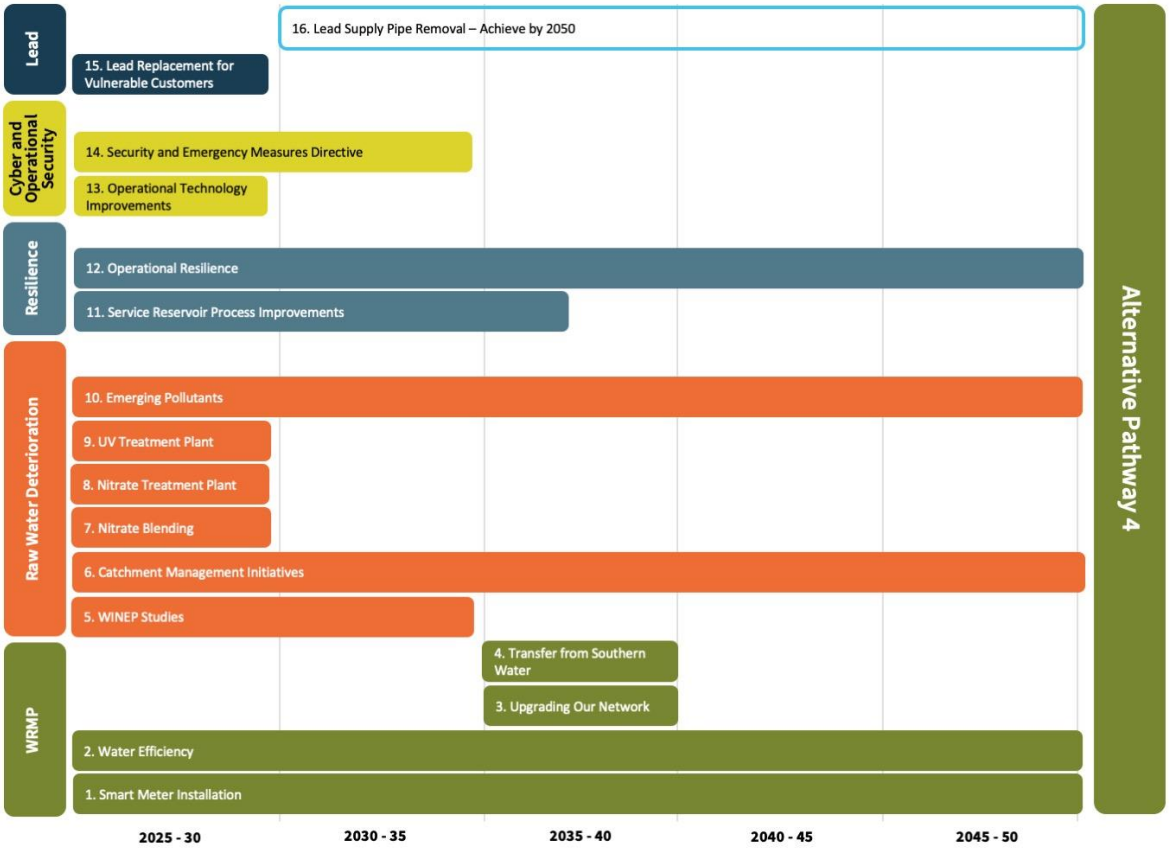
20. Replacing Customer Service Pipes 2030 - 2050

We will replace 80,288 service pipes by 2050. This is a new initiative we have included in our lead strategy, and we believe that the only way to safely guard against the implications of plumbosolvency is through lead pipe removal. It aligns with our ambition and is supported by our customers.

Decision and Trigger Points for Alternative Pathway 4

This alternative future 4 will reach a decision and trigger point in 2030, whereby we identify whether the legislation around lead in water is likely to reduce to 5 µg/L. If so, we will adapt to Alternative Pathway 4 and increase our investment and the rate at which we replace our customers' service pipes that are made of lead (Figure 21).

Figure 21: Proposed Delivery Profile of Alternative Pathway 4



By triggering Alternative Pathway 4 our expenditure must increase in AMP9 to replace all lead service pipes by 2050 (Table 8). We will double the number of service pipes we replace each year from 2030. This will be the only investment increase compared with our Core Pathway. We maintain our level of base expenditure in all our plans, maximising our essential activities that will continue to deliver our base level of operational activity.

Table 8: Future Totex forecast for Alternative Pathway 4

Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	149.2	149.4	124.7	99.6
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	358.3	338.9	319.9	295.3

Alternative Pathway 8

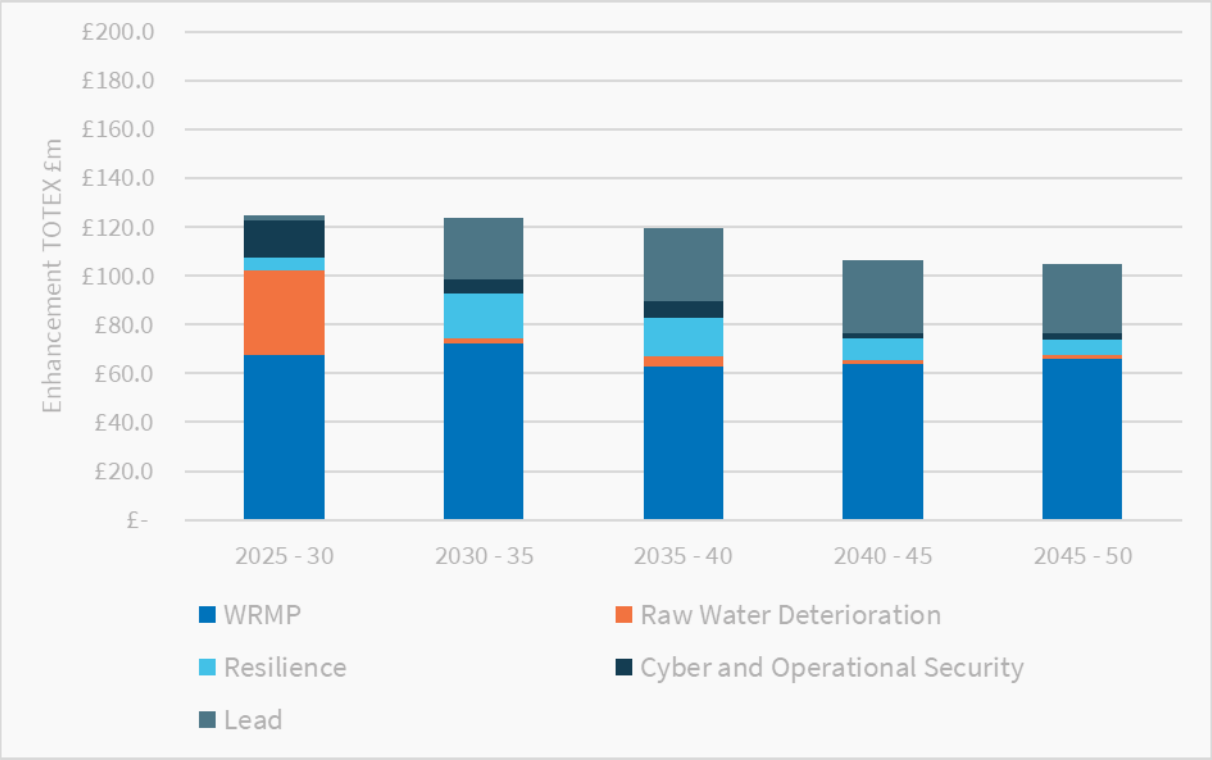
Alternative Pathway 8 represents one of the more adverse futures we have modelled using the common reference scenarios and is consistent with those options selected in our WRMP 'preferred pathway' (situation 4) that is compliant with WRPG. This future represents:

- Adverse Demand: our regional population exceeds forecasts provided in ONS18 and aligns with that presented by each of the local authorities within our region.
- Adverse Climate Change: we follow the trends of RCP8.5 and the upper quartile of the 28 UKCP18 climate change scenarios assessed. We begin to see the impacts of a more disruptive and challenging climate future.
- Adverse Abstraction Reduction: our WINEP investigations, indicate that we are causing irreparable damage should we continue to abstract water at our current rate and therefore need to reduce abstraction to minimise the detriment we are having on the environment. We will be required to implement the EA's high license cap.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

In addition to those activities we have identified in our Core Pathway, we are now facing a greater supply demand deficit caused by the impacts of increased demand, the negative impacts of climate change decreasing the amount of water we have available, and the implementation of license reductions on all of our resources. This will require us to introduce additional investment options along with those already identified in our Core Pathway (Figure 22).

Additional investment will be required from 2040 onwards. We maintain our investment in all other strategic areas, including delivery of our lead programme by 2070.

Figure 22: Enhancement Totex (£m) for Alternative Pathway 8



To ensure that we are able to deliver the requirements of this future, the timing of our key WRMP options and the additional investment of our that programme is as follows:

3. Upgrading our Network 2038 - 2040

To create additional flexibility in our network we plan to upgrade our Lavant Booster. This critical network enhancement will improve the way we can move water resources around our supply area. This will unlock 25 Ml/d of deployable output and enable us to harness the additional water that we are creating for the region through the Havant Thicket Reservoir.

4. Transfer From Southern Water 2035 - 2040

We currently have the capacity to share 30 Ml/d of water with Southern Water. Following the completion of Havant Thicket Reservoir, this will increase by an additional 30 Ml/d. We will need to begin importing water from 2038, as Southern Water's supply is offset by the new sources of water from within the region. We will need to invest in a key transfer between our companies to ensure that we are able to do this.

17. Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 1

We will install a pipeline that will enable us to transfer 10 Ml/d of water from Havant Thicket Reservoir into our network via Farlington WTW. This will include expansion of Farlington WTW to treat the water we abstract from Havant Thicket.

18. Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 2

We will expand the capacity and our ability to transfer water from Havant Thicket into our network by a further 10 Ml/d. This will include further expansion of Farlington WTW to treat the water we abstract from Havant Thicket.

19. Increasing Water Transfer from Havant Thicket to Hoads Hill SR

We will install a spur between Farlington Water Treatment Works and Hoads Hill Service Reservoir to enable an additional transfer of 10 Ml/d into our network.

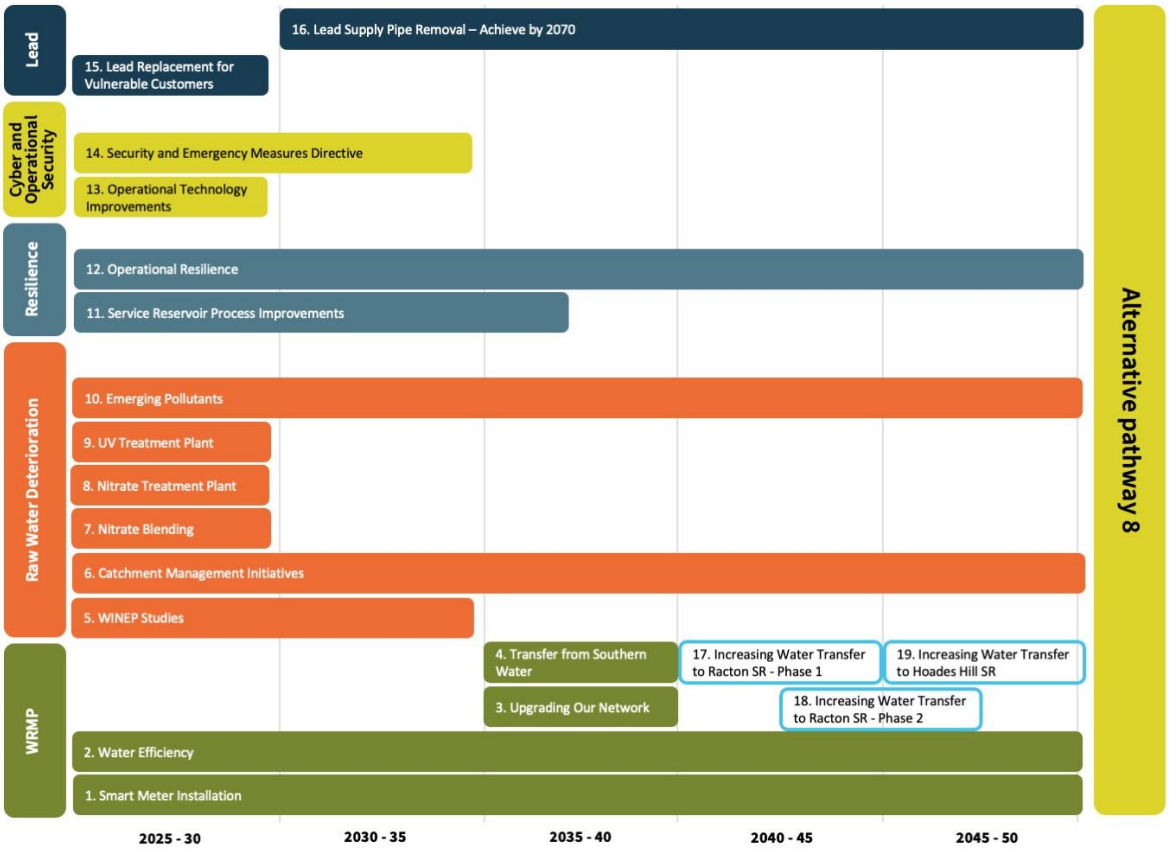
Decision and Trigger Points for Alternative Pathway 8

For this pathway to be triggered, we have two decision points in 2030.

In this future, we forecast that the lead in water standard remains at 10µg/L. Population growth however, exceeds that which has been forecast by ONS18, increasing the distribution input required for us to maintain our supplies. This will trigger Alternative Pathway 8, however this only impacts the timing at which we deliver out network upgrade (Option 3) and begin work on the transfer to Southern Water (Option 4), which remain unchanged from our Core Pathway.

A second decision point is reached in 2035, whereby we will assess the impact of climate change on and the abstraction reduction we will be required to make following our WINEP investigations. In the eventuality that climate change reduces our ability to abstract water as well as being required to reduce our abstraction from our sources for environmental reasons, Alternative Plan 8 will trigger. This will require us to build investment options 16, 17 and 18, the first of which begins construction in 2042 (Figure 23).

Figure 23: Proposed Delivery Profile for Alternative Pathway 8



Alternative Pathway 8 requires us to introduce three additional investment options to ensure that we can maintain our supply demand balance. We observe an increase in expenditure from 2040, when we need to begin construction on the additional water resource options we have identified (Table 9).

We maintain our level of base expenditure in all our plans, maximising our essential activities that will continue to deliver our base level of operational activity.

Table 9: Future Totex forecast for Alternative Pathway 8

Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	123.7	119.4	106.6	104.8
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	332.8	308.9	301.8	300.5

Alternative Pathway 9

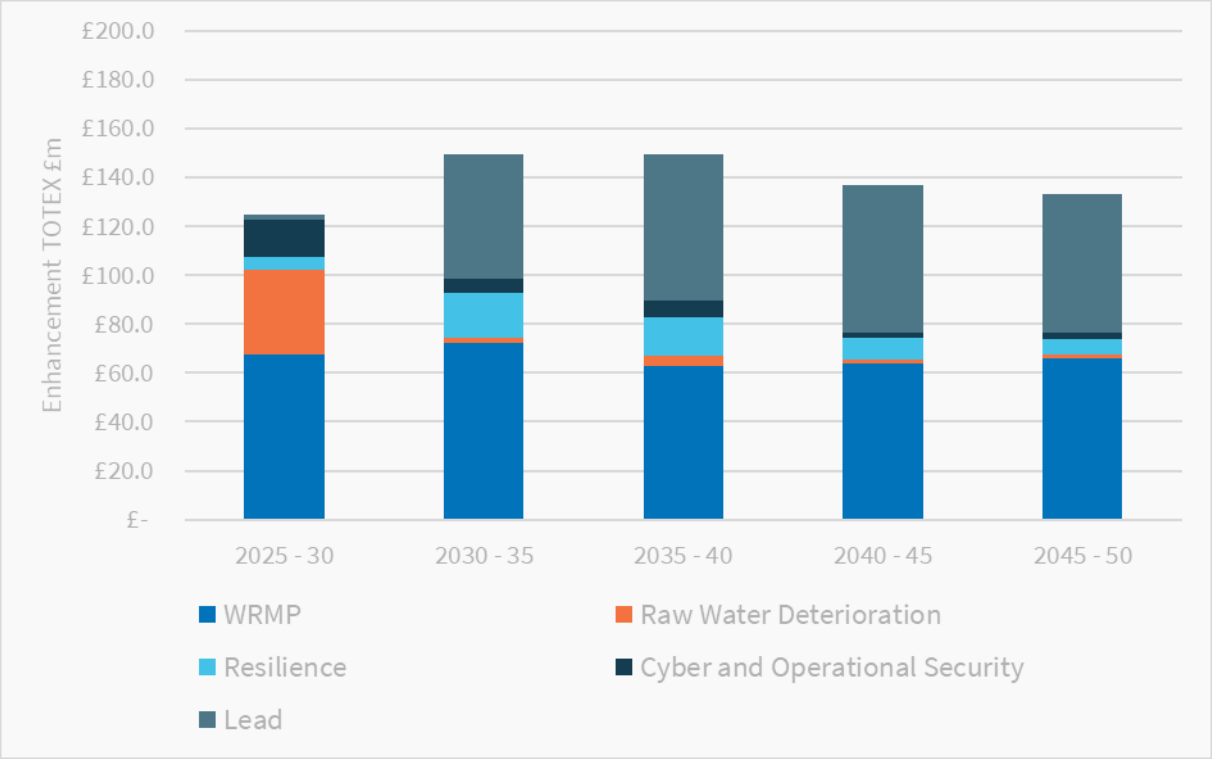
Alternative Pathway 9 represents one of the more adverse futures we have modelled using the common reference scenarios and is consistent with those options selected in our WRMP 'preferred pathway' (situation 4) that is compliant with WRPG. This future represents:

- **Adverse Demand:** our regional population exceeds forecasts provided in ONS18 and aligns with forecasts of each of the local authorities within our region.
- **Adverse Climate Change:** we follow the trends of RCP8.5 and the upper quartile of the 28 UKCP18 climate change scenarios assessed. We begin to see the impacts of a more disruptive and challenging climate future.
- **Adverse Abstraction Reduction:** our WINEP investigations, indicate that our abstraction is causing irreparable damage should we continue to abstract water at our current rate and therefore need to reduce abstraction to minimise the detriment we are having on the environment. We will be required to implement the EA's high license cap.
- **Adverse Lead Reduction:** the standard for lead in water reduces and we are required to comply with 5µg/L by 2050. We will increase the rate at which we plan to replace lead service pipes, replacing 80,288 by 2050.

We are now facing a greater supply demand deficit caused by the impacts of increased demand, the negative impacts of climate change decreasing the amount of water we have available, and implementation of license reductions on all of our sources. This will require us to introduce additional investment options along with those already identified in our Core Pathway (Figure 24).

This requires additional investment from 2040 onwards. We maintain our investment in all other strategic areas, but we are required to increase the investment we are making to achieve our lead ambition by 2050. This will double the investment we are making in lead reduction from 2030 so that this target can be achieved.

Figure 34: Enhancement Totex (£m) for Alternative Pathway 9



To ensure that we are able to deliver the requirements of this future, the timing and the additional investment of our key WRMP options and our lead programme is as follows:

3. **Upgrading our Network 2038 - 2040**

   To create additional flexibility in our network we plan to upgrade our Lavant Booster. This critical network enhancement will improve the way we can move water resources around our supply area. This will unlock 25 Ml/d of deployable output and enable us to harness the additional water that we are creating for the region through the Havant Thicket Reservoir. This option is critical in all of the futures we have developed; however, it is only viable following the completion of Havant Thicket Reservoir.

4. **Transfer From Southern Water 2035 - 2040**

   We currently have the capacity to share 30 Ml/d of water with Southern Water. Following the completion of Havant Thicket Reservoir, this will increase by an additional 30 Ml/d. We will need to begin importing water from 2038, as Southern Water's supply is offset by the new sources of water from within the region. We will need to invest into a key transfer between our companies to ensure that we are able to do this.

5. **Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 1**

   We will install a pipeline that will enable us to transfer 10 Ml/d of water from Havant Thicket Reservoir into our network via Farlington Water Treatment Works. This will include expansion of Farlington Water Treatment Works to treat the additional water we abstract from Havant Thicket Reservoir.

6. **Increasing Water Transfer from Havant Thicket to Racton Service Reservoir – Phase 2**

   We will expand the capacity and our ability to transfer water from Havant Thicket Reservoir into our network by a further 10 Ml/d. This will include further expansion of Farlington Water Treatment Works to treat the water we abstract from Havant Thicket Reservoir.

7. **Increasing Water Transfer from Havant Thicket to Hoads Hill Service Reservoir**

   We will install a spur between Farlington Water Treatment Works and Hoads Hill Service Reservoir to enable an additional transfer of 10 Ml/d into our network.

8. **Replacing Customer Service Pipes 2030 - 2050**

   We will replace 80,288 service pipes by 2050. This is a new initiative in our lead strategy as we believe that the only way to safely guard against the implications of plumbosolvency is through lead pipe removal.

Decision and Trigger Points for Alternative Pathway 9

For this pathway to be triggered, the first two decision points at 2030 will determine the likelihood of the lead in water standard being reduced to 5µg/L and whether the population growth within our region continues to be in line with ONS forecasts.

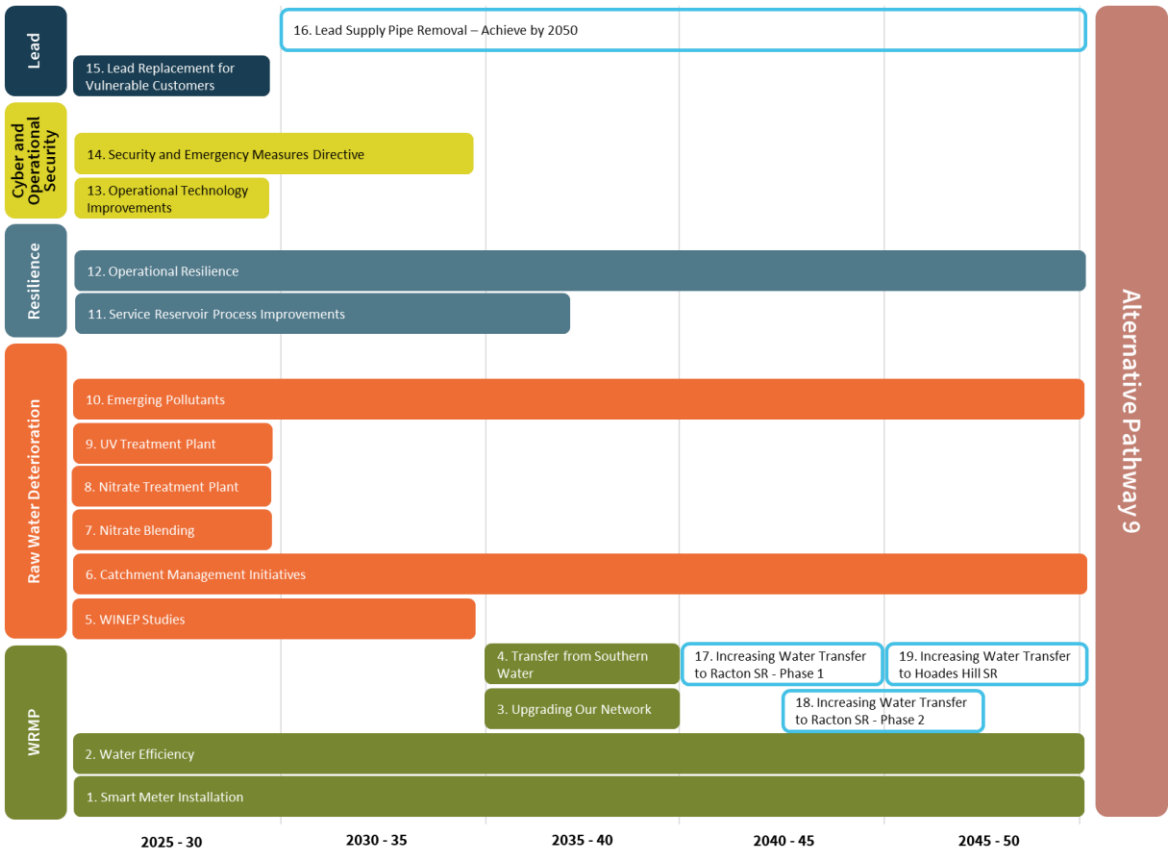
In this future, we identify whether the legislation around lead in water is likely to change. If so, we will adapt to this alternative plan, and increase our investment and the rate at which we replace our customers service pipes that are made of lead.

The population growth will exceed that which has been forecast by ONS18, aligning with our local housing authority, and increasing the distribution input required for us to maintain our supplies.

This will trigger Alternative Pathway 9, however the timing at which we deliver our network upgrade (Option 3) and begin work on the transfer to Southern Water (Option 4) remain unchanged from our Core Pathway.

A second decision point is reached in 2035, whereby we will assess the impact of climate change on the abstraction reduction we will be required to make following our WINEP investigations and their respective impact on our deployable output. In the eventuality that climate change reduces our ability to abstract water as well as being required to reduce our abstraction from our sources, Alternative Plan 8 will trigger. This will firstly require us to build investment options 16, 17 and 18, and introduce the first of these options in 2042 (Figure 25).

Figure 25: Delivery Profile of Alternative Pathway 9



Our Alternative Pathway 9, despite requiring the greatest investment seeks to maintain a consistent level of expenditure over the 25-year period, phasing investment to smooth customer bill impacts while ensuring we are able to deliver against our performance commitments.

We observe an increase in expenditure first in 2030 associated with the increased rate at which we deliver our lead service pipe replacement programme, and then again in 2040, where we need to begin construction on the additional water resource options we have identified (Table 10).

We maintain our level of base expenditure in all our plans, maximising our essential activities that will continue to deliver our base level of operational activity.

Table 10: Future Totex forecast for Alternative Pathway 9

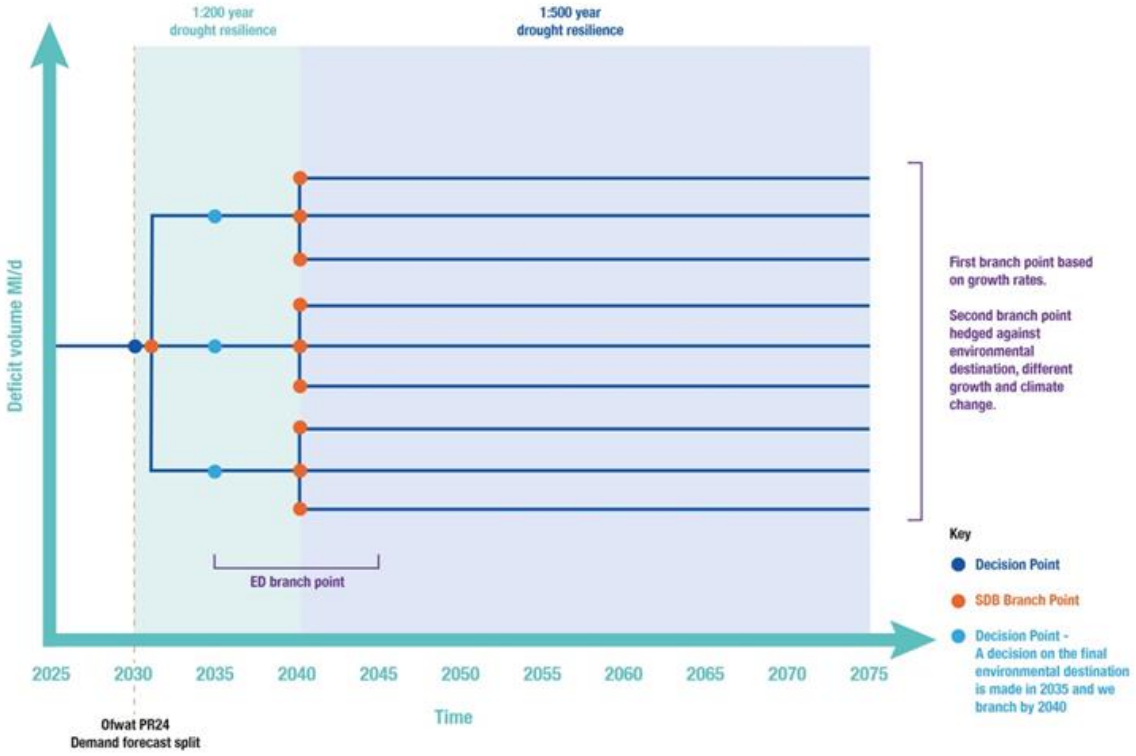
Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	149.2	149.4	136.6	133.3
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	358.3	338.9	331.8	329.0

Aligning the Long-Term Delivery Strategy with WRMPs

As described throughout our core and alternative pathways, the greatest challenges that we face as part of the Southeast region, originate from our ability to be able to provide water to our customers given the uncertainty we are facing.

Much of our enhancement programme is derived from our WRMP and we have modelled our investment decisions to ensure that we are able to deliver our requirements, while maximising the broader benefits we can to achieve from this programme. Our rdWRMP has used an adaptive planning process, setting out nine 'situations' or futures that will require us to adapt and implement the alternative pathways specified which have been reflected in our LTDS (Figure 26).

Figure 26: Adaptive Planning Branches of the rdWRMP



As described in our rdWRMP, situation 4 is our 'preferred pathway', and situation 8 is our Core Pathway, aligning with the requirements of the WRPG. We translate the investment options chosen in situation 4 into our Alternative Pathway 8 and Alternative Pathway 9, whilst those options from situation 8 are set out in our Core Pathway and Alternative Pathway 4.

Decision and Trigger Points

By approaching our investment planning this way, combining all our strategic planning frameworks, statutory environmental programmes and any investment activities that sit outside of these plans, we ensure that we have the best opportunity to continue to provide excellent service to our customers for generations to come, and in all potential futures.

As described previously, there are factors that could require us to adapt and adjust the investments we make to address the challenges the future presents. Our approach has been to describe our future challenges through the impacts of climate change, demand, abstraction reductions and lead reduction.

Our LTDS identifies the time at which one of these factors will impact our operations and require an alternative pathway to be followed, as set out in our core and adaptive pathways. To ensure that we have accurately represented the common reference scenarios, we have developed and defined each parameter and the time at which each could impact our business operations.

- **Climate change**. The impact of climate change will affect how much water is available to supply. This is a significant variable in all our plans, and we have currently recognised a decision point in 2035. This may require us to trigger an alternative pathway in 2040.

  We will assess the impact of climate change on deployable output, using the latest UK Climate projections to determine the percentage impact. This will be assessed and reported as part of WRMP29 and WRMP34.

- **Technology change**. We have not currently identified any emerging technologies that are not already included within our plan. We expect that through the implementation of those technologies we are proposing to use, we will be able to reduce the costs of our investments or invest further.

  We will continue to engage with the wider industry and beyond to determine and understand the latest technologies that are available to us to better serve our customers.

- **Demand**. We have included a decision point in 2030 where we will assess whether the growth in population and the updated population forecasts are in line with our Core Pathway assumptions. If they are above what we assumed and we need extra water, we'll move to an alternative pathway with additional investment. If lower, we will move to a pathway where less future investment is required. Should either be required, we would trigger the adaptive plan required to meet this new future in 2035.

  We will measure the property count and population as well as the measured volume used by households and non-households. Using this data, we will update and re-forecast the demand impact changes, revising the supply demand deficit we will be required to close. This will be reviewed annually and reported through our Annual Performance Report and a supporting document by WRSE, articulating the impact of the Southeast region.

- **Abstraction Reduction**. The level of abstraction reduction will impact how much water is available to supply. We have included a decision point in 2035 following the completion of the environmental investigations that will take place from 2025 through our WINEP programme. These studies will determine how much water companies including Portsmouth Water will need to reduce their abstractions by, to deliver environmental improvement by 2050. If this differs from our Core Pathway, we will move to the appropriate alternative pathway in 2040.

  We will assess the combined impact of both license reduction and deployable output reduction based upon the findings of the WINEP investigations. This will be reported and monitored through the outputs of the WINEP investigations.

- **Lead Reduction**. A legislative change could require us to accelerate our lead replacement programme to ensure that we are compliant with lower lead standards. Whilst we recognise the risk that lead poses to our customers and the need to remove all lead service pipes, our current investment in lead pipe removal reflects our customers preferences for a longer duration programme which spreads the costs. Should a legislative change occur, we would accelerate this programme to ensure compliance. A decision point will occur in 2027 to align with the next business planning process so that if there is a need to invest further, we can include the investment in our PR29 business plan.

This will be monitored through our engagement with our regulators and the industry to understand and identify the need, if any, for a reduced lead in water standard. This will be assessed and reviewed as part of our PR29 business plan submission.

We also recognise that this wider scenario is constrained to lead. At present this is the immediate risk that would require us to adapt our plans. As we continue to develop our investment planning processes, other possible legislative changes that could materially impact our organisation will be assessed and may be included.

Our decision points align with the start of the AMP in most cases, however this a reflection of our commitment to the planning and monitoring we intend to have in place to ensure that we can achieve our vision and the strategic targets set by our plans. The information we collect and the continued review of our business plans and our WRMP, will aid us in developing our future business plans and allow us to either revise our plans and trigger the additional investment requirements of the future.

Monitoring the Long-Term Delivery Strategy

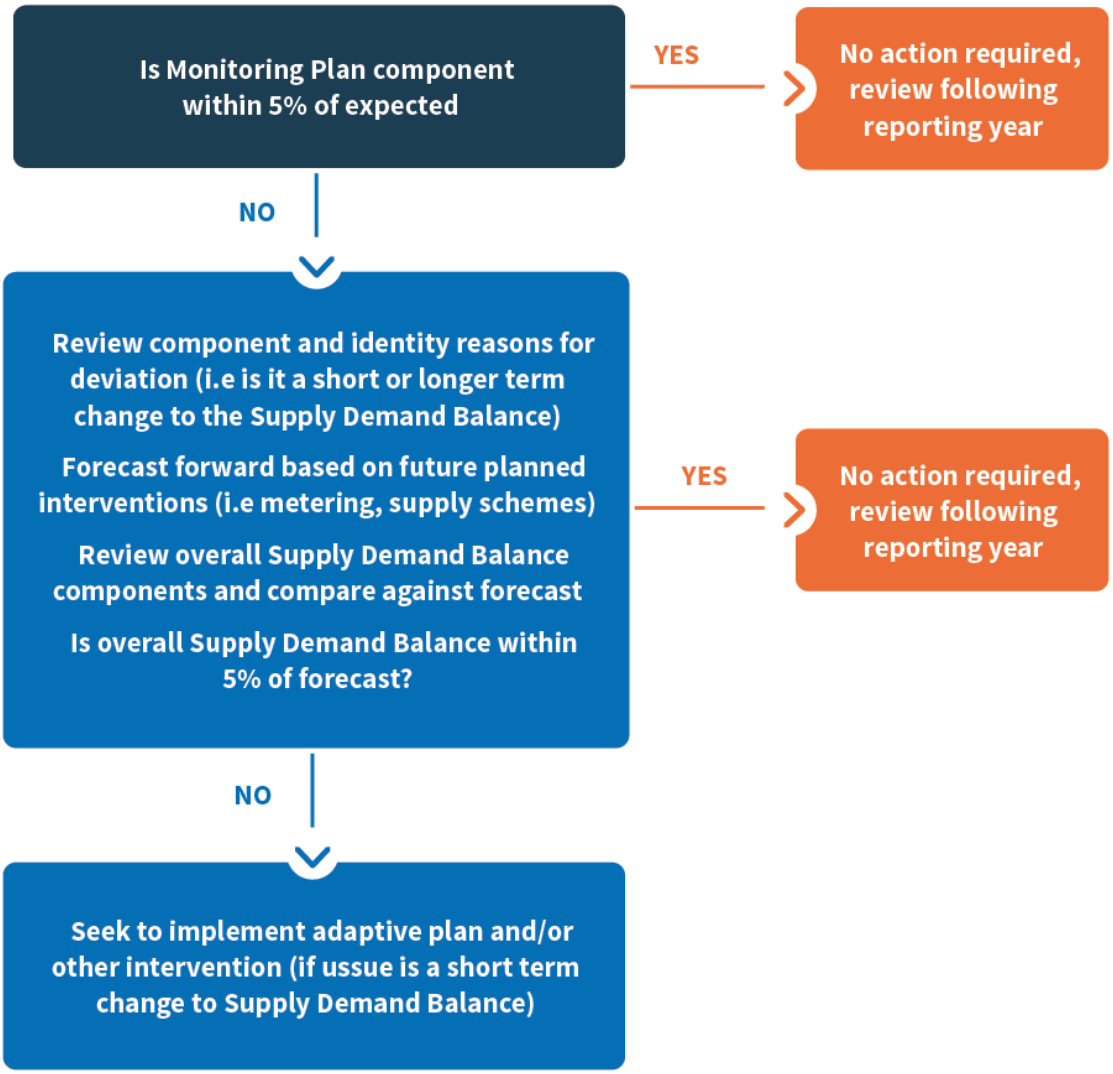
We are committed to ensuring that we can continue to achieve our vision, our priorities and meet our performance commitments over the long term. We will carefully monitor the water demand of our supply area, relevant environmental trends, customer behaviour insights and climate data trends, and develop our understanding as our WINEP investigations progress.

We will continue to produce our Annual Performance Report as well as our WRMP Annual Review and Annual Data Return in line with our reporting requirements. These reports include information on our current performance and will articulate our progression with key influencing factors to our LTDS such as leakage, PCC, Distribution Input, and population and property data. Furthermore, WRSE has committed to preparing and publishing an Annual Monitoring Report that will articulate any factors that may change the regional plan.

As discussed, the most significant challenge we face is ensuring that we are able to maintain our supply demand balance and so should that deviate beyond the range we have forecast, we will review the contributing and supporting factors to understand the impact on either our deployable output or distribution input.

We need also consider the impacts of local and short-term variations that may occur, as operational events may need be excluded from our annual assessment. To account for this, we will implement a robust review process that will guide the monitoring and review of our plans (Figure 27).

Figure 27: Long-Term Delivery Strategy Review Process



Should any material change to our plans be required, we will review and update our investment models and plans in line with our business planning cycles. Along with this we will remain active participants in the conversations with our regulators, so that should there be a significant change in the position on lead, we adapt accordingly.

We have identified several metrics that we deem essential to ensure we are able to remain informed and identify the points at which we may need to adapt our programme (Table 11). A full list of these metrics and the reviewing frequency can be identified in Appendix 10 of our rdWRMP.

Table 11: Monitoring Plan for LTDS

Component	Metric	Review Process
Population growth (impact on Distribution Input)	Change in Distribution Input (Ml/d) Property count Population	Annual water balance and regulatory reporting.
Climate Change (impact on Deployable Output)	Percentage Impact on Deployable Output	Updated as part of WRMP processes.
Environmental Policy (impact on Deployable Output)	Change in Deployable Output (Ml/d)	Output report from WINEP. Updated as part of WRMP processes.
Water Quality Regulation	Change in Lead Standard (µg/L)	Annual regulatory reporting.
License Variation	Change in Deployable Output (Ml/d)	Annual water balance and regulatory reporting. Updated as part of WRMP processes.
Progress of Demand Side Options	Change in Distribution Input (Ml/d)	Updated as part of WRMP processes.
Unplanned Outage	Change in Deployable Output (Ml/d)	Annual water balance and regulatory reporting.
Supply-demand balance	Change in Supply Demand Balance (Ml/d) Headroom	Annual water balance and regulatory reporting. Updated as part of WRMP processes.

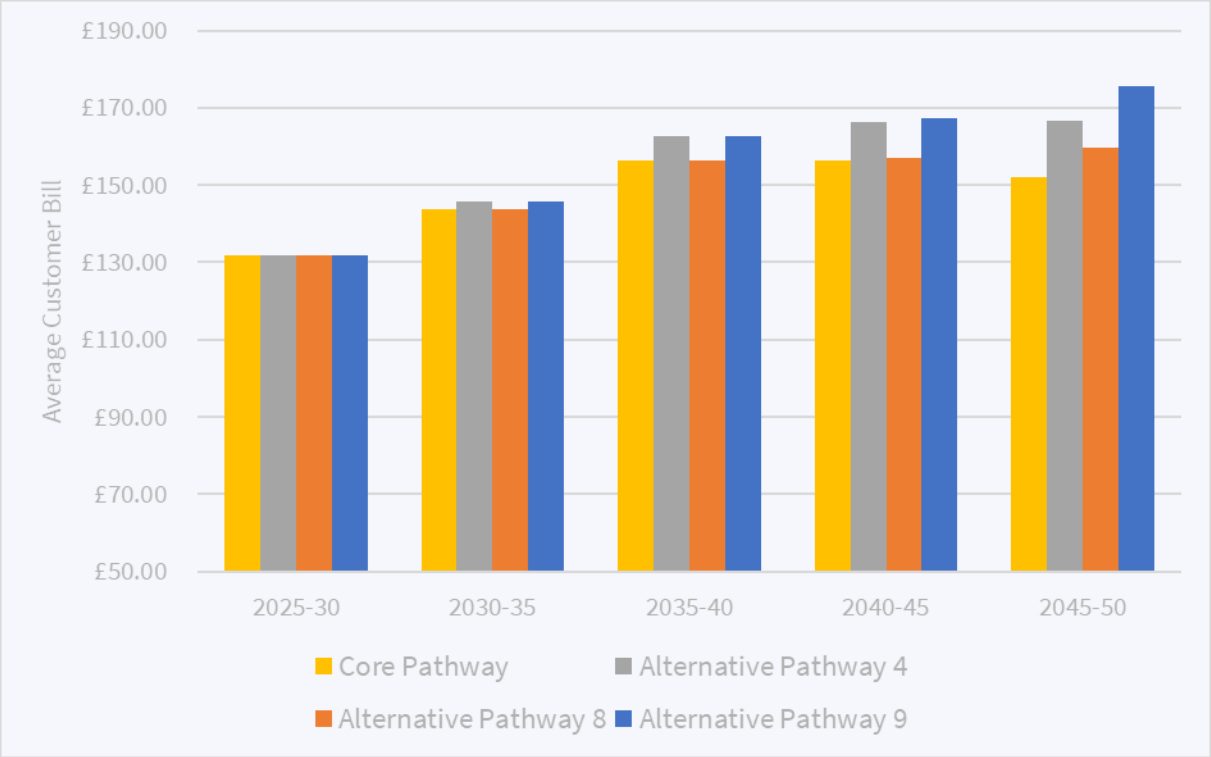
We will report through our Annual Performance Report, or as part of our future WRMP and business planning process. Additional detail presented in our Annual Performance Reports, will indicate whether we remain on track with our current forecasts or identify the need to begin planning to change to one of our alternative plans.

We believe the processes and practices we have established and embedded are sufficient to meet the monitoring needs of our plan. As with all aspects of our business plan, should we identify an opportunity, a risk or an innovation that would better inform our decisions, we will endeavour to assess and implement when appropriate.

Impact of the Long-Term Delivery Strategy on Customer Bills

For each of our four more likely alternative plans, we have forecast the expected bill impact.

Figure 28: The Impact on Customer Bills of Our Pathways



As can be observed, we anticipate a gradual increase in customer bills over the next 25-year years for our core and alternative pathways. This aligns with our customer preference for a gradual increase across plans, maintaining affordability in the short and long-term.

In all futures, AMP8 remains a critical period for us in that each of our alternative plans includes the same level of enhancement investment and lays the foundations for our long-term plan. The package of investments we make are essential to establish a platform from which to maintain our supply demand balance, continue providing the level of service our customers expect, achieving our performance commitments and protecting the environment for generations to come. We expect to see an increase of our customer bills from 2024-25 to 2029-30 of around 19% (Table 12).

Table 12: Impact of Alternative Pathways on Average Customer Bills

Customer Bill (£)	2025-30	2030-35	2035-40	2040-45	2045-50
Core Pathway	131.90	143.63	156.21	156.27	151.98
Alternative Pathway 4	131.90	145.87	162.49	166.38	166.75
Alternative Pathway 8	131.90	143.63	156.19	156.97	159.79
Alternative Pathway 9	131.90	143.63	156.19	156.97	159.79

There is a further increase in customer bills from 2030. Should legislation for the lead standard in water decrease from 10µg/L to 5µg/L at this trigger point we will increase our level of investment in lead service pipe replacement so that we are able to replace all customer service pipes in our area by 2050. This will result in us following Alternative Pathways 8 and 9.

Customer bills will increase again in 2040, should we need to offset the supply deficit from the impacts of climate change, demand and abstraction reductions by switching to Alternative Pathway 9.

The Likelihood of Our Pathways

Our Core Pathway summarises the investment options that are included in all of the alternative pathways we have tested. It represents the investment options we can do with low or no regrets and allows us to achieve our short-term targets and obligations as well as providing us with the investigatory information that we need to prepare us for the alternative pathways we may need to follow.

The first five years of our plans are identical for each of our alternative plans (Figure 28). As this is the case, we have determined that each of the pathways we have identified are currently equally likely, consistent with our WRMP and the WRSE.

Over the next five years, we recognise that this likelihood will change as we begin to observe the change in our climate, population growth and water usage, and as we better understand the requirements of our WINEP and any subsequent reductions in abstraction.

For the purposes of our LTDS, we discuss the four alternative pathways that are consistent with the options chosen in our WRMP ‘core’ and ‘preferred’ pathways, demonstrating the investment options we may need to make, the decisions and triggers that will influence when we adapt to an alternative pathway, and the timing at which these points will occur.

C. Rationale

Developing Our Strategy

We are currently delivering our PR19 business plan and have already made significant progression in delivery of our capital programme, remaining on track to deliver against our plan by the end of the AMP.

We pride ourselves on having an intimate understanding of our assets, our statutory obligations and the standards we are required to achieve, and in maintaining a strong relationship with our customers to understand their needs and expectations. Our LTDS has been developed and built upon the processes we already have established at Portsmouth Water.

At the outset of this planning phase, we initiated a company-wide self-assessment to ensure that we have captured any emerging risks and opportunities to ensure we can continue to deliver for this period, and effectively plan and forecast for the next.

This provided us with a holistic understanding of our current performance and ensured that any emerging risks are considered within our strategic planning processes. The key areas of risk that we have identified have been built into and considered as part of the five strategic areas of investment we have set out throughout our LTDS.

WRMP

At the heart of our investment programme is the largest single capital investment we have made, which was agreed as part of our PR19 plans, in Havant Thicket Reservoir. We recognise that our greatest challenges will be ensuring that we are able to continue to supply a safe and reliable drinking supply to our customers and to protect the environment for generations to come.

We have developed our WRMP against the backdrop of this critical regional infrastructure, identifying core and alternative pathways that have built the framework from which our enhancement activities have been created. Our baseline supply demand calculations make it clear that without intervention, we would be unable to deliver the level of service our customers expect of us.

Our WRMP sits at the core of our adaptive planning process, developing a regional plan to secure water supplies for the Southeast until 2075 using adaptive planning. It is essential that we work collaboratively with those across our region to ensure an environmentally sustainable and secure water supply is available. Our plan has been created in collaboration with WRSE, utilising adaptive planning to understand the impacts of climate change, growth and abstraction reductions and identifying those investments we will be required to make to ensure that we are able to protect the environment and continue supply water for generations to come.

As expectation grows for increased collaboration across the sector and the need to create a strategic network across water company boundaries, it's important to consider how these are evaluated in our draft regional plan. We believe water transfers or shared infrastructure with other regions should meet the same principles and standards which form the basis of our plan. Our regional plan therefore includes social and public value in our approach.

We apply the same standards to options and interventions which are reliant on other regional plans. This includes our positions on resilience and environmental ambition. For example, we wouldn't want to degrade the environment in another region just to provide water to the Southeast. Our regulators have also set out their expectations when sharing water between regions to ensure habitats and customers in a region aren't compromised in order to provide water to the Southeast.

We have determined the amount of water we will need by forecasting the supply and demand deficits that we would expect for the period from 2025 to 2075. This allows us to assess how much water will be needed in the future so that we can decide which demand management activities and new resource development options will be required as part of the regional plan.

The amount of water needed in the future for public water supply is being driven by four main challenges:

- **Drought resilience** – more water needs to be made available so our supplies last longer during severe drought events - those that occur once in every 500 years - so emergency measures are less likely to be needed.
- **Population growth (Demand)** – an increase in population means more water is needed to supply customers and businesses.
- **Climate change** – will reduce how much water is available from our water sources and when it is available; droughts will also become more common.
- **Environmental protection and improvement (Abstraction Reduction)** – we need to leave more water in the environment, reducing how much water we can take from some of our existing sources.

We had established these challenges prior to the requirements set out by Ofwat as part of this business planning process. Our approach marginally differs from the criteria that has been proposed within the Common Reference Scenarios and through consultation with Ofwat, we have further adapted our model to align with the constraints and metrics they have provided guidance on.

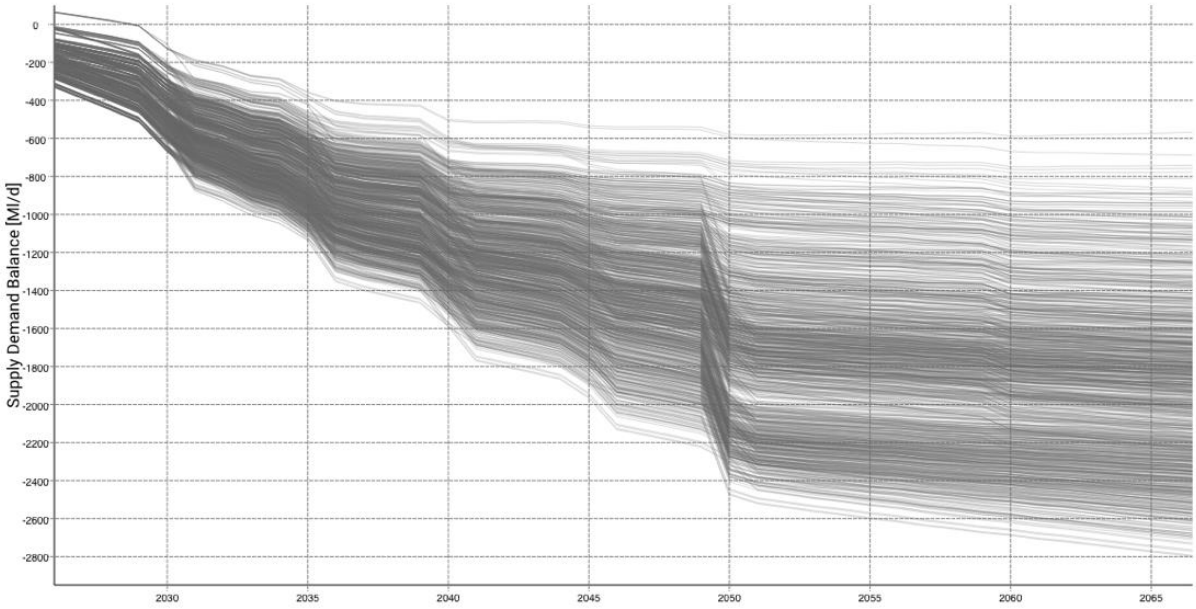
Using this guidance, we have been able to determine our baseline supply-demand balance for Portsmouth Water that identifies the scale of the challenges and how they change over time due to the impact of the different factors. We have developed these supply-demand deficits by combining:

- 4 different drought scenarios.
- 5 different population growth scenarios.
- 29 climate change scenarios.
- 4 different environmental ambition scenarios.

By approaching the challenge in this way, we can ensure the full range of potential future demand challenges can be planned for. This presented us with 580 different futures for each of the four drought planning scenarios, each of which shows the forecast deficits in available supplies and how that will change over time. In addition, we have also introduced four different planning scenarios that account for extreme drought conditions that would further increase the risk to us.

Where future demand exceeds future supply, we have a supply-demand deficit that needs to be closed by selecting options that will either reduce demand or increase supply. We are required to prepare a plan that evaluates which options in combination provide best value and ensure that no supply demand deficits occur.

Figure 29: Dry Year Annual Average (DYAA) plot of potential futures



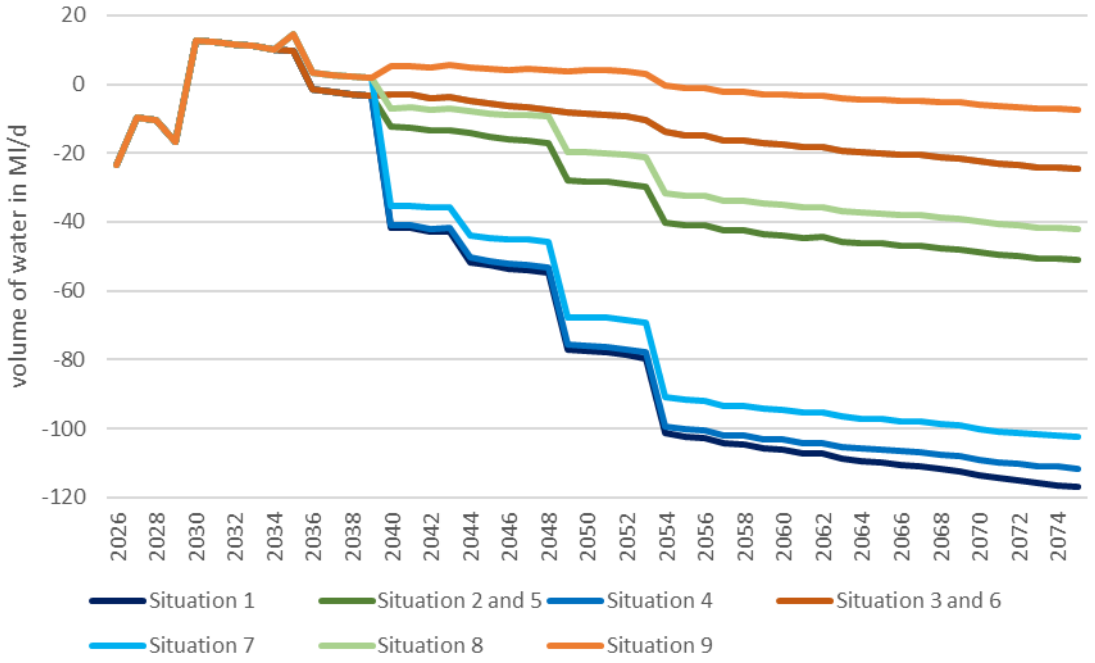
As can be seen from Figure 29 above, there is a wide range of potential future challenges and therefore a considerable level of uncertainty to account for. Through the WRMP process, we will continue to update these forecasts and revise our proposed interventions to ensure that we are able to maintain resilient public water supplies.

By the end of the planning period, at a regional level, the range between the most challenging and least challenging future is very significant, amounting to thousands of megalitres a day difference between the forecast futures. It is therefore not only the magnitude of the individual potential future challenges, but also the range between them and how this could change over time, which drives investment choices in the regional plan.

We have created pathways by combining discrete forecasts to describe the overall supply demand balances the region potentially faces in the future. Whilst each pathway can be described by a combination of discrete forecasts, many of the pathways are remarkably similar in terms of their deficits either at specific times or trend in the future. What this means is that whilst a single pathway or branch has been selected, there are several other combinations of forecasts that could produce a similar supply demand balance to the one described in the plan. We have combined these forecasts into nine ‘situations’.

In all nine adaptive situations (pathways), our supply demand balance starts in deficit and remains in deficit until 2028-29 for the dry year annual average (DYAA) scenario (Figure 30). In 2029-30 the supply demand balance improves significantly when the Havant Thicket Reservoir becomes operational and as existing bulk supply contracts end.

Figure 30: Baseline Supply Demand Balance for DYAA Conditions



Failure to introduce additional supply options or reduce our demand, will result in us being unable to supply our customers with water. We must therefore introduce new solutions to ensure that we can offset the challenges we face.

To determine the portfolios of activity to meet our future demand challenges, and identify the investment options we must make, we have created alternative adaptive plans that determine the options we need to select and the time at which we need to select them. These options have been identified using industry expertise, bringing together deep technical knowledge from within our organisation, support from external engineering consultancies and through consultation with local expert and industry leading research.

Options Appraisal

To meet the challenges each of these scenarios has presented us with we are required to identify and implement new interventions. For all of our strategic plans, we have undergone a significant options identification and appraisal process to identify the potential options we could consider.

We have identified investment options through a combination of internal development and external engagement, using workshops, surveys and seeking expertise from consultants and other water companies alike. We have considered an array of options, identifying a mix of operational, nature-based and capital solutions.

In the case of our WRMP, we followed a complex and robust ‘twin-track’ approach to option selection, considering options that would both reduce demand as well as options that would increase supply. Given the sensitive nature of our region, there are no new options to abstract water from the chalk aquifers under the ground, or from chalk streams or rivers, in our current plan.

This is a similar challenge for our neighbouring water companies so further water imports from them are not an option until major infrastructure, such as Havant Thicket, can be constructed. This focused our efforts on improving the demand side options that are available to us and improving the connectivity we have in our network so that we can more readily transfer water. We have explored new ways of creating water through desalination and water recycling, and these are being taken forward by Southern Water.

Due to the limited supply options available and our need for a short delivery time so that we can achieve our supply demand deficit, we have focused on reducing customer demand. This would provide us with an effective way of reducing the supply demand deficit near the start of the plan and enable us to support the delivery of our commitment to reduce the average PCC to 110 litres per person per day.

We have updated our process since our previous WRMP, better aligning with the other water companies in the region. Before we began, we compiled a list of unconstrained options available to us by performing a gap analysis from previous WRMPs of all companies in the WRSE. This enabled a methodology to be developed from which the options from all water companies could be assessed fairly.

We then produced an unconstrained list, collating options from several sources:

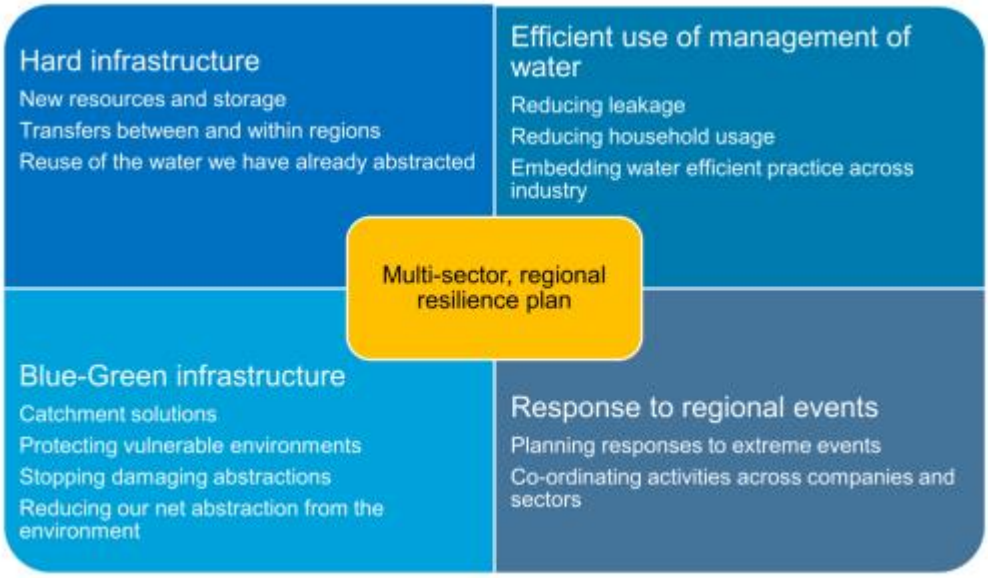
- WRMP19 options.
- WRMP19 rejected options.
- A systematic process of reviewing generic option types to develop new options.
- Third party submitted options.
- WRSE led development of options.

The creation of new options aligned with four broad multi-sector categories defined by WRSE (Figure 31). These categories covered a wide range of option types, with each option type being reviewed for their applicability and appropriateness.

To investigate the potential options available to us we held focus groups, inviting staff from across the company to identify new options; we encouraged option submission by sending out submission forms across the company and we identified potential resource options using our water resource model.

We performed additional option screening, working with WRSE, other water companies and third-party groups in a similar manner. This included further exploration of the possible interventions we could make at Havant Thicket Reservoir to maximise the output of our future resource. All proposals were screened and then placed into one of the four options categories.

Figure 31: Option Group Categories



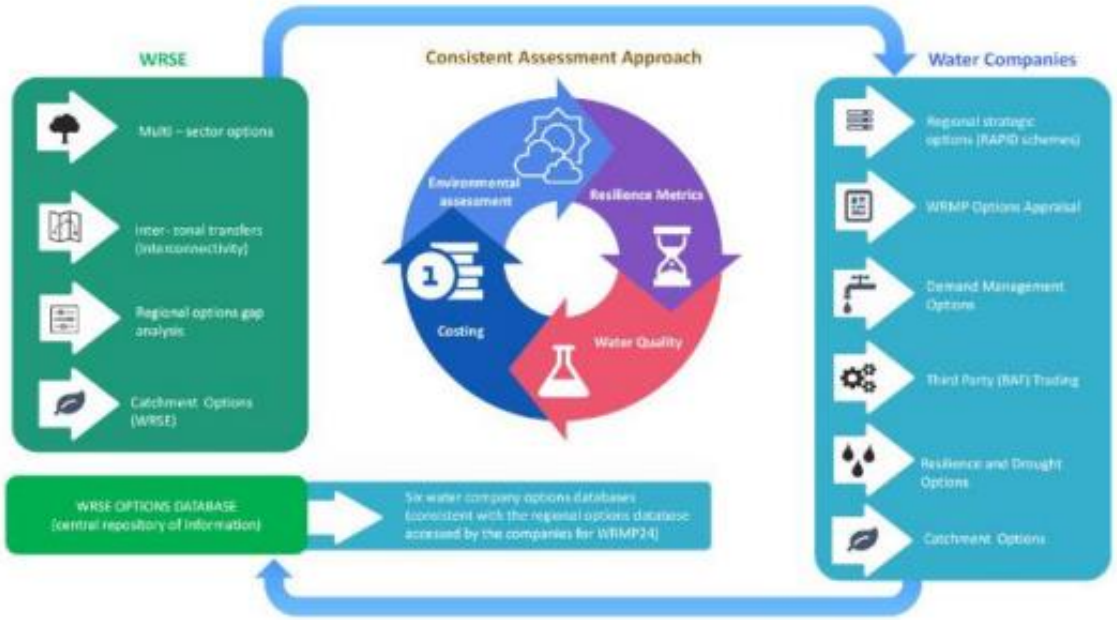
Each of the options identified were assessed in terms of their contribution and potential impact to either increasing the water available for use or the demand reduction they would provide. This was informed by historical evidence, engineering calculation or theoretical assumptions around potential.

As discussed above in the “What Our Customers Have Told Us” section, we have engaged with our customers through a series of surveys and forums to understand the degree of support for the options we have proposed. Customers favour demand side improvements, wanting us to deliver our commitments on leakage faster by 2040, and following the provision of additional data, they are supportive of smart metering.

Some of the more capital-intensive options proposed, such as desalination and water transfers, were less favourable given the perceived impact on the environment. Saving water for environmental reasons is supported as part of a general support for environmental benefits; reducing waste and saving money are the primary drivers for customers to use less.

This process enabled us to establish an unconstrained list of 259 investment options, with respect to our WRMP. To refine this list, the WRSE developed an appraisal process, integrating our requirements for environmental, resilience and water quality assessments (Figure 32). This was an essential step to ensure alignment and effective collaboration with the member companies of the WRSE.

Figure 32: WRSE Options Appraisal Process



As part of this approach, we performed a primary screening to assess the viability of the options, assessing each on five key tests:

- Is the option technically feasible?
- Does the option address the planning problem?
- Does the option avoid breaching any legal or planning constraints?
- Is the option promotable with regulators and customers?
- Is the option likely to be prohibitively expensive relative to the volume of water produced?

This enabled us to refine our options, as well as identify any that may already be included within our AMP7 programme. Those discarded, were added to a rejection register so that they can feed into future assessments, should these options become more viable or more extreme measures need be taken. This refined the options from 259 to 115, with six options already being delivered, or identified as needing to be accelerated and included in AMP7 due to the assumptions made for baseline supply and deployable modelling.

A second screening adopted a more rounded approach, to include environmental considerations such as:

- Habitats Regulations Assessments (HRA).
- Strategic Environmental Assessments (SEA).
- Water Framework Directive (WFD) measures for environmental impacts.

As well as additional viability metrics, we assessed using a RAG approach:

- Option costs.
- Promotability.
- Deliverability and constructability.
- Adaptability to future scenarios.
- Reliance on vulnerable sources.
- Uncertainty around key assumptions.

This provided a revised list of feasible options, totalling 59 demand options and 17 supply options. The impact each option would have on either deployable output or distribution input, was then calculated for inclusion in the investment modelling process. As part of our rdWRMP, the 59 demand side options have been revised down to 19 options in total, as these are the only options that are available within our refined list of options that would allow us to meet the Government's revised Environmental Improvement Plan targets.

A full detailed explanation of the options appraisal process, the individual considerations of each assessment, the discarded options, and the list of feasible options we have taken forward to meet our supply demand challenges can be found in our rdWRMP.

A similar approach has been replicated for our other strategic frameworks and the enhancement options we require outside of the WRMP. We identified an unconstrained list of options to solve the challenges of each strategic framework or business area. This was composed of historic options and experience identified from previous business plans, as well as new options identified through knowledge gathering and engagement. This enabled us to compile a list of potential investment options, articulating the need, the benefit the option would provide and the consequence of not pursuing the investment.

We then undertook a screening process with investment owners and senior leaders within the organisation, refining the list of proposed options. Each option was assessed based upon:

- Does the option achieve the whole of the required output / outcome?
- If not, will the option require further investment in the future?
- Cost benefit analysis.
- Affordability.
- Practicality.
- Does this align with customer expectations?
- Will the option provide an environmental benefit or impact?

This refinement provided us with a list of feasible and practicable options that would enable us to meet the challenges each of our futures would present us with. As discussed, due to the size of our operations, the options available to us are relatively limited.

Throughout each of the screening processes, we have identified several potential options that currently do not meet our requirements, through considerations such as affordability, practicability, environmental impact, or customer preference. We have identified and documented these options on a rejected register so that in future business planning processes we can return to these options and re-assess. Improvements in innovation, cost efficiency through technology or the increased requirements of the future may need these solutions to be considered (Table 12).

Table 13: List of Discarded Options Considered for LTDS

Investment Case	Option Name	Option Description	Reason for Rejection
WRMP	Trickle Irrigation	This would provide information to spray irrigators in our supply are to inform of the benefits of trickle irrigation. This will reduce the demand from 3rd parties.	The level of water saving from this option are highly uncertain and would require further engagement and investigation to confirm its validity.
WRMP	Rainwater Harvest	Install rainwater harvesting in new build households. We would bear the cost of installing these systems.	Very case specific and requires further investigation to determine the benefit that would be provided.
WRMP	Private Supplies	Assist large abstractors develop their own raw water schemes.	No specific schemes have yet been identified. Further engagement and scoping of activity required.
Protecting the Environment	Nitrate Treatment at Water Treatment Works	Install nitrate removal plants at those works at risk to treat increasing nitrate levels.	High risk sites that require treatment have been prioritised. Future sites will be assessed in future however catchment management prioritised to mitigate and reduce nitrate levels.
The Isolation and Recovery of Our Service Reservoirs	New mains and network reconfiguration	Install above ground infrastructure and additional underground mains to allow network reconfiguration and isolation of our reservoirs.	Complex, costly, and long delivery timescales make this solution unfeasible.
Security Resilience and ECAF Compliance at Operational Sites	Reduced implementation of ECAF measures	Slower delivery of the ECAF requirements to maintain affordability	Non-compliance with ECAF requirements. Increases cyber security risk for the business.
Lead Strategy Implementation	Replacement of lead pipe owned by Portsmouth Water	Replacement of the lead pipe up to the customer boundary.	Feasible however the risk to public health will remain. DWI recommend replacement of lead to the compliance tap within the customer property.

Best Value Planning

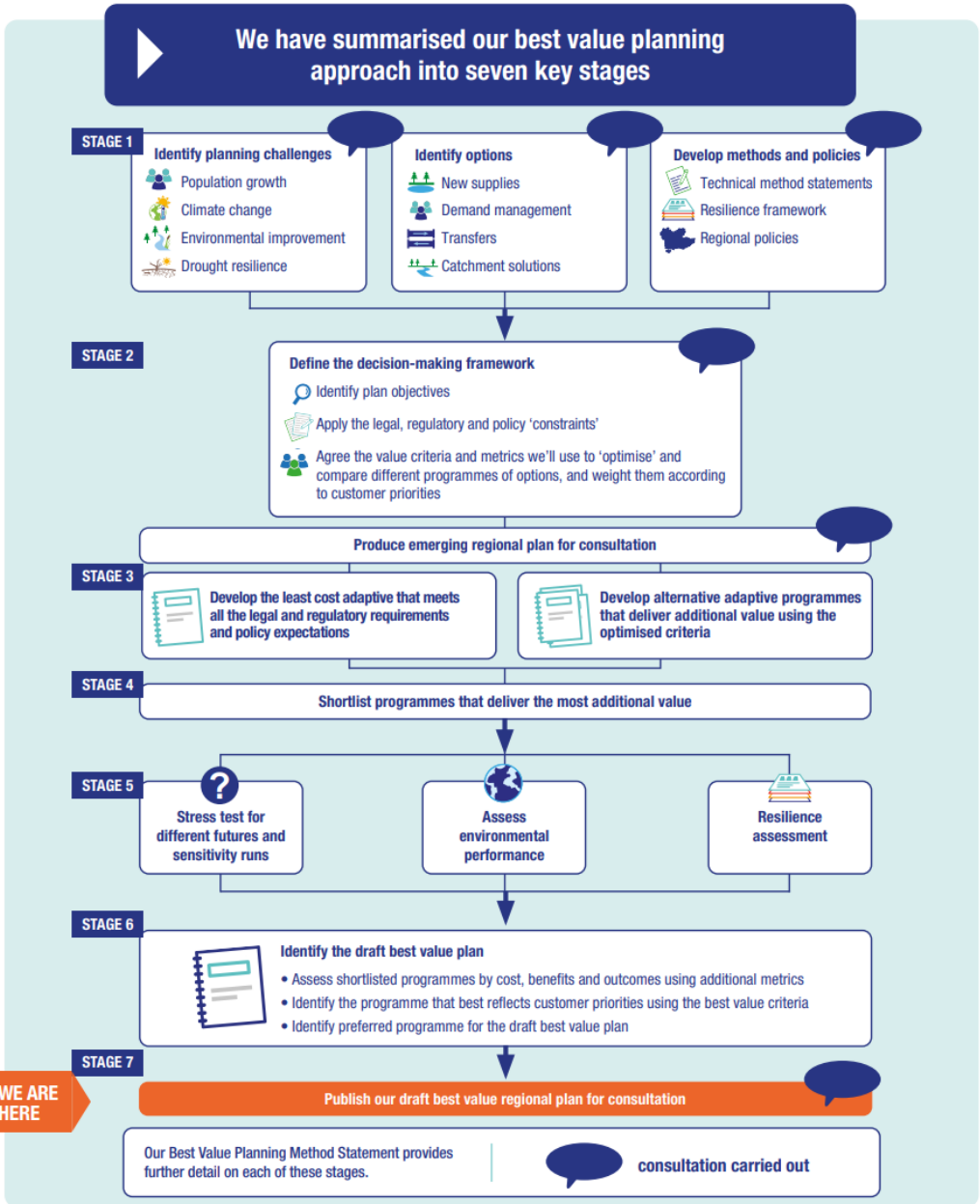
WRMP

As discussed, our WRMP has been developed in parallel with our LTDS and was developed in partnership with five other water companies within the WRSE group. As part of this process, we established a best value framework to ensure that we are selecting those options that provide a range of values to our customers, not just economic cost. This has enabled us to prioritise and phase investment choices based upon a specific metric or combination of metrics that we would consider represent best value.

This framework has been developed by defining objectives for the regional WRMP that we have determined as best value, using insight from customers and stakeholders from across the Southeast region to understand their priorities as well as considering the range of policies that are applicable to our region. A detailed method statement can be found in the supporting documentation for our WRMP.

This framework was integral to determining those options as set out in our core and alternative pathways. It has provided us with a set of criteria that enable us to achieve our legislative and regulatory requirements, that secure supplies and increases the overall benefit to our customers, the wider environment and society, in the most efficient, affordable, and deliverable way.

Figure 43: WRSE Best Value Planning Approach – Process Overview

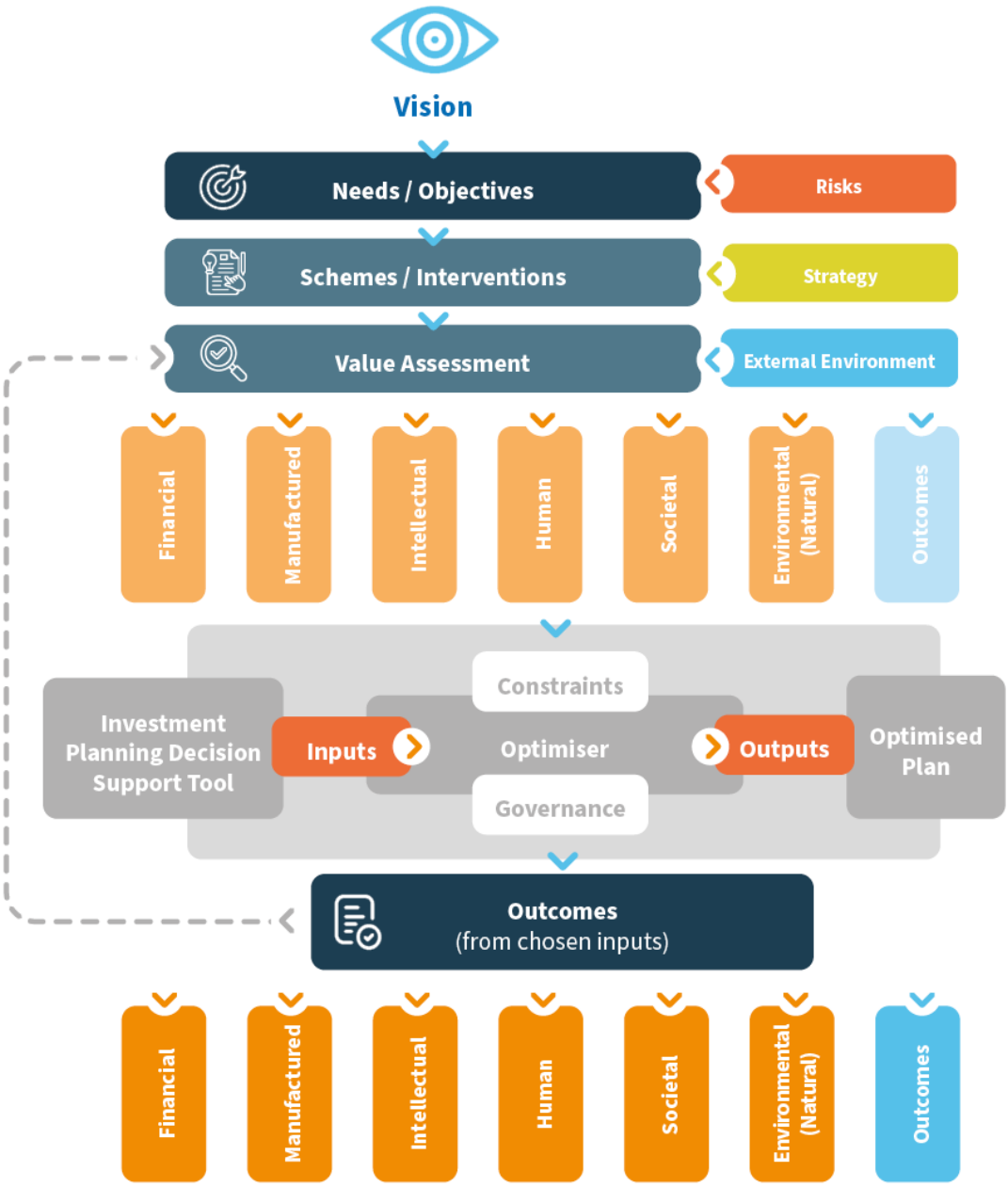


LTDS

We have developed a similar approach to that set out in our WRMP for determining best value for the options we select in our other strategic plans. This has ensured that the best value options we are selecting are reflected throughout our main business plan and LTDS.

This has enabled us to make sure that we are making the right investment decisions for ourselves, ensuring that we can provide best overall value for our customers and the environment.

Figure 54: Portsmouth Water Decision-Making Process



We have recently integrated our decision-making process at Portsmouth Water and have recently invested in the Copperleaf decision support tool. We will continue to evolve our procedures using Copperleaf so that we ensure we are making the right decisions that allow us to continue to provide best value for our customers.

Each of the options we have identified to solve the strategic challenges, will be assessed using our best value decision framework. This will enable us to quantify the broader value of the investment options we have identified alongside their cost. This will inform the decisions we make to ensure that we are choosing those options that meet the strategic challenges we face and provide additional value.

Developing the Plan

Once we have refined those options using these best value approaches, we are left with a repository of options from which to introduce to the investment models to support option decision making. These options are then selected to create the adaptive plans that we have presented in this LTDS.

Each plan includes:

- A preferred set of pathways that show how we invest and build in response to changing conditions.
- The short-term actions that we need to start now, and the longer-term investments in each pathway.
- Any preparatory actions we need to take now and going forward to allow us to keep the longer-term options open.
- A monitoring plan that identifies how we will track the situation and what will 'trigger' us to take one pathway over another.

Our adaptive planning approach isn't just looking for the quickest fixes or 'smallest' schemes that can be built quickly in response to immediate needs but is considering the optimum set of solutions over the longer term, and across many different potential futures.

Short term decision making can often result in regret if futures turn out to be more challenging than expected. Similarly, taking an overly risk-averse position from the start can result in investment and developments that can become unnecessary or utilised much less over the longer term. The basis of our adaptive planning approach is to look at the wide range of future uncertainty and determine what is the best schedule and set of interventions that can meet and adapt to future uncertainty.

In the case of our WRMP, the model applies a technique known as 'progressive hedging' to determine those options which need to be developed in the short term to provide the necessary platform to adapt to different pathways in the future. This is expressed through our decision to maximise the benefit we get from our demand side options, through smart metering and leakage activity, enabling us to postpone significant capital expenditure into large infrastructure schemes until 2035.

We try to avoid 'locking in' to more costly strategies by maintaining flexibility. That works both ways – do too much 'big stuff' and we're locked in to planning for adverse futures; don't start anything and we're locked into a highly reactive strategy, which could be less efficient for the future and transfer cost to future generations.

Choosing our Decision and Trigger Points

Through our adaptive planning processes, we have identified two types of trigger points that will inform our decision making:

- Risk-based trigger: when could the future uncertainties caused by our scenarios, result in us being unable to achieve our levels of service and environmental commitments?
- Policy decision-based trigger: when could a statutory or regulatory obligation require further intervention for us?

These two types of triggers have enabled us to identify the times at which we believe a decision will need to be made to ensure that we can effectively adjust and adapt our investment plans to meet the challenges of the new future we are now in.

Table 14: Decision and Trigger Points for Each of Our Pathways

Scenario	Decision Point	Trigger Point	Action
Demand	2030	2035	We recognise that our region is growing and will continue to grow. Our Core Pathway accounts for population growth in line with ONS18 projects. Should our region's population increase beyond this forecast, an alternative pathway will be triggered in 2035.
Abstraction Reduction	2035	2040	We will be conducting investigatory activity in line with our WINEP obligations to determine whether we need to reduce the amount of water abstracted to ensure we can effectively protect the environment. Should we be required to reduce our abstraction and be unable to mitigate this through alternate investments, an alternative pathway will be triggered in 2040.
Climate Change	2035	2040	Our Core Pathway assumes that the global climate projections will continue in line with RCP2.6. Should climate change exceed the limits forecast and global temperatures increase, an alternative pathway will be triggered in 2040.
Lead Reduction	2027	2030	We will be actively monitoring and participating in the topic of lead and will make an informed decision based upon the direction of the industry. Whilst we recognise that there is no safe level of lead, we are committed to minimising plumbosolvency within our supply and believe that removal of customer lead service pipes to be the most effective way of achieving this. Should the regulatory standard for lead to reduce to <5ug/L in 2030, this will trigger us to follow an alternative pathway.

By determining the point in time by which a decision needs be made, we can effectively plan the timing of our trigger points, or the point at which our plan deviates from our Core Pathway onto an alternative one.

The trigger points we have included align with the completion of the five-year business plans so that we are able to include additional investment needs and adjust to the pathway we are now following. This will also provide us with the ability to review and update our adaptive forecasts as well as continue to plan beyond the 2050 horizon, and ensure we are effectively prepared for the long-term.

Scenario Testing

We have tested all the common reference scenarios and identified the relevant alternative pathways, selecting the investment options that would be required to achieve those futures. As discussed, we have set out the four alternative pathways that align with the WRMP 'core' and 'preferred' pathways we have developed; however, we have available the full details of each of these alternative pathways and the reference scenarios which they relate to (see Appendix A).

Sensitivity Tests

To ensure that the options and pathways we have chosen are resistant to a range of uncertainty in our plans outside of the core scenarios already considered, we have conducted a series of stress tests. This has enabled us to understand the sensitivity of the options that have been selected to material impacts that could influence the option choices we have made, and our alternative pathways. These tests covered the following key areas:

- Demand management: achieving lower reductions than forecast.
- Abstraction reductions / time-limited license variations: implementing license reductions earlier in the planning period reflecting loss of time limited license variations.
- Bulk supplies with neighbouring water companies: capping exports during non-drought periods.
- Bulk supplies to new appointments and variations (NAVs): including an additional baseline volume allowance for these.
- Lavant booster upgrade and the impact of us not implementing this option.

These tests have demonstrated the robustness of our plans in the face of an uncertain future. In many of the tests that have been applied, the options that we have provided remain selected. However, we would be required to either reduce the amount of water we are able to export to our neighbours, Southern Water, or be required to introduce our Network Upgrade (Option 3) sooner (Table 15). If this were to occur, Southern Water would be required to explore additional Strategic Resource Options (SROs) to offset the deficit that would now be created from a reduced import from us. Given the complexity and time sensitive nature of these options, we recognise this may not be feasible and therefore will require the WRSE to explore further options as part of the planning process for WRMP29.

Outside of our WRMP, we recognise that much of the work we are planning on conducting in AMP8 is to either ensure compliance with statutory obligations or to investigate and effectively inform our plans into the future. We have planned these activities so that we can reflect our customers wishes, ensuring fairness in affordability between our current and future customers.

Table 15: Sensitivity Tests of the WRMP 'Preferred Plan'

Sensitivity Test	Impact to our Pathways
Lower savings from demand management Options	Additional water would need to be imported to us from Southern Water.
Earlier abstraction reductions	Less water would be exported to Southern Water. However, this would cause environmental impact to Southern Water as they would need to further abstract from their sources
Reduced savings from drought demand options	Construction of the additional water resource options in Alternative Pathway 8 and 9 will be constructed sooner
Capping of Southern Water Export	The model struggled to solve by capping this export. It demonstrates the importance of the bulk import and exports that we have with Southern Water which will have to be carefully managed in accordance with the EA.
Low and no benefit (Ml/d) from Source S Drought Permit	Lavant Booster Upgrade construction begins sooner
Increase in demand from NAVs	Southern Water Transfer construction begins sooner

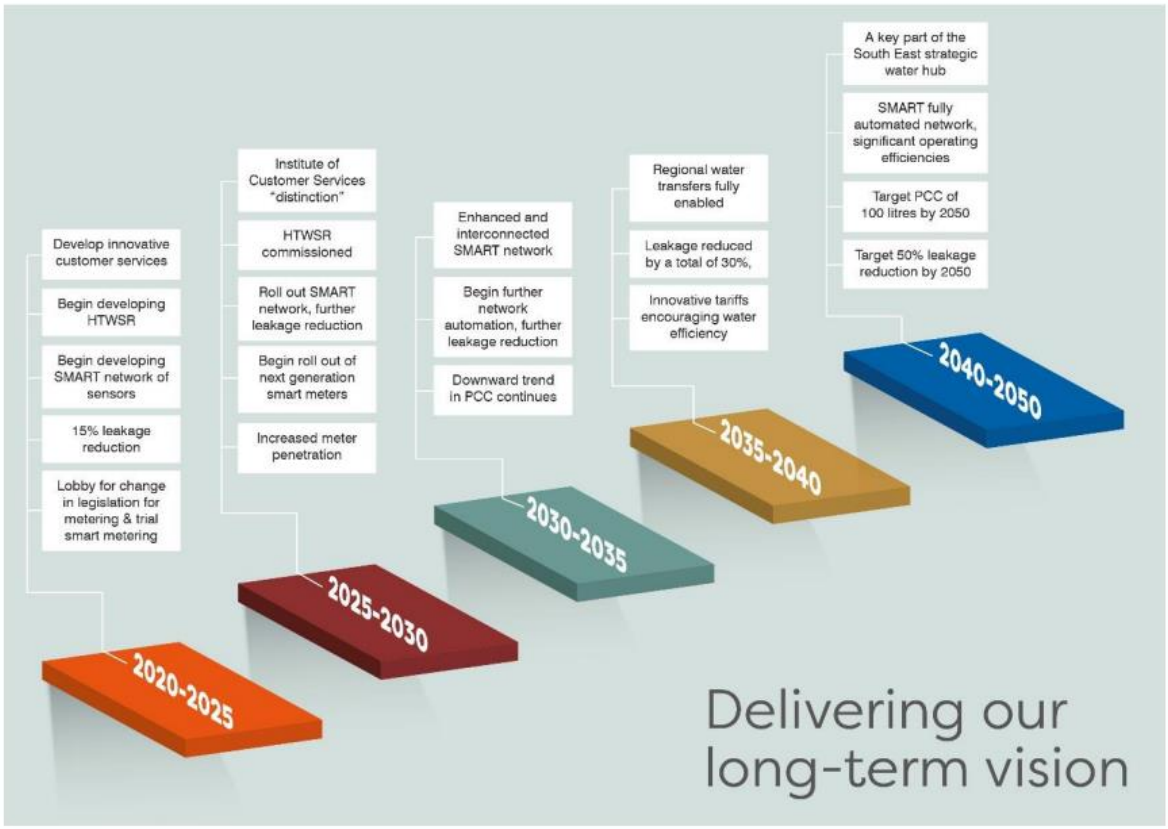
Comparing Previous Long-Term Strategies

Portsmouth Water is a company very much in transition, evolving to continually improve and maintain our excellence in a changing world. Building on our history of leading customer service, efficient costs, and reliable high-quality supplies we are stretching our sector-leading performance and investments to make sure we can continue to meet our customers' expectations.

To deliver on the performance commitments and ambitions we've outlined for our customers and environment we've embarked on a challenging programme of evolution. This is designed to support and continue our history of excellence and forms the backbone of this business plan and our long-term delivery strategies.

At PR19 we set out a comprehensive long-term vision, identifying key activities and milestones for the next 30 years to ensure we are "Delivering excellence for our customers, our people and environment" (Figure 35).

Figure 35: Our PR19 Long-Term Vision



The challenges we set ourselves were chosen to articulate how we would secure best-value resilient water supplies for our future customers and the wider Southeast, meeting the significant challenges the region faces at the same time as enhancing the natural environment.

However, since then, there have been both significant shifts in the planning landscape, as well as the continuing evolution of data, methods, and our understanding of the natural environment.

Since WRMP19, a significant influence on this plan has been the Environment Agency's National Framework for Water Resources (launched in March 2020). The Framework sets out a national aspiration to leave the environment in a better condition than we found it, while improving resilience to drought and minimising interruptions to water supplies.

The Framework took on board many of the recommendations from the 2018 National Infrastructure Commission (NIC) 'Preparing for a Drier Future' report, such as the need for improved drought resilience and strengthened regional planning. The National Framework for Water Resources established a requirement for the delivery of regional plans and for those plans to explicitly inform individual company WRMPs. They also set out some core planning objectives for all company plans.

These objectives included:

- To reduce the amount of water individuals, use to 110 litres of water per person per day by 2050.
- To facilitate a reduction in water use across all sectors.
- To halve leakage rates by 2050 (based on a baseline of 2017–18).
- To reduce the use of drought measures that have an impact on the environment.

Furthermore, the Water Resources Planning Guidelines require us to:

- Ensure that water supplies move from being resilient to an event we might expect to see once in every 200 years (i.e. a 0.5 per cent chance of happening each year) to being prepared to provide a reliable supply in a drought event we might expect to see once in every 500 years (i.e. a 0.2 per cent chance of happening each year).
- Present an environmental ambition with potential short, mid, and long-term reductions in supplies to protect our environmentally important chalk sources with associated investment for new interventions to enable us to continue to meet customer demands in future.
- Incorporate the uncertainty associated with the impact of Covid-19 on demand in the future.

All these considerations have now been included and built into our core and alternative plans. Given the emerging risk we are seeing around the availability of water resources, through the impacts of the different scenarios described, as well as the need to reduce our demand, an increase in expenditure over the next AMP will be required to effectively mitigate the risks we face in the future.

An addition to our previous business plan cycle, is our aspiration for a lead-free supply for our customers, providing mitigation against a long-standing risk for the water sector and a difficult challenge to resolve. We are investing in a lead service pipe removal scheme over the next five years, targeting those most vulnerable, in schools and nurseries, as well as a trial area within our network, to inform our area-wide programme from AMP9 onwards.

At PR19 we forecast several stretching performance commitment targets (Table 16). We projected where we believed we would outturn at the end of AMP7 and AMP9, considering the investments we planned to make.

Table 16: Long-Term Performance Commitment Target Forecasts Set at PR19

Long Term Target For ODI	Unit	2019-20	2024-25	2034-35
Per Capita Consumption	l/h/d	142	135	129
Leakage	Ml/d	34.9	29.6	26.1
CRI	Rank	UQ	UQ	UQ
Interruptions to Supply	Mins	00:04:00	00:03:00	00:02:00
Mains Repairs	Repairs/1000km	69	67	64
Unplanned Outage	%	4	3	3
Severe Droughts	Ability to achieve 1 in 200 Drought	Achieve	Achieve	Achieve
C-MeX	Rank	n/a	UQ	UQ
D-MeX	Rank	n/a	UQ	UQ

As demonstrated in our PRT12: Accounting for Past Performance, we have achieved many of our end of AMP7 commitments, including outperforming our targets for interruptions to supply and water quality contacts.

We do recognise that following the increase in household consumption during the Covid-19 pandemic we have work to do on reducing per capita consumption. Reducing consumption through our smart metering programme is one of the core objectives of this plan and our targets are consistent with our WRMP. Like all other companies within the industry, we saw a sharp rise in consumption over the past five years due to the impact of COVID19, with many workers being forced to work from home. Our WRMP and our LTDS show a long term, deliverable trajectory to meeting Defra targets to reduce customer use.

Whilst we have met our targets for unplanned outage using the PR19 methodology, we also recognise that we need to further improve performance during AMP8 because the revised outage measure will include partial outages, which can occur for water quality reasons. As a company with almost 100% groundwater abstraction, we suffer outage and partial outage issues related to water quality after periods of continuous high rainfall. These outages typically occur outside of peak demand periods and do not pose a risk to customer supply.

Given the immediacy of the risks and the limitations of the interventions we can implement to mitigate against these future challenges, this new planning approach is one which has required us to adapt to new ways of working and thinking. We believe that our balance in decision-making is one that is justified and ensures we can continue to deliver wholesome water for our customers, whilst protecting the environment for generations to come.

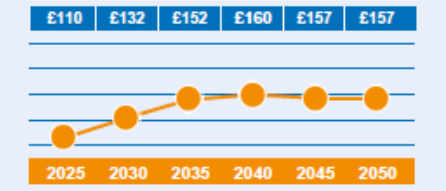
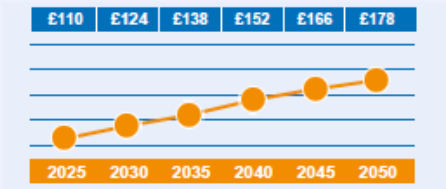
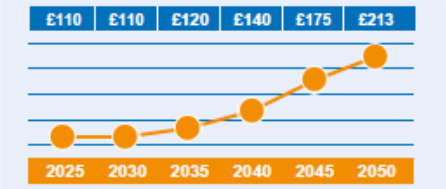
Impact on Affordability and Fairness Between Current and Future Customers

We asked our customers, both bill payers and future customers, for their preferences on long term bill profiles to support investment as part of our consultation throughout December 2022. We provided three stylised options from which customers from different socioeconomic backgrounds could select their preference for how their bills might evolve over the long-term. These were:

- Increase in water bill in the short term, then flatten out.
- Increase moderately both in the short term and the long term.
- Remain lower in the short term and then increase by more.

We conducted our research at a time when customers were feeling the impact of the rising cost of living, and therefore were less tolerant of bill increases. Despite this, our customers clearly indicated that they don’t want us to defer investment onto their children and grandchildren, preferring a balanced bill profile option over the 25-year period (Table 17).

Table 17: Customer Preference on Bill Impact

Water Bills	Bill Profile	Household Bill Payer Choice
Increase in the short-term then flatten out.		24%
Increase moderately both in the short-term and the into the future.		68%
Remain lower in the short-term then increase more.		9%

Our customers have overall expressed a preference for a 'balanced' bill profile, except for vulnerable (financial or otherwise) and future customers. The latter preferred a short-term rise and then a flat profile. The reason behind this is predominantly the view that the problems we face today are not problems that Generation Z have created and therefore they should not have to pay for this. The former, more vulnerable customers, want to mitigate the impact of short-term bill increases as much as possible.

Our wider customer base clearly preferred a balanced bill profile with 68% overall selecting this option. It is clear however that we need to work harder to protect those more vulnerable customers and it is our responsibility to ensure that their bills remain manageable and affordable.

Our LTDS is structured to defer investment where it is prudent to do so, irrespective of the pathway we are on. Should we need to adapt, we will ensure that our programme remains affordable and balanced, challenging ourselves to be more efficient and identifying opportunities to reduce or defer cost where possible.

Our Core Pathway represents both a best value and least cost approach to a planned, risk-managed future that delivers for both our current customers and future customers. Alternative Pathway 9 represents a plausible, adverse future that includes additional investments from our WRMP as well as the expenditure required to achieve a lead-free supply for all our customers. These represent the extremes we have tested within our plans, and in either future, we have ensured that we maintain a balanced and affordable expenditure profile for our customers.

Enhanced Funding and Preparatory Work

Our Core Pathway recognises the challenge already presented to us, requiring us to significantly invest and scale up our capital activities over the next five years. As discussed previously, we need to ensure we can maintain our supply demand balance, and we propose to install 172,200 smart meters in our area during AMP8. This will allow us to reduce the demand we place on our precious resources as well as providing us with rich insight into usage, supporting us in identifying leaks and providing an early warning sign for emerging issues.

As discussed, much of our Core Pathway includes either enabling activities or investigatory work, that better prepares us for the future challenges we are being presented with.

We are also transforming our digital capabilities by upgrading our CRM, GIS, and ERP systems so that we can support the effective delivery of our smart metering programmes. GIS and ERP solutions will be enhanced to:

- Provide rich data on assets including historical activity and maintenance information to the mobile workforce. As part of the Smart Metering and Networks ('Smart') programme we will be adding over 330,000 new meter assets which will require maintenance and will provide useful data to help with the maintenance of other assets in the network.
- Enable dynamic job scheduling and communication, which can adjust in reaction to real time unfolding events. IFS[1] cloud improves the workforce management solution (recognised as top quadrant in Gartner's 22 review) and brings capabilities such as dynamic scheduling and resource optimisation needed for supporting delivery of the smart metering programme.
- Deliver on the job training and job instructions, with live support and communications to the back office.
- Provide up to date safety information and updates to the work force, enabling two-way communications and including improvements to lone working processes.
- Provide route optimisation based on real time routing and changing job priorities, enabling the long-term management of circa. 330,000 smart meters and the supporting infrastructure
- Deliver smart meter data within the GIS[2] environment, which will allow for modelling of data originating from many sources (meter data, flow meters, pumping stations, reservoirs levels and production outputs) with access via mobile devices for field and operational staff giving them near to real time network intelligence in the field.

Our WINEP programme is designed to investigate the needs of our environment so that we are able to continue to abstract water responsibly. This work directly informs our abstraction reduction decision and trigger points, as it will enable us to understand what, if any reductions or investments need to be made so that we are able to achieve our supply demand balance.

The WINEP work is an essential component in all our pathways and will either inform the interventions we may need to make to ensure that we are able to continue to abstract from our sources or indicate the need to move to an alternative pathway. To ensure that we deliver on this investment, we are committing to a Price Control Deliverable to deliver all schemes we have identified in our programme.

Finally, a key component of our Core Pathway and essential in achieving our long-term ambition is the replacement of lead service pipes to our vulnerable customers, replacing 300 lead service pipes over AMP8. This work is essential for both protecting the most vulnerable in our community as well as informing our plans to replace 80,288 lead service pipes as part of our programme that is to begin in 2030. We are committing to a Price Control Deliverable so that we replace 60 service pipes a year at schools and nurseries in our supply area.

[1] IFS is Portsmouth Water's core ERP solution as well as the Asset Management and Workforce Management solution.
[2] ArcGIS by ESRI

D. Foundation

We are committed to providing sustainable and reliable water solutions. Our long-term delivery strategy is underpinned by a robust foundation of key assumptions and uncertainties. These critical elements are carefully considered to ensure that our strategy is adaptive, resilient, and responsive to new information and changing circumstances.

We transparently lay out these key underpinnings and we create a clear line of sight that connects our past successes with our refreshed vision. This enables us and our stakeholders to better understand how our strategy has been formulated and how it will continue to evolve in the future.

Assumptions

The scenarios we have developed include several key assumptions about the futures that may be realised:

- **No material changes to legislation, except for lead.** We have considered a range of statutory, regulatory, and legislative requirements in all our strategic plans. In many cases those requirements have helped shape the futures we are required to achieve, such as achieving per capita consumption of 110 litres per person per day by 2050. The models and frameworks we have created use the most up to date understanding of these requirements, and whilst we are aware further changes may be required, we have assumed that they remain as forecast within our planning assumptions. The exception is legislation relating to lead, where we have created a separate scenario to account for this uncertainty.
- **No change to the regulatory funding model**. Our expenditure forecast, our financeability and our customer bills have all assumed that there will be no material change to the regulatory funding model over the plan period.
- **The activities of other water companies, in particular those that are a part of the WRSE, will all deliver in line the agreed pathways set out in our rdWRMP.** To ensure our long-term water security, our WRMP is reliant on our partnerships with the neighbouring companies within WRSE. Our WRMP has set out the requirements of our own supply demand balance, however this is a piece of a much larger puzzle to solve the challenge presented within our region. All companies within the WRSE have agreed to follow Situation 4 as part of their preferred pathway, and our modelling assumptions rely on every company following and delivering the investment options set out.
- **Consumer behaviours and attitudes towards our demand-side reductions will align with expectations.** As identified within our customer engagement, whilst our customers are supportive of smart metering once informed, they are more hesitant about the changes that would be required to use less water. Our modelling has assumed that usage will decrease in line with the savings achieved elsewhere through smart metering. We have accounted for uncertainties around this by performing a stress test to identify which further options may be required should this benefit not be achieved.
- **We are able to successfully deliver Havant Thicket Reservoir in line with the latest estimated schedule.** The development of Havant Thicket Reservoir is now set to be delivered in 2031-32, assuming adjustments to the schemes to accommodate Southern Water's recycling solution are adopted. Completion of construction enables us to store surplus winter spring flows for use in the summer, increasing the quantity of water we supply to Southern Water, which in turn allows them to reduce their reliance on sensitive chalk sources in Hampshire. The completion of Havant Thicket Reservoir will enable us to unlock new local and regional options for future water security, such as water recycling, that will allow us to reduce our abstractions and improve our resilience to droughts that would occur once in every 500 years. We have assumed that this will be delivered in line with the latest forecast.

- **The current market cost of the options that are presented to us are consistent with our estimations.** As described, the cost estimates of the options we have put forward have been estimated using historical evidence, through consultations and quotations from our suppliers, and by assessing current market prices.
- **We are able to achieve the efficiencies set out in our main business plan** (see PRT09: Securing Value for Money). We are challenging ourselves to be more efficient in the delivery of our capital programme. This includes an assumption that if the cost of low-carbon construction materials does not equal that of conventional building materials, we can continue to both deliver our programme, and achieve our commitments on carbon reduction whilst maintaining affordability and fairness for our customers.
- **There is capacity within the supply chain to deliver the options we have proposed.** We have already conducted an assessment to understand the capability and capacity of our supply chain to deliver many of the activities we have identified within our plan. Through these initial consultations we are confident we have the ability to do so in the short term (see PRT08: Delivering our Investment Plan).

Performance Improvements from Base Expenditure

Through our business planning process, we have reaffirmed those activities that make up our base expenditure. We have recognised that much of the activity we have included within our base expenditure will enable us to deliver the level of service we are providing and support us in achieving the performance commitment levels we have set out over the next 25 years (Table 1).

In our previous business plans, much of our base expenditure was focused on mains renewal. This has allowed us to achieve industry-leading performance for supply interruptions and mains repairs. We believe we can continue to maintain this level of performance for interruptions to supply and mains repairs while increasing the level of investment in our non-infrastructure assets, our asset management function and delivering our leakage ambition in line with our WRMP.

A key activity in achieving the supply-demand requirements and a base component of our operations, is our commitment to reducing leakage on our network by half by 2040. By reducing leaks on the network and customer supply pipes, we reduce the demand on our network and decrease the need to abstract and process raw water.

We have demonstrated through our past performance, that the investments we make have driven industry-leading performance. However, we recognise that we can improve our performance further, by increasing investment in our non-infrastructure assets and harnessing the benefits of the digitalisation of our systems. This will enable us to achieve our stretching performance commitment targets and allow us to maintain and improve our levels of service.

We recognise that through the work we have done over the course of the previous planning period and in the build up to this planning period, we are able to improve on our past performance levels through much of our base activity. We will continue to invest in our operations to ensure that we can provide our customers with a secure, resilient, and wholesome water supply for generations to come.

Table 18 below summarises the service level improvements that we will deliver from base expenditure.

Table 18: Performance Commitment Levels from Base Expenditure

Performance Outcome	25-26	26-27	27-28	28-29	29-30	2035	2040	2045	2050
Interruptions to Supply (hh:mm:ss)	00:02:11	00:02:09	00:02:08	00:02:06	00:02:05	00:01:36	00:01:15	00:00:41	00:00:00
Water Quality Contacts (No. per 1000 customers)	0.42	0.41	0.41	0.41	0.41	0.39	0.38	0.37	0.36
Biodiversity (Net change in biodiversity units / per 100 km^2 of nominated land in water supply area)	0.38	0.53	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Discharge Permit Compliance	100%	100%	100%	100%	100%	100%	100%	100%	100%
Serious Pollution Incidents	0	0	0	0	0	0	0	0	0
Leakage (Leakage in million litres per day on three-year average)	24.01	22.91	22.51	22.62	22.51	22.20	20.80	20.26	20.00
PCC (litres per person per day – three-year average)	160.00	159.00	158.19	157.39	156.58	152.52	145.23	138.76	134.32
Business Demand (Million litres per day on three-year average)	0	0	0	0	0	0	0	0	0
Operational GHG (tCO2e)	7527.55	7514.17	7489.47	7339.61	7300.27	6847.91	6757.14	6751.65	6749.10
Mains Repairs (No. per 1000km)	66.83	65.43	64.35	63.27	62.22	51.3	50.54	49.8	49.08
Unplanned Outage (%)	2.30	2.25	2.15	2.09	1.69	1.36	1.14	0.87	0.00

We believe that through our base expenditure we can achieve zero minutes interruptions to supply (greater than 3 hours) by 2050. The investments we are making into renewing the strategic pressure control valves in our area as well as introducing a digital twin to evolve our understanding of our network and improve our ability to prevent, react and respond to incidents will enable us to achieve this target.

We continue to build on our upper quartile leakage performance, driving efficiency and performance improvements through our base level of investment. We look to innovate in the coming years so that we can make further and faster leakage reduction cost-effective which will support us in achieving a 40% reduction in leakage by 2040.

Our challenges to unplanned outage performance relates to the high proportion of groundwater abstraction. Periods of high intensity rainfall often lead to higher levels of turbidity, which means we are sometimes unable to abstract full capacity from our aquifers. Alongside this we have seen system challenges, driven by onsite asset and system-based challenges. We are making significant improvements to our asset-management root cause processes that will support reducing system-based outages and drive our performance improvement over time, resulting in no planned outages by 2050.

Uncertainty

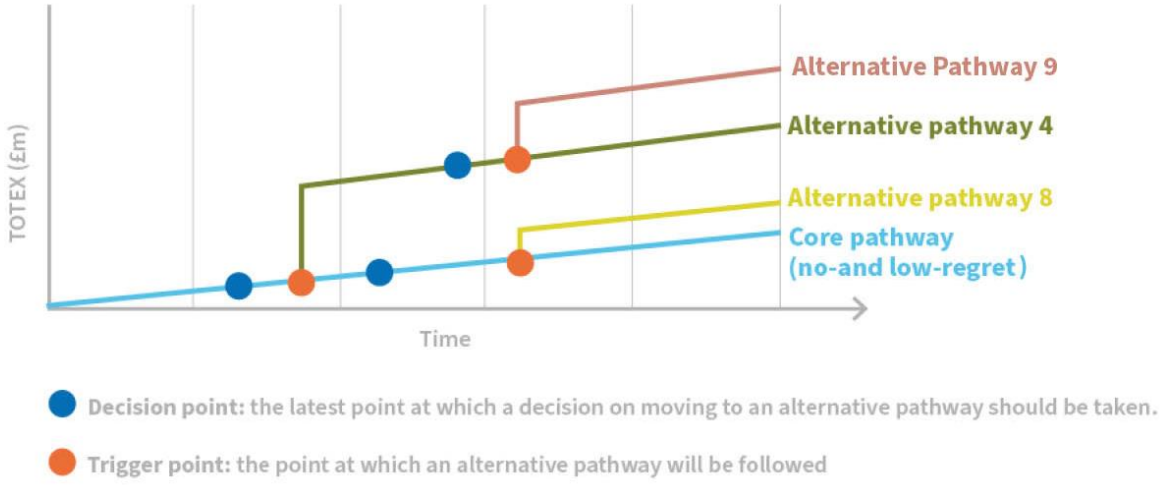
Throughout our business planning processes and in the development of our LTDS, there is a level of uncertainty in all that we do. This may be in the areas of cost, benefit provided, delivery time, the level of impact we experience due to the challenges presented, or any other external factors that could influence our operations such as the availability of our supply chain or the increase in cost of materials we use daily.

It is this uncertainty that we factor into everything we do, reactively flexing the delivery of our activities and identifying opportunities to maximise efficiencies within our operations so that we can adjust our investment needs to meet the immediate challenges we are presented with.

The greatest uncertainty in our strategy is in our supply demand forecasts within our WRMP. We have included a 'Target Headroom' factor in our calculation of the supply demand balance to account for the uncertainties within both the supply and demand forecasts. In determining target headroom, we considered the appropriate level of risk for our plan. If target headroom is too large it may drive unnecessary expenditure. If it is too small, the risk is that we may not be able to meet our planned level of service.

As part of the WRSE group our approach to Target Headroom has been revised for the regional WRMP plan. The new approach seeks to avoid the potential doubling counting of uncertainties that are already explored and accounted for within the adaptive planning branches (Figure 36).

Figure 36: Our Core and Alternative Pathways



Overall, our long-term plan has not ‘locked’ us into any activity, contract obligations or network interventions other that those that we are required to conduct as part of a statutory or regulatory obligations. Therefore, we believe that we can adapt our investment requirements and operational decisions to continue to both supply water to customers and deliver excellent performance against our commitments.

We will continue to investigate and understand the uncertainties we are currently faced with and work to build our asset management and business capabilities to identify those we have less information on. It is this commitment to growth and learning which will feed into and inform our investment decision making for the future.

BOARD ASSURANCE

Our Board has been closely involved with the development of our LTDS, from its foundations in setting the Ambition, through the development of the set of long-term strategies for key areas of our business that underpin our LTDS and business plan, through to review of the final plan.

An industry expert 'Red Team' consisting of Martin Baggs, Tony Smith, Trevor Bishop, and Mike Gerrard were engaged by the Board to provide independent external challenge and advice, including specifically on the LTDS document. The Board has discussed the team's findings with them at two Steering Groups/Board Meetings. This review process led to the decision to rephase some of the investment in our business plan, and to absorb some costs within base. It also helped us ensure that the LTDS document was of high quality.

We have also worked closely with Arcadis in the development of our LTDS, to benefit from external expertise and insight from across the wider sector. Arcadis have provided expert guidance and challenge to our LTDS, as well as capabilities in modelling and long-term planning, which we are currently developing in-house.

Third party assurance of our LTDS has been carried out by Jacobs, as part of their overall assurance work on our plan. As part of that assurance process Jacobs have reviewed a number of iterations of the plan and challenged us to ensure that we were meeting Ofwat's detailed requirements for the LTDS.

PRT18 APPENDIX

The following shows alternative pathways that we have considered.

1. Alternative Futures

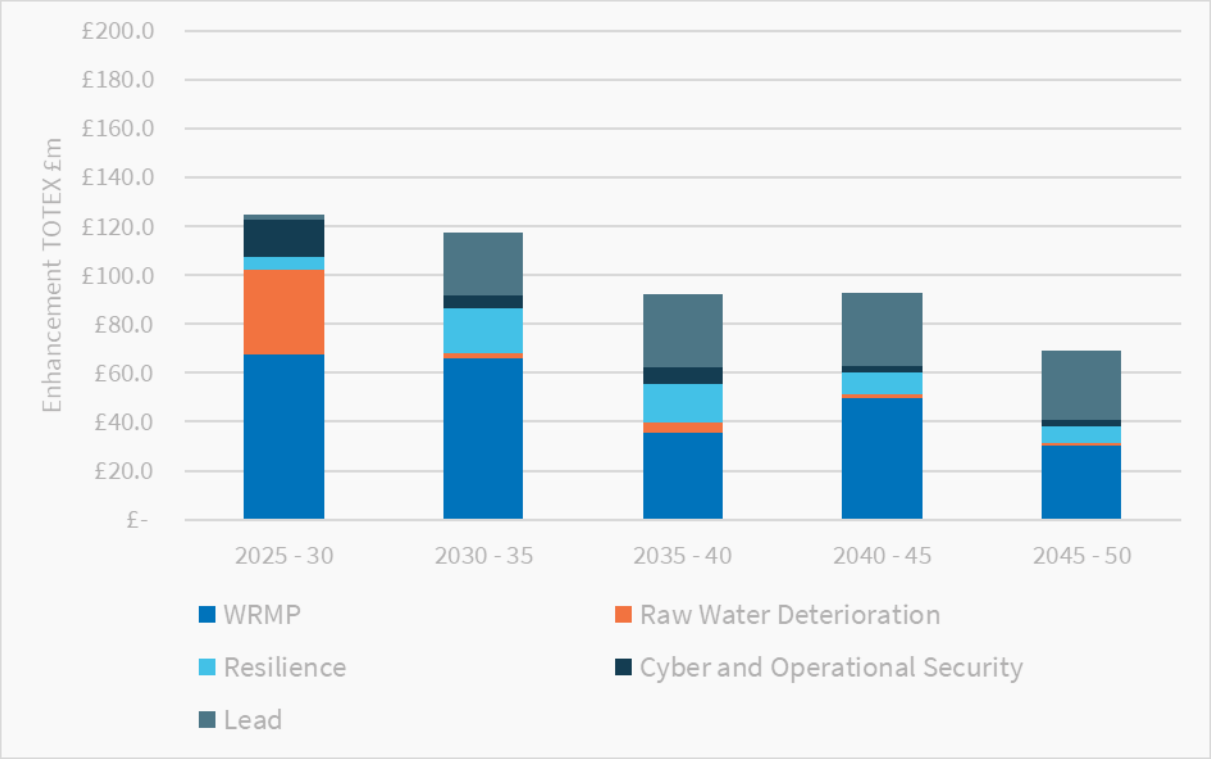
Future	Climate Change	Demand	Abstraction Reduction	Lead Reduction
Core	Moderate	Moderate	Moderate	Benign
Alternative 1	Adverse	Benign	Benign	Benign
Alternative 2	Benign	Adverse	Benign	Benign
Alternative 3	Benign	Benign	Adverse	Benign
Alternative 4	Moderate	Moderate	Moderate	Adverse
Alternative 5	Adverse	Adverse	Benign	Benign
Alternative 6	Benign	Adverse	Adverse	Benign
Alternative 7	Adverse	Benign	Adverse	Benign
Alternative 8	Adverse	Adverse	Adverse	Benign
Alternative 9	Adverse	Adverse	Adverse	Adverse

1. Alternative Pathways Investment Construction Year

Plan	3. Lavant Booster	4.Southern WaterTransfer	17. Transfer to Racton SR Phase 1	18. Transfer to Racton SR Phase 2	19.Transfer to Hoades Hill SR	16. Lead Reduction
Core Pathway	2038	2035	Not selected	Not selected	Not selected	2070
Alternative Pathway 1	Not selected	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 2	2032	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 3	2038	2035	2045	2065	Not selected	2070
Alternative Pathway 4	2038	2035	Not selected	Not selected	Not selected	2050
Alternative Pathway 5	2040	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 6	2032	2035	2043	2045	2059	2070
Alternative Pathway 7	2038	2036	2045	2065	Not selected	2070
Alternative Pathway 8	2038	2035	2042	2044	2047	2070
Alternative Pathway 9	2038	2035	2042	2044	2047	2050

2. Alternative Pathways Enhancement Totex (£m)

Alternative Pathway 1

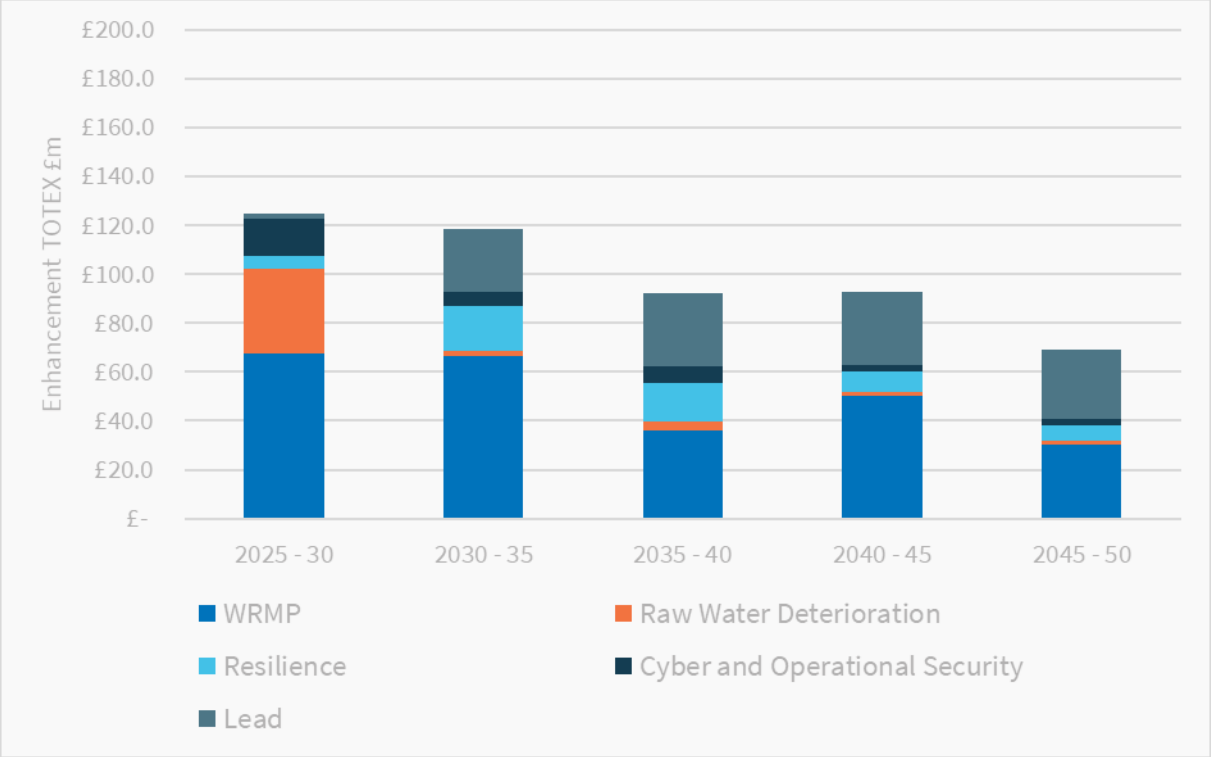


Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	117.4	92.1	92.6	69.0
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	326.5	281.7	287.8	264.7

Alternative Pathway 1 represents:

- Benign Demand: our regional population follows the growth forecast consistent with ONS18 projections.
- Adverse Climate Change: we follow the trends of RCP8.5 and the upper quartile of the 28 UKCP18 climate change scenarios assessed. We begin to see the impacts of a more disruptive and challenging climate future.
- Benign Abstraction Reduction: following our WINEP investigations, we can continue abstracting water at a rate that aligns with the best estimates of potential license capping to address to WFD no deterioration risk.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

Alternative Pathway 2

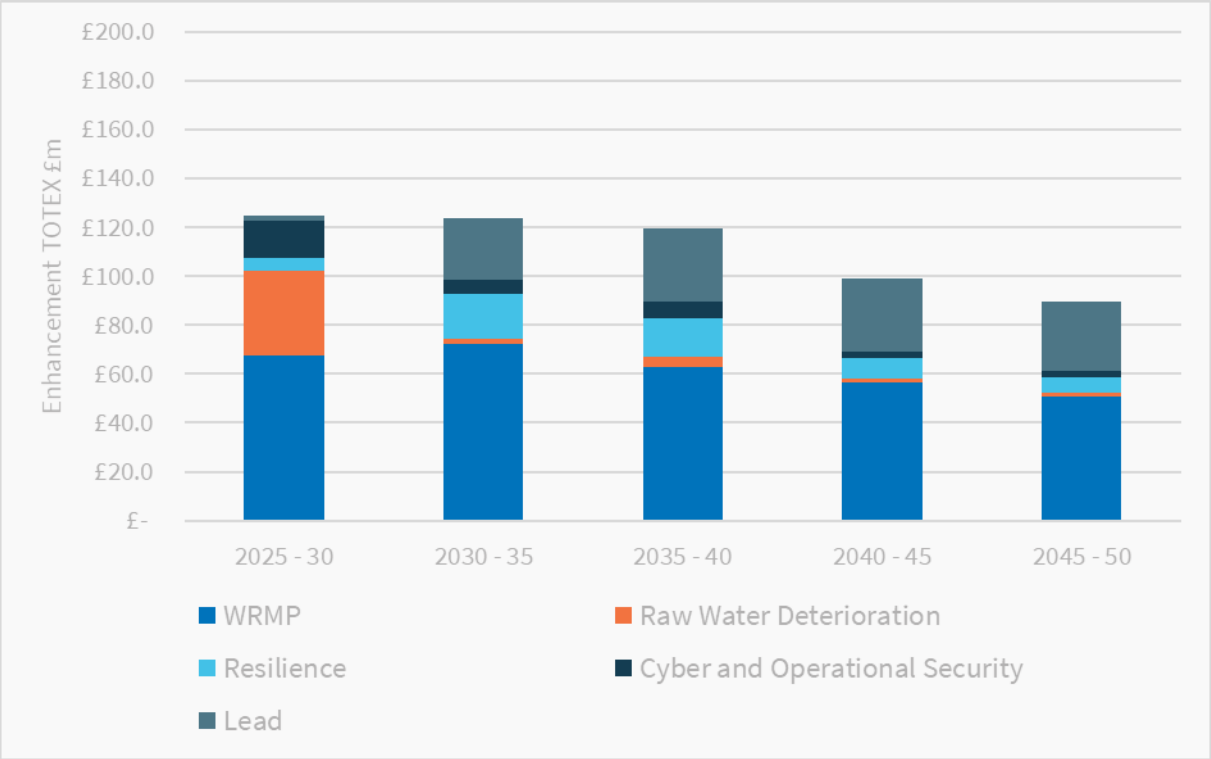


Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	118.2	92.2	92.7	69.1
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	327.2	281.7	287.9	264.8

Alternative Pathway 2 represents:

- Adverse Demand: our regional population exceeds forecasts provided in ONS18 and aligns with that present by each of the local authorities within our region.
- Benign Climate Change: we follow the trends of RCP2.6 and the lower quartile of the 28 UKCP18 climate change scenarios assessed. We see the impacts of a milder climate future.
- Benign Abstraction Reduction: following our WINEP investigations, we can continue abstracting water at a rate that aligns with the best estimates of potential license capping to address to WFD no deterioration risk.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

Alternative Pathway 3

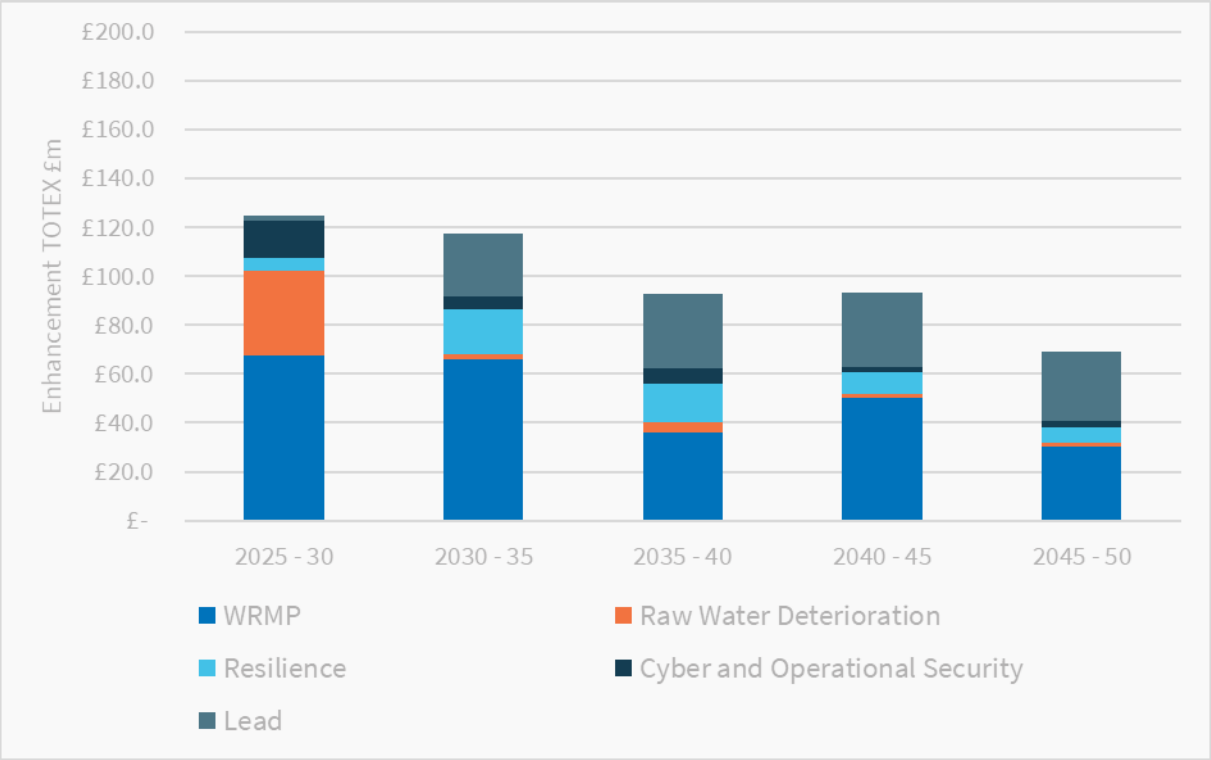


Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	123.7	119.4	99.0	99.5
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	332.8	308.9	294.2	285.3

Alternative Pathway 3 represents:

- Benign Demand: our regional population follows the growth forecast consistent with our local authority projections.
- Benign Climate Change: we follow the trends of RCP2.6 and the lower quartile of the 28 UKCP18 climate change scenarios assessed. We see the impacts of a milder climate future.
- Adverse Abstraction Reduction: our WINEP investigations, indicate that we are causing irreparable damage should we continue to abstract water at our current rate and therefore need to reduce abstraction to minimise the detriment we are having on the environment. We will be required to implement the EA's high license cap.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

Alternative Pathway 5

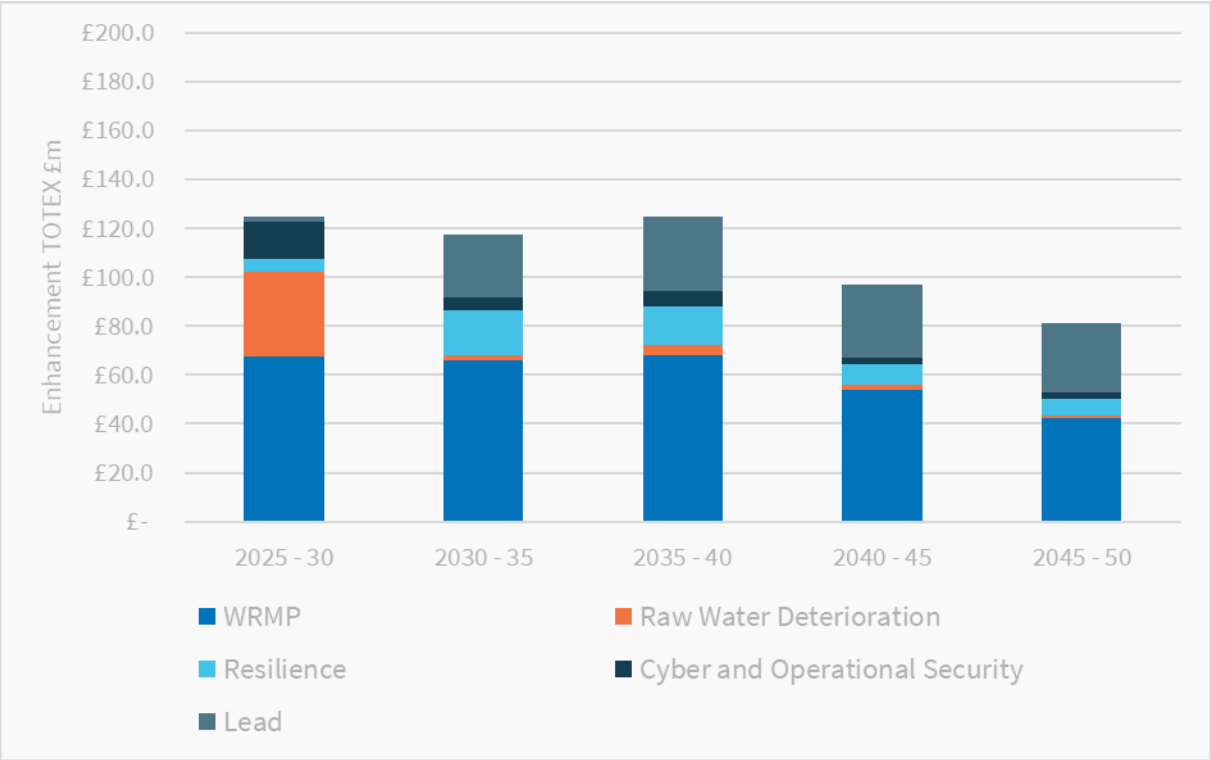


Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	117.4	92.5	93.1	69.1
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	326.5	282.0	288.3	264.8

Alternative Pathway 5 represents:

- Adverse Demand: our regional population exceeds forecasts provided in ONS18 and aligns with that present by each of the local authorities within our region.
- Adverse Climate Change: we follow the trends of RCP8.5 and the upper quartile of the 28 UKCP18 climate change scenarios assessed. We begin to see the impacts of a more disruptive and challenging climate future.
- Benign Abstraction Reduction: following our WINEP investigations, we can continue abstracting water at a rate that aligns with the best estimates of potential license capping to address to WFD no deterioration risk.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

Alternative Pathway 6

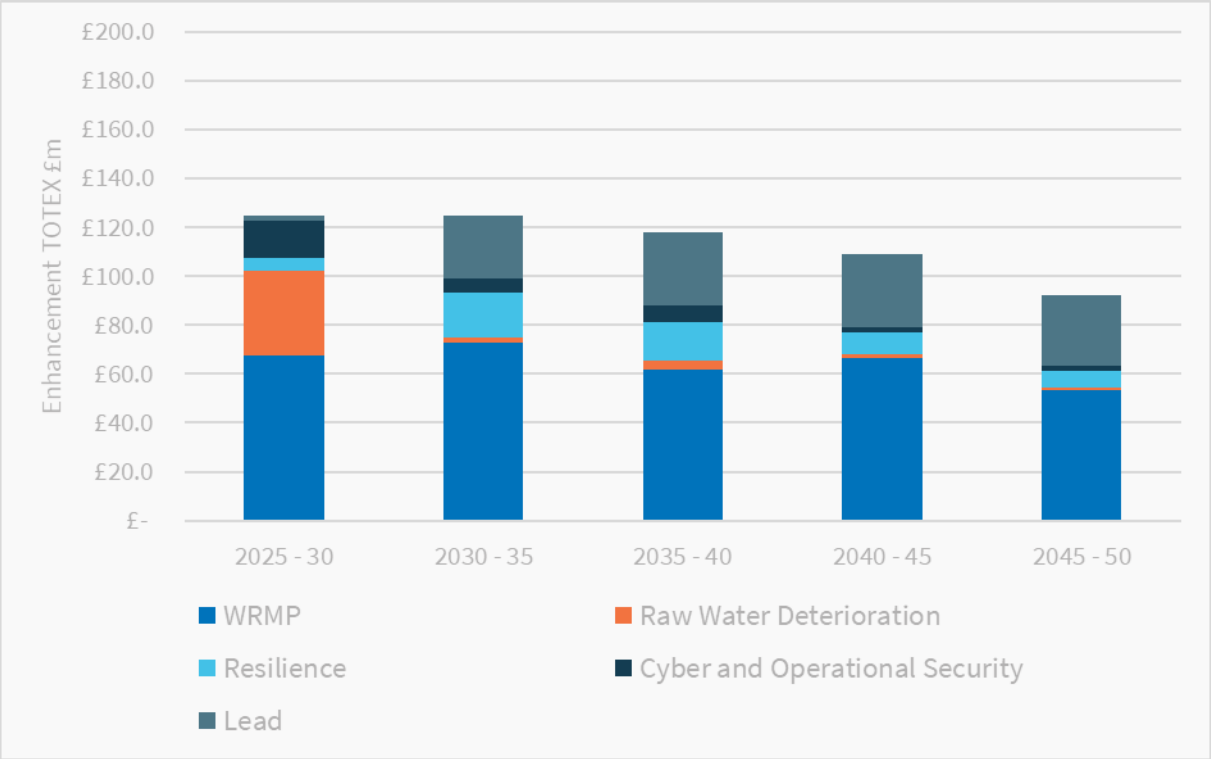


Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	117.4	124.5	96.9	81.0
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	326.5	314.1	292.1	276.8

Alternative Pathway 6 represents:

- Benign Demand: our regional population follows the growth forecast consistent with our local authority projections.
- Adverse Climate Change: we follow the trends of RCP8.5 and the upper quartile of the 28 UKCP18 climate change scenarios assessed. We begin to see the impacts of a more disruptive and challenging climate future.
- Adverse Abstraction Reduction: our WINEP investigations, indicate that we are causing irreparable damage should we continue to abstract water at our current rate and therefore need to reduce abstraction to minimise the detriment we are having on the environment. We will be required to implement the EA's high license cap.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

Alternative Pathway 7



Totex (£m)	2025-30	2030-35	2035-40	2040-45	2045-50
Enhancement	124.7	124.5	117.9	109.1	92.0
Base	209.8	209.1	189.5	195.2	195.7
Total	334.5	333.6	307.5	304.4	287.7

Alternative Pathway 7 represents:

- Adverse Demand: our regional population exceeds forecasts provided in ONS18 and aligns with that present by each of the local authorities within our region.
- Benign Climate Change: we follow the trends of RCP2.6 and the lower quartile of the 28 UKCP18 climate change scenarios assessed. We see the impacts of a milder climate future.
- Adverse Abstraction Reduction: our WINEP investigations, indicate that we are causing irreparable damage should we continue to abstract water at our current rate and therefore need to reduce abstraction to minimise the detriment we are having on the environment. We will be required to implement the EA's high license cap.
- Benign Lead Reduction: the standard for lead in water is maintained at 10µg/L until 2050. The risk presented by lead still requires intervention, so we continue to replace lead service pipes at a more affordable and sustainable rate, replacing 80,288 by 2070.

3. Average Customer Bill Impacts of Alternative Pathways

Customer Bill (£)	2025-30	2030-35	2035-40	2040-45	2045-50
Core Pathway	131.90	143.63	156.21	156.27	151.98
Alternative Pathway 1	131.90	143.51	151.98	150.99	147.63
Alternative Pathway 2	131.90	143.97	152.12	151.11	147.74
Alternative Pathway 3	131.90	143.63	156.21	157.25	157.49
Alternative Pathway 4	131.90	145.87	162.49	166.38	166.75
Alternative Pathway 5	131.90	143.51	151.98	151.14	147.76
Alternative Pathway 6	131.90	143.73	155.95	160.21	161.64
Alternative Pathway 7	131.90	143.51	155.14	156.48	153.90
Alternative Pathway 8	131.90	143.63	156.19	156.97	159.79
Alternative Pathway 9	131.90	143.63	156.19	156.97	159.79

This table demonstrates the average customer bill impact of all of our alternative pathways that we have tested.

Plan	Lavant Booster	Southern Water Transfer	Transfer to Racton SR Phase 1	Transfer to Racton SR Phase 2	Transfer to Hoades Hill SR	Lead Reduction
Core Plan	2038	2035	Not selected	Not selected	Not selected	2070
Alternative Pathway 1	Not selected	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 2	2032	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 3	2038	2035	2045	2065	Not selected	2070
Alternative Pathway 4	2038	2035	Not selected	Not selected	Not selected	2050
Alternative Pathway 5	2040	Not selected	Not selected	Not selected	Not selected	2070
Alternative Pathway 6	2032	2035	2043	2045	2059	2070
Alternative Pathway 7	2038	2036	2045	2065	Not selected	2070
Alternative Pathway 8	2038	2035	2042	2044	2047	2070
Alternative Pathway 9	2038	2035	2042	2044	2047	2050

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