



Chapter SRN02

Long-term Delivery Strategy

2. Our Long-term Delivery Strategy

2.1. Executive summary

In the next 25 years climate change and population growth will radically alter the world we live in. Water and wastewater services need to be in the vanguard to adapt and to ensure that these essential services continue to deliver for our customers and environment.

We need to continue delivering safe water every day while safely disposing of wastewater. We need to ensure our chalk streams, rivers, coastlines, estuaries and beaches are protected. This will be challenging and requires new approaches. The costs of delivering resilient services will be significant.

To deliver best value services we need to avoid unnecessary or inefficient investment. It is essential that our planning processes anticipates the uncertainties we could face, and we are able to make decisions at the right time to ensure the delivery of our critical infrastructure when it is needed.

Our Long-term Delivery Strategy (LTDS) explains how we will respond to these challenges over the next 25 years. It sets out how we have used an adaptive planning framework that identifies the range of investments we could need to meet the future challenges.

Our LTDS is built up from our core pathway. This details the low and no regrets investments we need to make to meet the challenges we are facing. Our LTDS also includes eight adaptive pathways – with additional investments to respond to climate change, new environmental challenges or higher levels of population growth.

Our Business Plan is the first five years of our LTDS core pathway. The investments we will make will ensure we meet the short-term challenges and allow us to move to any of our adaptive pathways should we need to.

Following our core pathway between 2025 and 2050, we will invest £15.5 billion on low or no-regret activities to enhance our services and protect and improve our environment. We have also identified up to £11.5 billion of additional investment we might need, depending on which of our adaptive pathways we may need to adopt.

Our plans are based on our customers' and communities' expectations. Customers want us to be ambitious, show leadership and make the right investments for the future. They want us to invest in nature-based solutions first wherever possible, focus on delivering their priorities and support phasing investment to deliver the biggest benefits first while protecting the most vulnerable.

We have listened to our customers and adapted our outcomes and plans to reflect their priorities.

Our LTDS is based on our five long-term priorities¹:

- Ensuring a reliable supply of high-quality water for the future
- Protecting and improving the environment
- Becoming a renewable power generator
- Understanding and supporting our customers and communities
- Enabling and empowering our people

We have grouped investment and outcomes under nine strategic delivery themes – explained in more detail below. The table below shows some of the largest areas of investment within our plan:

Table 1: Our long-term priorities

Ensuring a reliable supply of high-quality water for the future	Protecting and improving the environment	Becoming a renewable power generator
<ul style="list-style-type: none"> • Working with Portsmouth Water to build Havant Thicket Reservoir • Building other new supplies including a new reservoir, water recycling, desalination and transfers with other water companies • Supporting major supply schemes outside of region and building transfers to move water from them • Reducing leakage and helping our customers save more water 	<ul style="list-style-type: none"> • Working with nature and our communities to prevent rain entering our sewer networks – and separating stormwater and wastewater sewers • Improving our wastewater treatment capacities and capabilities – and enhancing our maintenance programmes • Building storm water storage tanks if we need additional capacity in the future • Changing how we work to move towards net zero 	<ul style="list-style-type: none"> • Taking advantage of new technology to build more advanced digestors and create more renewable energy

¹ In Summer 2022 we consulted on four long term priorities. Since then the Board has concluded we should add another on renewable generation. We intend to update our published version later this year.

Our other two priorities are Understanding and Supporting our Customers and Communities and Enabling and Empowering our People. These are important areas, although the majority of the investment falls outside of the LTDS scope which covers our wholesale business.

Our core pathway provides the capacity necessary in the less severe predictions for future demand for water, climate change, abstraction reduction, bioresources regulation and high performing technology development. We have developed a monitoring plan that allows us to identify when the core pathway will not deliver ambition and the process to move to one of our adaptive pathways.

Most pathways have decision points after 2028 and we are implementing the structures and governance to ensure that decisions are taken in a timely manner based on the best evidence available. We have identified an adaptive pathway for bioresources to respond to changes to the Farming Rules for Water that may occur before 2028.

(See chapter [SRN05: Wholesale wastewater \(costs and outcomes\)](#)).

All of our proposed adaptive pathways are designed to ensure that customers' priorities and regulators' expectations will be met in an efficient and effective manner. The table below shows some of the long-term outcomes we will achieve and by when.

Table 2: Our long-term outcomes

By 2040	By 2050
<ul style="list-style-type: none"> By 2035: we address 75% of priority storm overflows By 2038: Reduce effluent phosphorous load by 80% By 2040: Reduce all asset failure pollution incidents to zero By 2040: Renew bioresource asset infrastructure and develop enhanced power generation capability By 2040: increase our resilience to withstand 1 in 500-year drought 	<ul style="list-style-type: none"> By 2050: reduce leakage by over 50% By 2050: reduce average personal water use to below 110 l/p/d. By 2050: reduce our use of storm overflows by over 80% By 2050: Net zero operational emissions and embedded carbon

Our customers want us to invest now and deliver our promises. They do not want to pass the challenges to future generations – but they expect us to make sure bills are affordable. We need to balance the need and support for additional investment, with keeping bills affordable and protecting the most vulnerable.

To make sure our plans are deliverable we're planning a mixture of financing and delivery options including:

- Direct Procurement for Customers
- Alternative Delivery
- Partnership working
- Co-funding

We will always choose the best value option – balancing the needs of our customers, communities and environment.

(See chapter [SRN04: Costs and Outcomes Approach for how we developed the options in our plan](#)).

This is an ambitious plan that delivers our customer priorities despite the challenges of:

- Continuous delivery of infrastructure (£2 billion to £4 billion per AMP)
- Significant climate change and abstraction reductions
- Financeability
- Customer affordability

This chapter is a summary of our main chapter [SRN12: Long-term Delivery Strategy](#).



2.2. Our long-term priorities and their context

Our vision is to create a resilient water future for our customers.

In 2022 we shared our Long-term Priorities² to achieve this – based on our understanding of the long-term trends, challenges and enablers we've identified.

We have reflected on what our customers told us and added an extra priority to become a renewable energy generator. Figure 1 below shows our long-term priorities in their strategic context.



Figure 1: Our long-term priorities in context

2 [5951_long-term_strategic_plan_v12.pdf \(southernwater.co.uk\)](#)

2.2.1. Our long-term priorities

Our five long-term priorities are:

- 1. Ensuring a reliable supply of high-quality water for the future** – Our customers and communities expect to turn on the tap and receive a high-quality, reliable supply of drinking water, all day, every day whatever the weather, whatever the challenge.
- 2. Protecting and improving the environment** – We believe it is important to protect the environment. We also know how important it is to go further and look to improve and enhance it where we can. We must be responsible when we take water from our rivers and streams and keep those same rivers and streams free from pollution. We also need to protect our beaches and bathing waters from storm overflows during heavy rain.
- 3. Renewable power generator** – We are committed to reducing our carbon emissions and have a target to generate 25% of our energy from renewable sources by 2025³. By investing in new technology, we can increase the amount we generate for our own use or supplying the grid and supply our local communities with renewable power. Customers will benefit from lower bills as we will only invest in projects that deliver value to customers.
- 4. Understanding and supporting our customers and communities** – Customers want us to deliver great service – whatever the issue and whenever it happens. From billing queries, to responding to burst mains and blocked drains and sewers, our service will be easy, quick, seamless and sympathetic.
- 5. Enabling and empowering our people** – to make sure we're fit for the future we'll continue investing in our people and systems so we're resilient to cope with future challenges and fluctuating prices and availability of goods and resources.

Household and future customers supported our long-term priorities, which they felt represented their issues well.

"I think this accurately reflects the importance which should be weighted towards long term sustainability from large companies. If everyone plays their part, especially those like Southern Water who directly interact with the environment given the nature of supplying water, then change can happen."

Future Customer

Our LTDS focuses on the first three of our long-term priorities, as we need to enhance our services to deliver them. Chapter [SRN07: Customer – Household and Non-Household \(Costs and outcomes\)](#) explains how we will change our retail services and engage better with our customers and communities.

We have grouped our water and wastewater investments into strategic delivery themes, which link to our long-term performance commitments.

2.2.2. Trends

Our consultation in 2022 identified six key trends that will change how we work and the services we provide for our customers and communities.

Growing demand

We are expecting significant population growth in our region over the next 25 years. By 2050 the population in the South-East is predicted to grow by between 19% and 25% from 2020. Population growth will increase demand for our services. This means we will need to invest in new sources of water and enhance our wastewater networks to support new growth.

Housing growth will also mean increased urbanisation – increasing the potential for rainwater to overwhelm our networks, cause flooding and lead to pollution.

Changing shape of communities

Our communities are changing. Our customers are getting older⁴ and there is a growing focus upon health and wellbeing. For example, the proportion of people over 65 in the Isle of Wight is forecast to grow by 10% by 2043. With more people living alone and the lasting changes to how we work after the pandemic, demand for our service is also anticipated to increase.

Evolving customer expectations

Customers' expectations are changing. Increasing speed of service expectations are rising due to enhanced customer experiences in other industry sectors driven by digitalisation and real time access to services wherever and however customers prefer. Their expectations on protecting the environment and storm overflows have developed significantly since PR19.

Our customers expect us to deliver a reliable high-quality service, be proactive and prevent issues from happening. And when something goes wrong, they expect us to fix it quickly and it to not happen again.

³ [Southern Water – Annual report – page 5](#)

⁴ [Subnational population projections for England - Office for National Statistics](#)

Increasing use of technology

Our customers and communities expect to see near real-time information about how we are performing, especially our impact on water quality. We are committed to becoming more transparent and were the first company to share live information about storm overflow releases through Beachbuoy. This is now a reference site for our region that allows councils, local groups and stakeholders to make informed decisions about their water activities such as swimming.

Increasing our use of sensors, machine learning and AI will enhance how we monitor our network and become more proactive at preventing issues – and responding quickly when they occur. We have installed 24,000 sewer monitors which will allow us to detect blockages and fix the problems before they cause flooding.

Rising concerns about the environment

Improving our environmental performance is our customers' highest priority. No pollutions are acceptable to them – and they include our use of storm overflows in this category. Nearly 800,000 people in the South-East participated in open water swimming in 2022⁵ and they expect to be able swim safely in our seas and rivers.

We rely on rare, fragile chalk streams for much of our water in Hampshire and the Isle of Wight. We have already reduced how much we take from them to protect them for future generations – and expect to reduce this even further in the future.

Climate emergency

Climate change is impacting our environment and, in some cases, making it more challenging to deliver our services.

We are already experiencing more extreme weather than we did in the past. Droughts and storms will become more extreme and more frequent, challenging our ability to provide water and wastewater services while protecting and improving our environment.

Some of our sites are becoming more vulnerable to coastal erosion and power failures caused by extreme weather. We have identified vulnerable sites and equipment and started a long-term programme to improve resilience.

2.2.3. Challenges

We have identified seven long-term challenges we need to overcome:

Water scarcity

Our region is water stressed and we need to leave more water in our environment to protect it for future generations. This challenge is biggest in Hampshire where we rely on sensitive chalk streams for much of our water.

As our population grows and we experience more extreme weather we need to make sure our networks and supplies are resilient. This includes ensuring we protect our existing sources from the impacts of climate change, and enhancing how we treat water to respond to new challenges.

Increased flooding

We are already experiencing more extreme storms and expect this to get worse in the future. These can cause our sewers to be overwhelmed by rainwater, knock out power supplies to some sites or cause flooding at our works. These can all lead to pollution.

We need to adapt our services to meet this challenge, while reducing our use of storm overflows – the traditional safety valve for our networks.

40% of our customers live in coastal communities⁶, higher than all other water companies, meaning many of our assets are near the coastline. This places them at higher risk from coastal erosion and rising sea levels.

Meeting customers' expectations

Our customers have clearly told us what they expect from us. They expect us to maintain our core services and make major improvements to our pollution and leakage performance – putting the environment first at all times.

We also need to improve how we respond to incidents – making sure we resolve things quickly and get fixes right the first time.

Keeping bills affordable

We may need to invest up to £27 billion over the next 25 years.

Our customers have told us we should invest now for the long-term and not pass the problem to future generations. However, we need to make sure our bills are affordable for all and we protect the most vulnerable customers.

⁵ [Active Lives | Results \(sportengland.org\)](#)

⁶ See [SRN20: Coastal population Cost Adjustment Claim](#)

Decarbonisation

We are committed to reducing our carbon emissions and achieving net zero operational and embedded carbon. Reflecting what our customers have told us, we are now committed to achieving this by 2050 – in line with government's net zero target.

We will continue reducing our emissions by improving our treatment processes, using electric vehicles and increasing how much renewable energy we generate.

Building trust

We know our performance has not been where our customers, communities or regulators expect – and that this has damaged trust.

We know our customers want to trust us again and are lending their trust to us to deliver their priorities. We need to deliver our commitments – and increase how transparent we are – to regain their trust for the long-term.

Our [SRN47: Resilience in the Round technical annex](#) identified shorter term challenges we need to respond to: population growth and climate change, drought, aging assets, cyber security and the transition to net zero. Aging assets and cyber security will be addressed via our AMP8 and future plans. The other challenges to resilience and meeting expectations continue in the longer term.

Delivering our ambition

Our ambition and our customers ambition will require us to change from being just a water processing and treatment company. To successfully deliver the outcomes we must manage our business to balance:

- **Affordability** – Achieving a mixture of increased income through government, bill income and alternative income sources
- **Adaptability** – Adapt to a future with potentially high climate change impacts and increasing environmental protection regulation
- **Deliverability** – Delivering the required infrastructure over the 25-year LTDS period
- **Financeability** – Securing the necessary corporate or government investment through the demonstration of a reasonable income stream and agreed rate-of-return



2.2.4. Long-term Delivery Strategy interconnectedness with other strategic plans

Our Long-term Delivery Strategy integrates our short, medium and long-term plans into one long-term strategy.

It includes the investment we have identified through our Water Resources Management Plan (WRMP), our Drainage and Wastewater Management Plan (DWMP)

and our Water Industry National Environment Programme (WINEP) – as well as the long-term water quality risks we have identified. We have included other strategic plans, including our plans for bioresources, resilience, net zero and the environment.

The graphic below shows how all our plans are linked through our Long-term Delivery Strategy.

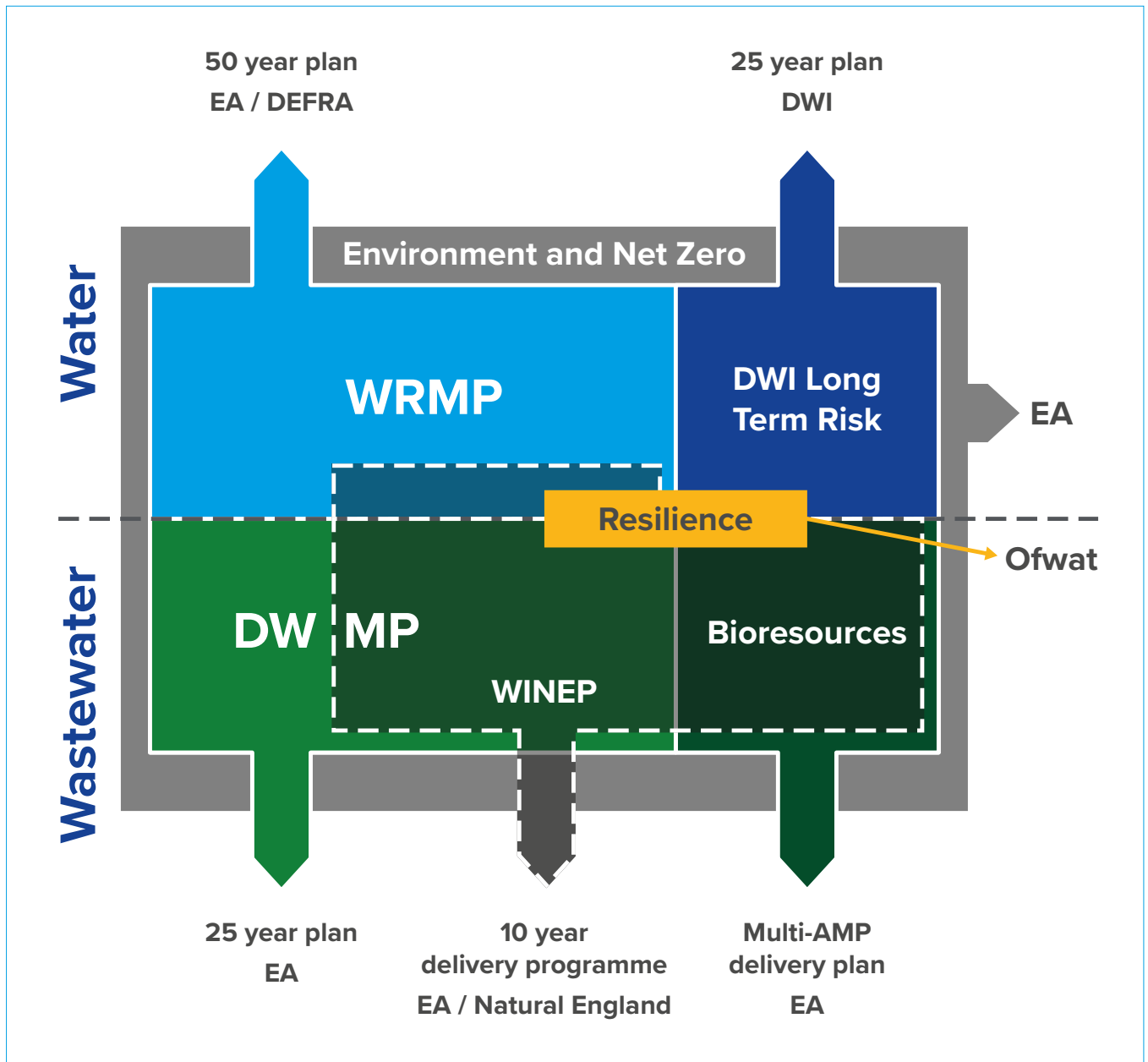


Figure 2: How our plans link together

2.2.5. Customer and Stakeholder insight

Our plan is informed by our most detailed customer engagement ever. More than 25,000 customers spent over 8,000 hours from over 190 different reports telling us what they think to develop our plan. We combined this with over 10 million data points from sources such as contacts, complaints, social listening and other sources.

We used deliberative insight across multiple stages and audiences to develop and refine our long-term strategy. This insight has shaped our ambition as well as how we will deliver the improvements our customers and communities expect. (More information about our customer engagement is in chapter [SRN03: Customer Acceptability](#) and [SRN14: Customer Insight technical annex](#)).

Our customers, stakeholders and communities expect us to plan for the future and make sure we can provide resilient water supplies for future generations while protecting our environment from damage. Maintaining a reliable supply of high-quality water is our customers’ highest priority.

They want the right, long-term solutions that balance looking after our current supplies and developing new sources. Our future water resources should be a blend of solutions and scalable. This is so consumption can be fairer to future generations and ensure we all have access to the reliable services.

Our customers and communities want us to be ambitious and enhance how we protect and improve our environment. They expect us to work with nature first, wherever possible, and look for ways to deliver wider environmental benefits – including by being more innovative. Our customers want us to be more ambitious in some areas, like storm overflows, but not at the detriment of our core services – even if that means being less ambitious in other areas.

Customers want us to invest in the right long-term solutions for the challenges we face and do not want us to shift the burden to future generations. They expect a blend of solutions that think about best value for the long term and show credible progress in the short term.

Bills need to be affordable with support for those that need it most. However, they are prepared to invest now for future generations, provided we show leadership.

Customers want to see us collaborating and using technology at pace – and we need to be seen to do our part. Collaboration is key with regulators, neighbouring water companies, local authorities and other organisations. Our stakeholders and communities want us to work together on new housing and population growth.

The table below shows some of the ways customers’ priorities have influenced our plans. More detail about how customers’ views have been reflected throughout our plan. (More information about how customers’ views are reflected in our plans is in chapter [SRN03: Customer Acceptability](#) and [SRN14: Customer Insight technical annex](#)).

Table 3: Customer priorities

Customers told us...	So we...
reducing storm overflows and pollution are the most important thing. They want us to be ambitious, and pushed our original plans further...	...added the top spilling overflows, additional bathing water overflows and stretched our pollution target
...a reliable supply of high-quality water is the most important thing we should do	...focussed our plans on making sure we can provide Water for Life now and in the future
to prioritise environmental benefits above everything else and work with others to improve our environment – especially when we are not the only ones responsible...	...developed our best value plan to prioritise environmental improvements and are leading partnerships like our Three Harbours Strategy
...to plan for the future and invest now so problems are not passed to future generations	...will start investing in the new sources we need for the future, including starting work on some now that will deliver benefits after 2030
we should invest in the right long-term solution – putting nature first, working in partnership and embracing new technology – but only 41% trust us to design the right solution...	...developed a best value plan for storm overflows that delivers wider benefits, using best-practice guidance. We are learning from our experience, testing what works and investing in the right long-term solutions
...we should use a mix of sources, and make sure we maximise environmental benefits where we can	...have included a mix of sustainable sources in our long-term plans, like desalination and water recycling, as well as transfers from other companies – as well as using nature-based solutions to protect our existing sources
increasing our resilience to climate change, coastal erosion and power failure is important – but expected us to have done some of this already	...increased our investment in operational resilience to meet new challenges – while addressing our previous performance through Botex
we should innovate and change how we work, especially to avoid incinerating bioresources, even if the technology has been used elsewhere already...	...developed our Bioresources Strategy to avoid having to incinerate bioresources and generate more renewable energy
we should invest now and not push problems to future generations – but we should keep bills affordable by focussing on delivering the biggest benefits first	...have phased some parts of our programme over eight years – delivering some short-term improvements and keeping bills fair for current and future customers

Customers told us our strategy feels genuinely customer-centric, and directly addresses the big issues of today in storm overflows and affordability, as well as tackling longer term environmental and infrastructure challenges.

“I am impressed in that I think they have covered everything that is a concern in their priorities... they are listening to customers and....planning for the future.”

Household Customer

2.3. Our ambition

Our Long-term Delivery Strategy sets the investments we will make to our services and environment – and how we’ll deliver them. It is based on our understanding of the challenges we face, the opportunities open to us, what our customers and stakeholders have told us – and government’s long-term targets.

In some areas, like Net Zero and drought resilience, we’ve decided to meet government targets rather than exceed them. Customers told us it is important we balance enhancing our services with getting the basics right.

2.3.1. Our strategic themes

We’ve grouped our key enhancement activities into nine strategic delivery “themes” – five for water, four for wastewater.

Our water strategic themes are to:

- **Provide extra water supply** to meet future population growth and offset abstraction reductions from environmentally sensitive water sources
- **Make our supplies more resilient to severe drought** because we anticipate drought conditions may become more prevalent in the future
- **Reduce leakage** to make our service more efficient and demonstrate our willingness to prioritise customer concerns
- **Lower water use in homes and businesses** so that a successful balance of water supply against demand can continue to be achieved over the long-term
- **Improve water quality** in the face of increasing treatment challenges due to rising levels of environmental pollution

Our wastewater strategic themes are:

- **Network flow management to reduce flooding and spills** which prioritise surface water separation and nature-based solutions to reduce the use of storm overflows and build resilience to flooding
- **Recycling wastewater and nutrient removal** which includes how we improve the quality of the wastewater that we return to our environment
- **Asset health and resilience** which focuses on how we ensure our aging assets perform effectively and efficiently throughout their anticipated lifespan
- **Bioresources** that details how we can utilise the opportunity to utilise new technologies to extract gas or electricity from our waste product and feed that energy back into the national grid



2.3.2. Our long-term water performance commitments

Strategic themes	Ambition outcome/ Performance commitment	Mandatory regulatory requirement	Customer priority	Ambition target (beyond mandatory)	
Provide extra water supply	¹ Deliver modular approach to new infrastructure build (Core plus adaptive planning)	Legal requirement to sustain population water supply	✓	–	Ambition is same as Mandated Targets
Make our supply more resilient to severe drought	² Drought resilience	Withstand 1 in 500 year drought event in 2040	–	–	
	Unplanned outage	–		Percentage unplanned loss of peak week production capacity over the year – 2%	
Reduce leakage	³ Reduce leakage	By 50% in 2050	✓	WRMP target 51.5%	Aligns to WRMP
	Mains repairs	–		No. of mains repairs per 1,000km 98.1	
Lower water use in homes and businesses	⁴ Reduce personal water usage	Reduce personal usage to 110 l/p/d by 2050		Reduce personal usage to 105.6 l/p/d by 2050	Ambition is greater than Mandated Target
Improve water quality	⁵ Exceptional water quality	Compliance Risk Index at zero with margin less than one	✓	–	Ambition is same as Mandated Target
	Lead reduction	–	–	Lead free network by 2050	Ambition aligns to DWI aspiration

Figure 3: Water: Performance commitments to 2050

2.3.3. Our long-term wastewater commitments

Strategic themes	Ambition outcome/ Performance commitment	Mandatory regulatory requirement	Customer priority	Ambition target (beyond mandatory)	
Network flow management to reduce flooding and spills	1 Reduce storm flow overflows	Deliver < average 10 spills per overflow by 2050 (80% reduction)	✓	–	
	Reduce bathing water pollution	Protect bathing waters by ensuring < 3 spills per season	✓	Improve all bathing areas to excellent standard (< 2 spills per season)	Ambition is greater than Mandated Targets
	Reduce shellfish water pollution	Protect shellfish waters by ensuring < 10 spills per annum	✓	–	
Recycling wastewater and nutrient removal	2 Comply with discharge permits	Deliver 100% WPS permit compliance by 2028	✓	–	
	Nutrient neutrality	Reduce phosphorous load reduction by 80% by 2038, ensure nitrogen treatment to TAL where receiving water course unsatisfactory by 2030		–	
Asset health and resilience	3 Reduce pollution	Zero serious pollution incidents by 2025	✓	Reduce all pollution incidents to zero by 2040	Ambition is greater than Mandated Targets
	Sewer collapse	–		Sewer collapses per 1,000km sewers 5.61	No mandated targets
	Internal sewer flooding. External sewer flooding	–	✓	Flooding incidents per 10k properties 0.78 4.6	
Bioresources	4 Renew bioresources infrastructure			2040	
Net zero	Reduce carbon	Achieve net zero operational carbon and embedded carbon by 2050		–	

Figure 4: Wastewater: Performance commitments to 2050

When setting our long-term performance commitments to 2050 we have considered the regulated and government targets where applicable and aimed to achieve these at the required date. In some circumstances where customers are demanding swifter action we have accelerated our delivery, for example storm overflows and pollution incidents. In areas where there are no mandated targets and customer engagement has indicated a lower priority we have aimed for a level of performance that we forecast is achievable without significant additional investment.

2.4 Our strategy – core pathway

This section explains what is in the core pathway of our Long-term Delivery Strategy. Our business plan is the first five years of our core pathway.

The core pathway is our best value plan comprising of low and no-regret enhancement activities. It includes enhancement schemes that are required to meet:

- Ambition outcomes and performance commitments
- Legislative and regulatory requirements

It includes activities that are required across a wide range of plausible scenarios; to meet short-term requirements; or to keep future options open, such as enabling work or learning and monitoring, where possible, or to minimise the cost of future options.

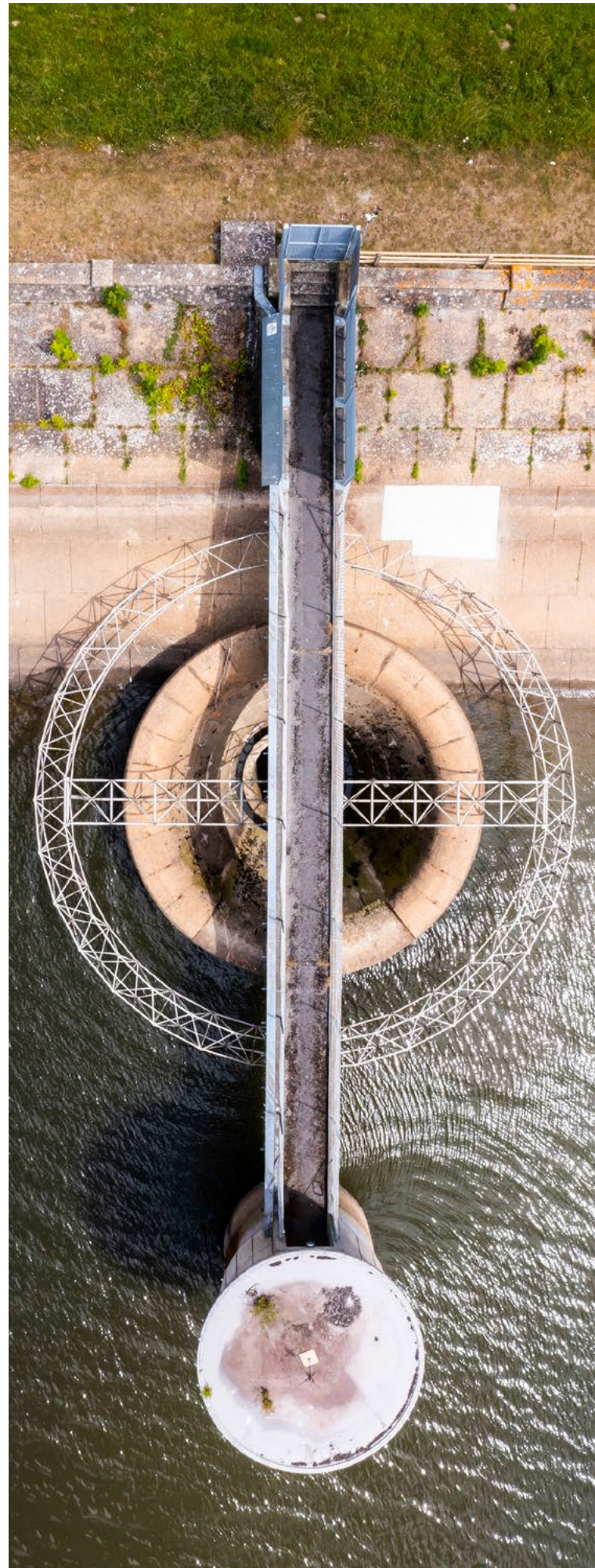
Our core pathway is able to deliver our ambition over a range of lower impact plausible futures.

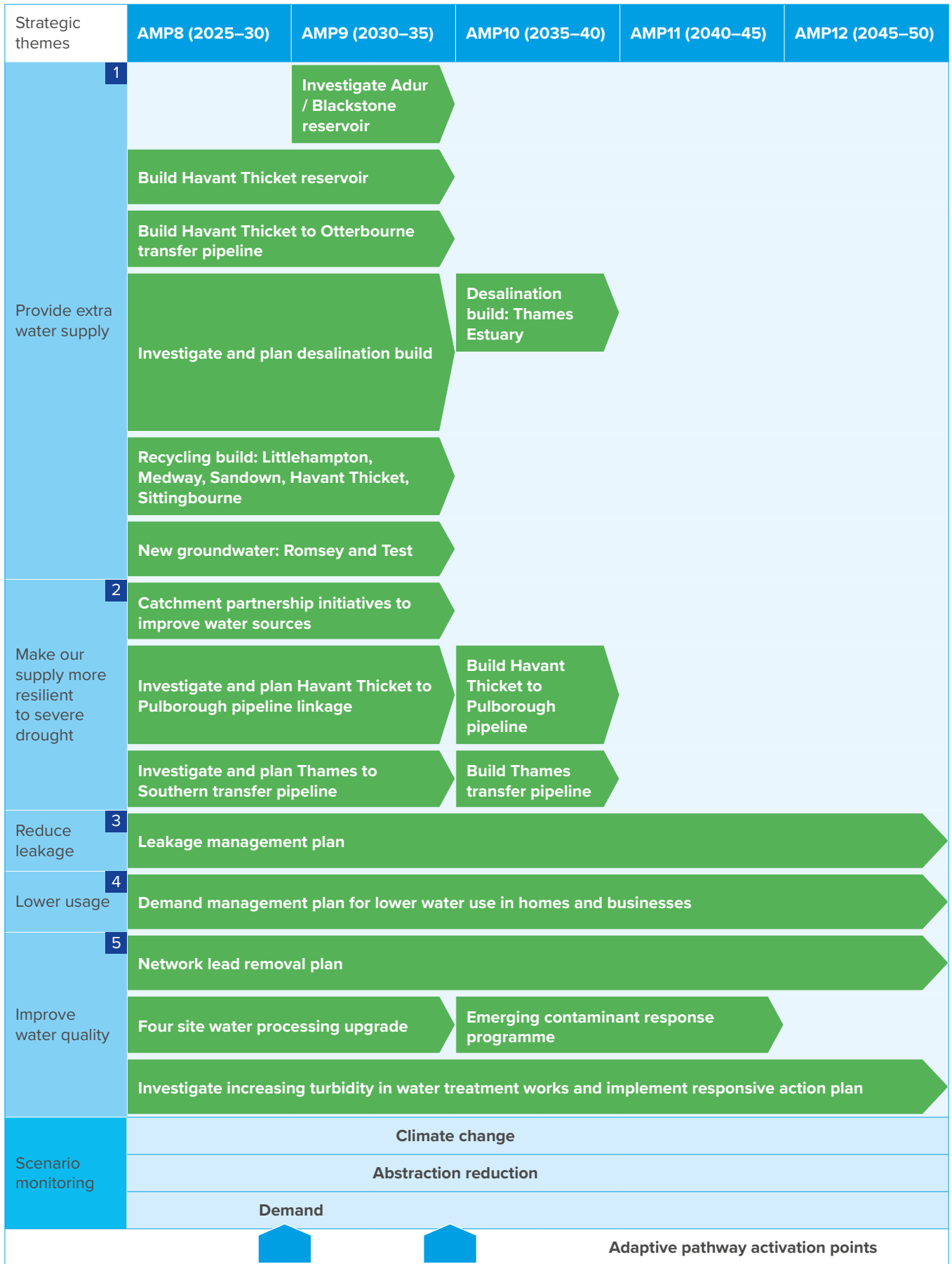
The next two sections explain what is in our core pathway for water and wastewater.

2.4.1. Enhancing our water supplies

Our core pathway for water includes those schemes we identified in our WRMP as low or no regrets and preparatory work for options. It also includes long-term actions to protect water quality and increase the resilience of our supply network.

The graphic on the next page shows our core pathway enhancement activities, grouped under our strategic delivery themes.





■ Core Activity

Figure 5: Water: Core enhancement activity pathway (WRMP Situation 6) roadmap

To **provide extra water supply** we will:

- Jointly deliver Havant Thicket Reservoir with Portsmouth Water, build a water recycling plant and a new transfer pipeline as part of Water for Life Hampshire
- Build new recycling plants at Littlehampton, Medway, Sandown, Havant Thicket and Sittingbourne
- Invest in other new sources including a new groundwater source in Hampshire, a new reservoir in Sussex and desalination plants on the Kent coast

To **make our supplies more resilient to severe drought** we will:

- Continue working with neighbouring water companies to improve how we move water around the region to where it is most needed
- Take a bigger stake in a new reservoir being developed by Thames Water and take the lead on a new strategic pipeline which could transfer up to 120 million litres per day into Hampshire
- Develop a new transfer pipeline from Havant Thicket to Pulborough
- Strengthen partnerships with farmers, landowners and environmental groups to protect water sources from over abstraction and pollution

We'll **reduce leakage** by:

- Replacing 300km of mains by 2030 and 3,800km more by 2050 – in addition to our everyday work to find and fix leaks
- Creating a smart network by installing more sensors and using machine learning and AI to improve how we manage our networks, identify problems before they happen and fix them quickly when they do
- Use developments in technology such as drones, thermal imaging, satellite imagery and fibre optics to improve leak detection methodology

We'll help customers **lower water use in homes and businesses** by:

- Installing more than 1 million smart meters by 2030
- Continuing our Target 100 campaign and running information and education campaigns to encourage water efficiency
- Introducing innovative tariffs that incentivise water efficiency and reflect the value of water

We'll **improve water quality** by:

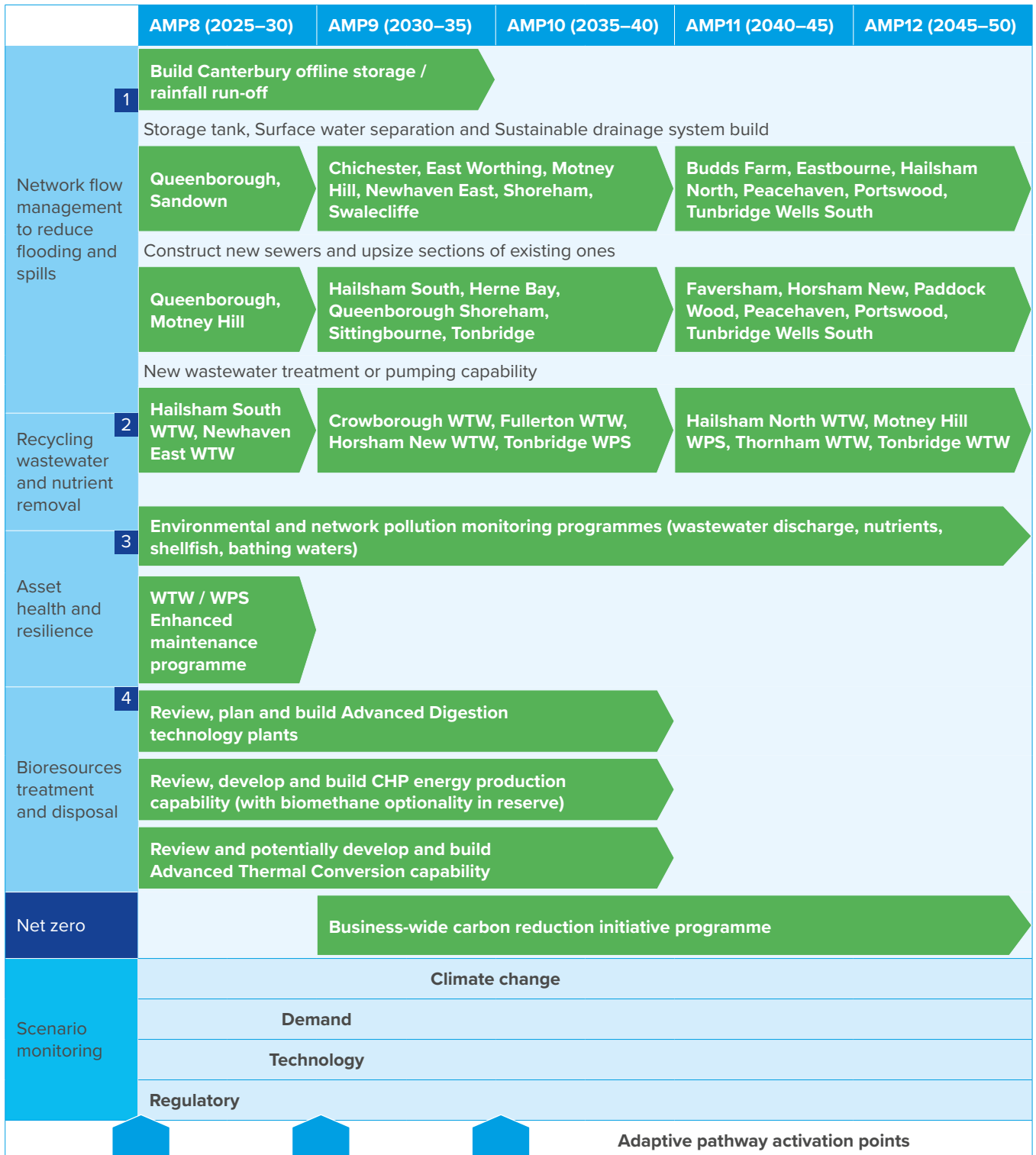
- Improving our resilience to water quality and supply interruptions through improvements to our major water treatment sites
- Investing in additional water treatment at sites where raw water quality is deteriorating
- Investigating the impact of climate change on our sources, particularly which supply works are at risk from increased turbidity – and using the results to design and deliver the right solutions after 2030 – using nature-based solutions first wherever we can
- Removing lead communication pipes from public buildings in high-risk areas and where we find them as part of our mains renewal programme
- Implementing a sampling and monitoring programme to identify new and emerging contaminants by 2030, and then piloting and delivering the right treatment options from 2030

2.4.2. Enhancing our wastewater services

Enhancing how we protect our environment is our customers' biggest priority for us to improve, and the biggest driver of investment across our plans.

Our core pathway for wastewater focuses on our Drainage and Wastewater Management Plan (DWMP) and WINEP. It also includes how we will continue safely and sustainably treating and recycling our bioresources.

The graphic on the next page shows our core pathway enhancement activities, grouped under our strategic delivery themes.



 Core Activity

Figure 6: Wastewater: Core enhancement activity pathway roadmap

We will improve **network flow management to reduce flooding and spills** by:

- Using sustainable drainage systems, such as swales, raingardens, ponds, to slow the flow of water to allow existing drainage systems to drain water away over a longer period of time
- Building new, or increasing the capacity of existing, storage tanks after we've used nature-based solutions as much as we can
- Increase the capacity of our wastewater pumping stations and sewers – including building new ones if we need to

We will enable **recycling wastewater and nutrient removal** by:

- Increasing and enhancing treatment capacity to meet new and emerging environmental standards
- Testing and adopting nature-based solutions and innovative treatment processes

Developing stronger partnerships to develop long-term action plans to improve water quality – including through our Three Harbours Strategy (See chapter [SRN06: Wholesale wastewater \(costs and outcomes\)](#)).

We will increase our **asset health and resilience** by:

- Delivering a step-change in the use of monitors and artificial intelligence to identify emerging issues before they cause pollution or flooding. For example, we have installed 24,000 sewer level monitors so we can proactively identify blockages and failures
- Carrying out a full review of our asset maintenance programmes, revising our maintenance strategies and care plans to improve the resilience of our treatment works and pumping stations and reduce the risk of breakdowns
- Taking a proactive approach to identify future resilience risks, developing and delivering targeted enhancement business cases where we are vulnerable to future shocks and stresses

2.4.2.1. Bioresources

Bioresources, or sludge, is the treated, dried byproduct from wastewater treatment. It is a valuable resource for farmers and, currently, all our bioresources are recycled to agricultural land. We use the gases created during the treatment process to generate renewable energy and have a target to generate 25% of our energy by 2025.

Our bioresources asset base is ageing and as they become due for replacement we can upgrade them to take advantage of more advanced and innovative technologies. This will allow us to improve the quality of our bioresources and generate additional renewable energy.

By 2030 we will consolidate our asset base in Kent where we plan to consolidate seven conventional digestion sites into two modern advanced digestion sites. By 2040 across our region we will consolidate the remaining existing digestion sites to seven advanced digestion sites.

Advanced anaerobic digestion (AAD) will provide more resilience to our operation and mitigate immediate threats as it reduces the amount of biosolids recycled to agriculture, opens up additional farmland for spreading and is a more stable product less likely to cause public nuisance. Additionally, it enables additional power generation.

Between 2025 and 2030, we'll explore Advanced Thermal Conversion technology which builds on the AAD technology. Should research and trials prove successful, it could result during AMP9 and 10 in the commissioning of this new capability at a number of sites. Adoption of this technology would improve process efficiency reducing costs to the customer, lower carbon emissions and better extraction of renewable products such as bio-gas.

2.4.3. Delivery from base

In developing our strategy and achieving our ambition we have considered the performance we could deliver from our base allowances. We have combined a mix of approaches in forecasting what base buys after 2030 depending on the framework guidance on how to develop the solutions and options for the problem characterisation. These were generated by a combination of historic performance and using risk assessment methodologies. The slightly different approaches are identified below:

- Final methodology approach. For some PCs we have continued with our approach for PR24 delivery. This has been used mainly for outcomes that fall outside of the frameworks that have specified approaches. A bow-tie analysis was the starting point for the assessment of actions against cause to event and event to consequence is effective, and that factors that could cause failures are recognised
- WRMP framework. Our WRMP used the following approach:
 - Problem Characterisation, to assess the risks following the UK Water Industry Research (UKWIR) guidance (UKWIR, 2016a and UKWIR, 2016b) for risk-based planning
 - Options development and appraisal, that started with unconstrained list and then refined through to solutions to best value

- DWMP framework. Our DWMP uses a risk based approach to our planning objectives. This approach followed the national guidance and followed a:
 - Risk Categorisation into 3 bands, not significant, moderately significant and very significant risk
 - Problem Characterisation, to explore the causes of the risks and those with the highest levels of concern
 - Options development and appraisal, that started with unconstrained list and then refined through to solutions to best value

We have grouped the outcomes into three categories based on our forecasts of delivery; improving performance, flat performance and deteriorating performance from base expenditure.

Improvements

Over the next 25 years we consider that only one outcome will continue to see improvement from base performance.

- Mains repairs

Maintained performance

We can maintain most of our outcomes from base expenditure. This has been evaluated with consideration to the deterioration of the external environment including demand and climate change offset by efficiencies and technology. This base performance is below our ambition, environmental and government targets and we will need enhancement investment to achieve these goals.

- Compliance risk index
- Water supply interruptions
- External sewer flooding
- Biodiversity
- Leakage
- Pollution Incidents
- Discharge permit compliance
- Bathing water quality
- River water quality
- Storm overflows
- Unplanned outage
- Sewer collapses

Deteriorating performance

We have identified that for some outcomes base expenditure would be unable to maintain performance due to the deterioration of the external environment including demand and climate change which would not be offset by efficiencies and technology. This forecast base performance is below our ambition, environmental and government targets and we will need enhancement investment to achieve these goals.

- Water quality contacts
- Internal sewer flooding
- Operational GHG
- Per capita consumption
- Business demand

(Further details on how these have been evaluated is in our [SRN18: Performance Commitment Methodologies technical annex](#)).



2.4.4. Costs and bill impacts

Total 2025–50 enhancement spend for our core pathway has been estimated at £15.5 billion.

Our £15.5 billion core pathway enhancement spend across all AMPs is split between £9.2 billion for our Water business and £6.3 billion for our Wastewater business.

Table 4: LTDS Total core enhancement expenditure (2025–2050)

	AMP8 £m	AMP9 £m	AMP10 £m	AMP11 £m	AMP12 £m	ALL AMPS £m
Water core pathway	1,466	2,511	2,426	1,338	1,445	9,186
Wastewater core pathway	1,619	1,565	1,421	884	780	6,269
Core pathway	3,086	4,075	3,847	2,222	2,225	15,455

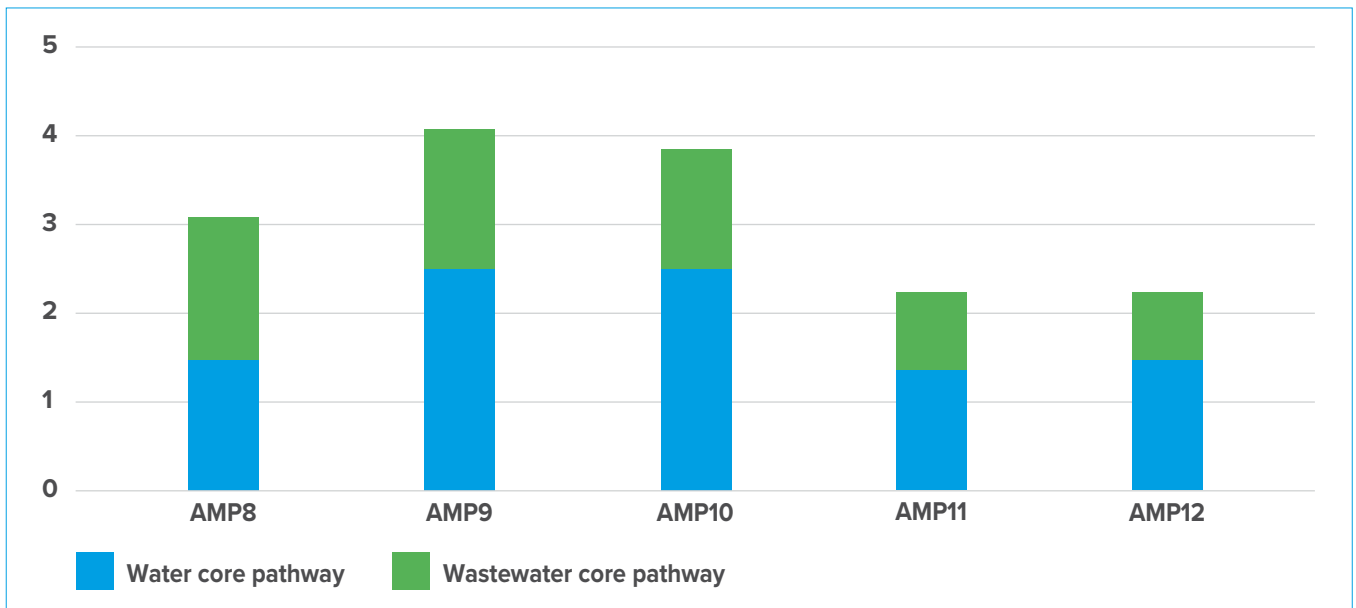


Figure 7: LTDS Core pathways: Total enhancement cost (£bn)

The impact upon bills from our planned enhancement costs can be seen from the chart below.

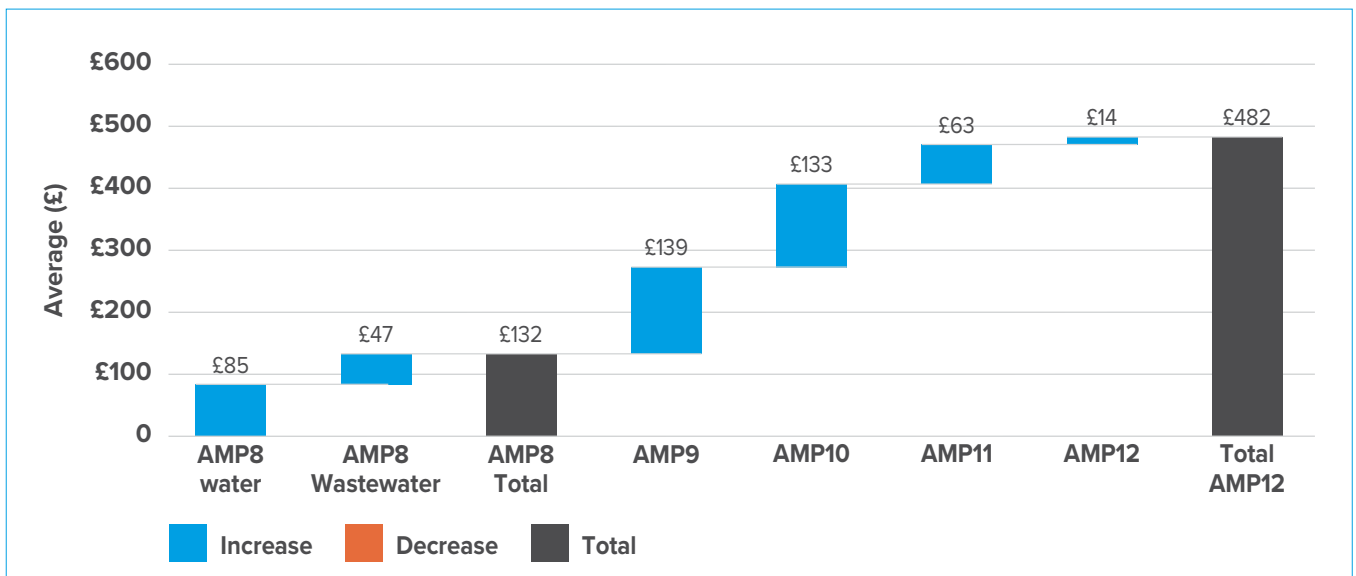


Figure 8: Enhancement Impact on Average Customer Bills to 2050 (22/23 prices)

Note: Average bill impacts have been calculated in accordance with the Ofwat Long Term Delivery guidance and Final methodology. These impacts are based on Enhancement spend only after AMP7 and detailed figures are in LS7.

The impact upon our bills of our water-related adaptive pathways can be seen below.

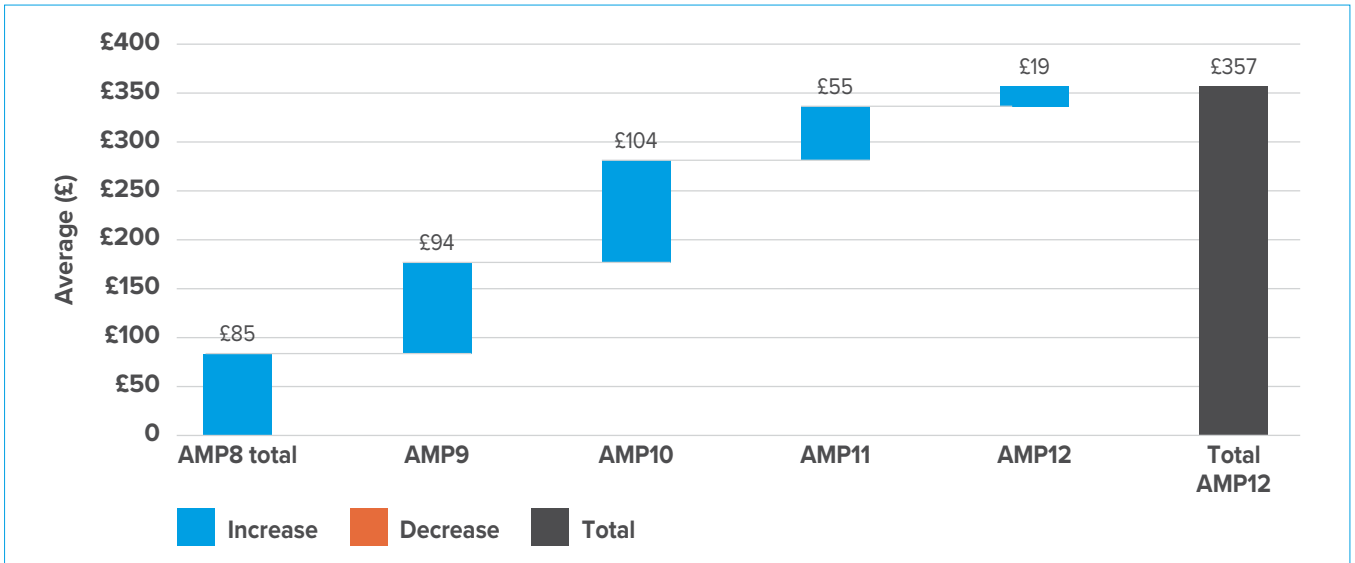


Figure 9: Water Enhancement Impact on Average Customer Bills to 2050 (22/23 prices)

The impact upon our wastewater bills of our wastewater-related adaptive pathways can be seen below.

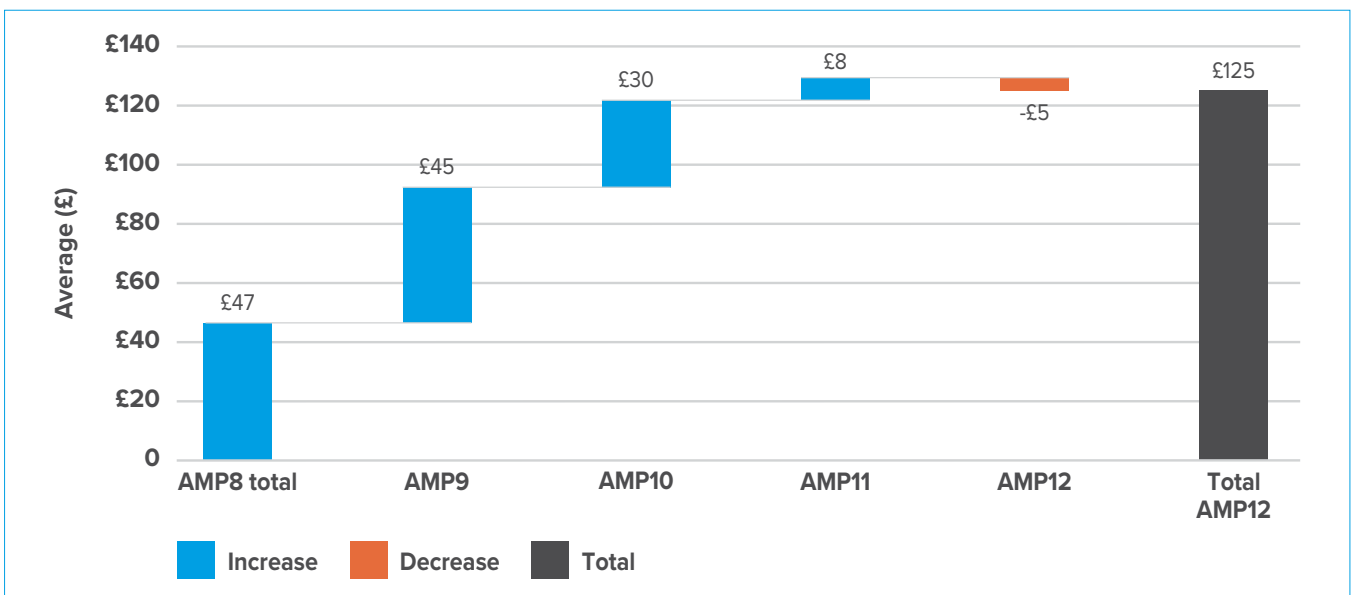


Figure 10: Wastewater Enhancement Impact on Average Customer Bills to 2050 (22/23 prices)

2.5. Adaptive planning

2.5.1. Our adaptive pathways

We know the future contains lots of uncertainty. We have identified eight adaptive pathways to respond to:

- Changes to the Farming Rules for Water which may mean farmers cannot use our bioresources anymore
- Whether the new technology we have assumed will work is viable and we can use it in time
- How much more water we need to leave in our environment
- Increased demand for our services from population growth
- The impacts of climate change

Two adaptive pathways relate exclusively to water, six relate exclusively to wastewater.

The graphic below summarises our adaptive pathways and when we might need to follow them.

We will not need to follow all of our adaptive pathways as some cancel each other out. For example, our DWMP assumes higher spending may be needed than our core pathway after 2030 – but the decision on future pathways will be taken at that point.

If we only see moderate increased demand, then we will follow Adaptive pathway 3. If demand is much higher – our adverse scenario – then we will follow Adaptive pathway 5. We cannot follow both.

A full explanation of our adaptive pathways, how we developed them and our trigger and decision points is in [Sections 2 and 3 of our Long-term Delivery Strategy technical annex](#).

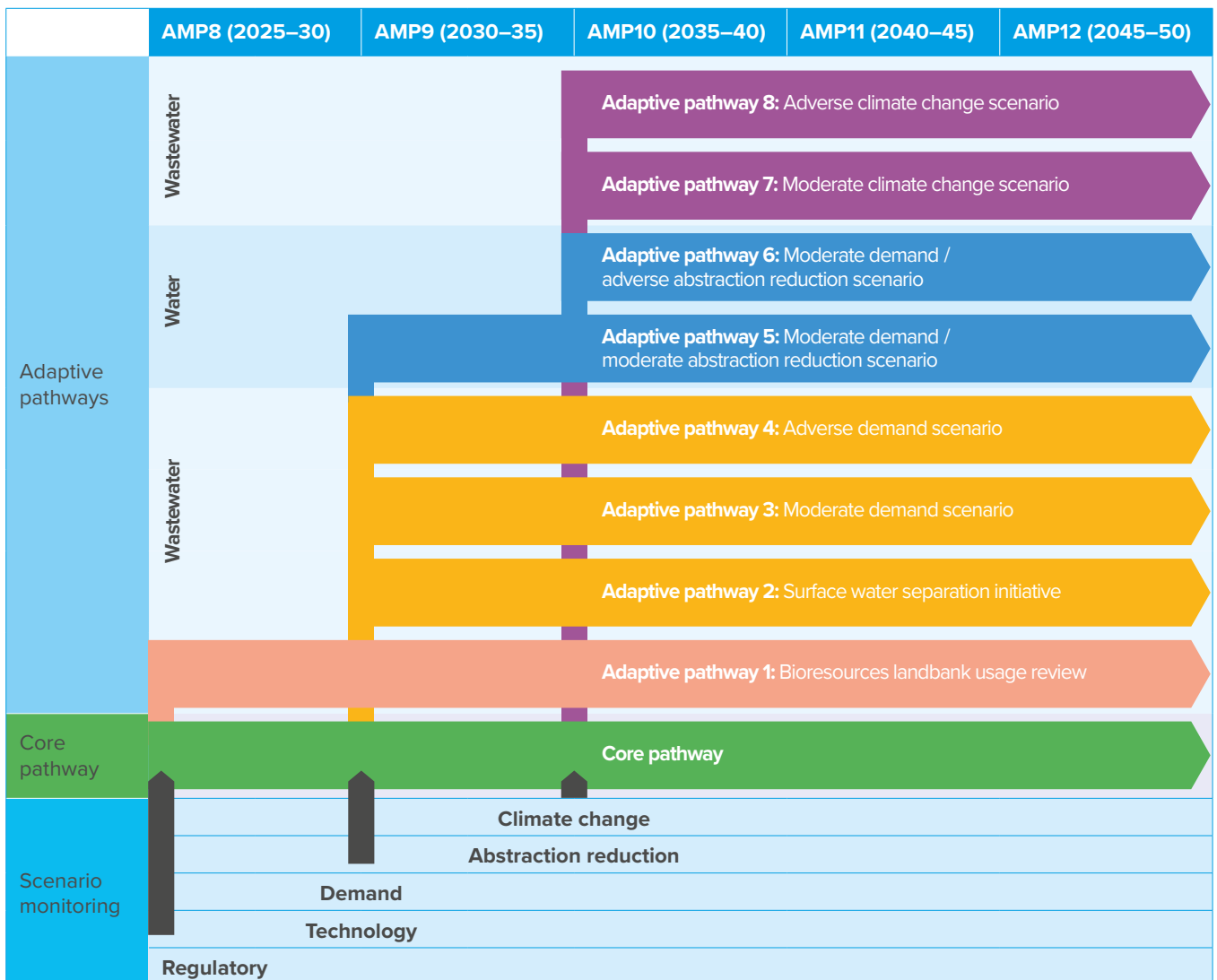


Figure 11: LTDS: Holistic adaptive pathway overview

2.5.2. Outline of adaptive pathways

We have two adaptive pathways that relate directly to water:

- **Adaptive pathway 5:** Moderate demand increase and moderate abstraction reduction scenario. This pathway delivers additional freshwater supply capacity to address the demand and abstraction reduction challenges. We anticipate that the earliest trigger could occur in 2030.
- **Adaptive pathway 6:** Moderate demand increase and a high abstraction reduction scenario. This pathway delivers further freshwater supply enhancement to address the demand and abstraction reduction challenges. We anticipate that the earliest trigger could occur in 2030.

We have six adaptive pathways that relate directly to wastewater:

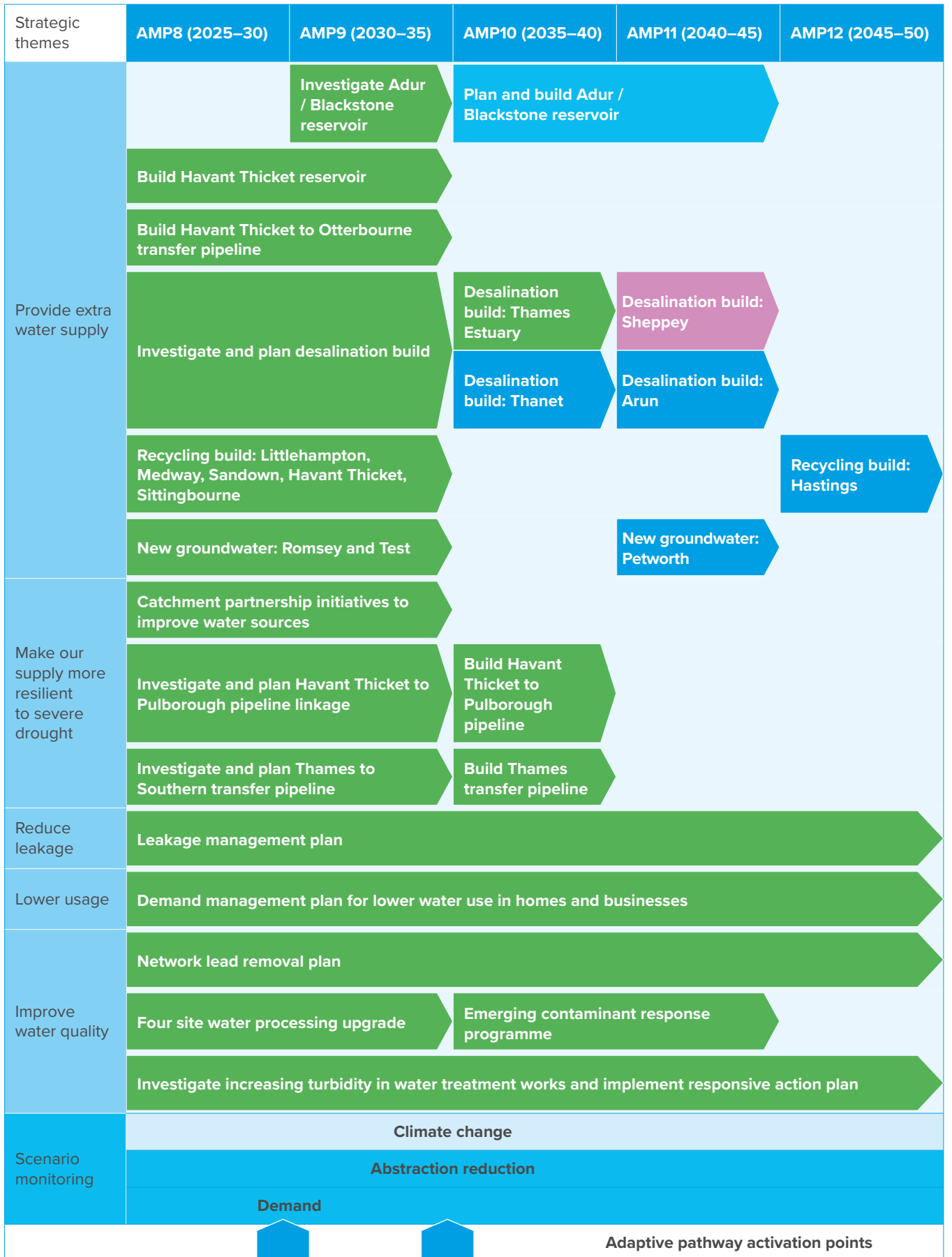
- **Adaptive pathway 1:** Bioresources landbank usage review. This pathway addresses a potentially adverse outcome of the DEFRA and EA review which would reduce our ability to utilise farming as a disposal route for our waste product. We anticipate that the earliest trigger could occur in 2025, though the timing of the decision is itself uncertain.
- **Adaptive pathway 2:** Surface water separation initiative. This pathway addresses the possibility that innovative surface water separation techniques to address storm water flow are not as effective as anticipated. We anticipate that the earliest trigger could occur in 2030.
- **Adaptive pathway 3:** Moderate demand increase scenario. This pathway delivers additional treatment capacity to address notably increased population growth above the benign scenario utilised for the core pathway. We anticipate that the earliest trigger could occur in 2030.

- **Adaptive pathway 4:** Adverse demand increase scenario. This pathway delivers further additional treatment capacity to address an adverse population growth increase above the benign scenario utilised for the core pathway. We anticipate that the earliest trigger could occur in 2030.
- **Adaptive pathway 7:** Wastewater moderate climate change scenario. This pathway delivers increased investment for additional wastewater storage tank and network flow capacity to absorb more frequent and more intense climate change driven stormwater surges. We anticipate that the earliest trigger could occur in 2035.
- **Adaptive pathway 8:** Wastewater adverse climate change scenario. This pathway delivers further climate-driven enhancement along the same parameters as that of adaptive pathway 7. We anticipate that the earliest trigger could occur in 2035.

2.5.3. Total potential enhancement impact of adaptive pathways

2.5.3.1. Water

The graphic on the next page shows the additional water enhancement schemes we'll need if all our adverse scenarios happen.



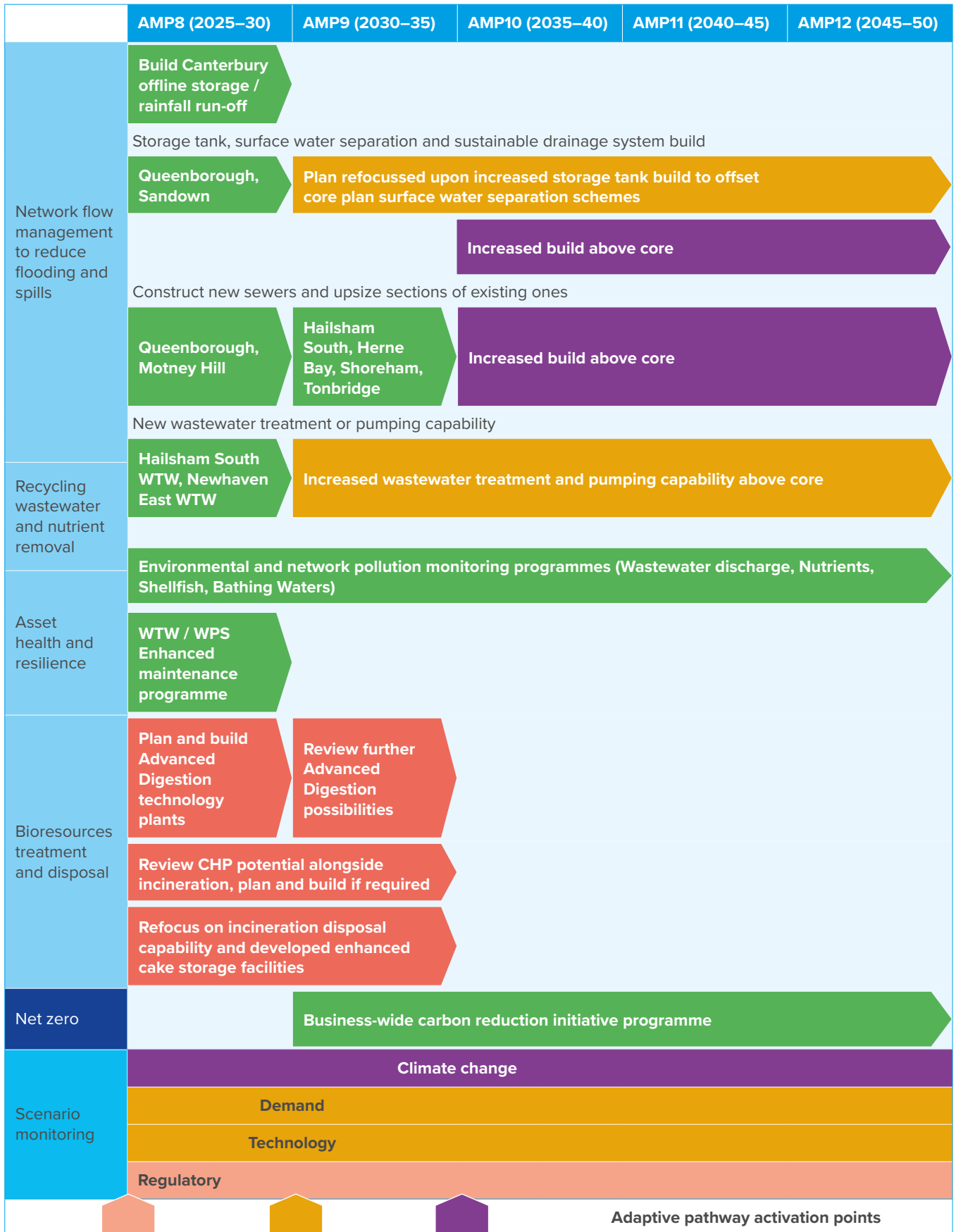
■ Core Activity
 ■ Adaptive Pathway 5 activity above core
 ■ Adaptive Pathway 6 activity above Core (and Pathway 5)

Figure 12: Water: Total potential enhancement impact of adaptive pathways

2.5.3.2. Wastewater

The graphic on the next page shows the additional water enhancement schemes we'll need if all our adverse scenarios happen.





- Core Activity
- Technology and demand adverse scenario
- Regulatory adverse scenario
- Climate change adverse scenario

Figure 13: Wastewater: Total potential enhancement impact of adaptive pathways

2.5.4. Costs and bill impacts

In addition to the £15.5 billion planned for our core pathway, we also have an additional £11.5 billion identified as part of our adaptive planning process which has considered a number of key uncertainties. Should all adverse uncertainties come to pass (which we do consider to be unlikely) then our plan contains a full enhancement spend of £27 billion.

Adaptive pathway enhancement spend initially becomes noticeable in AMP9. However, beyond AMP9, our core plan could be significantly impacted should long-term adverse uncertainties be realised that require us to consider activating one or more of our adaptive plans.

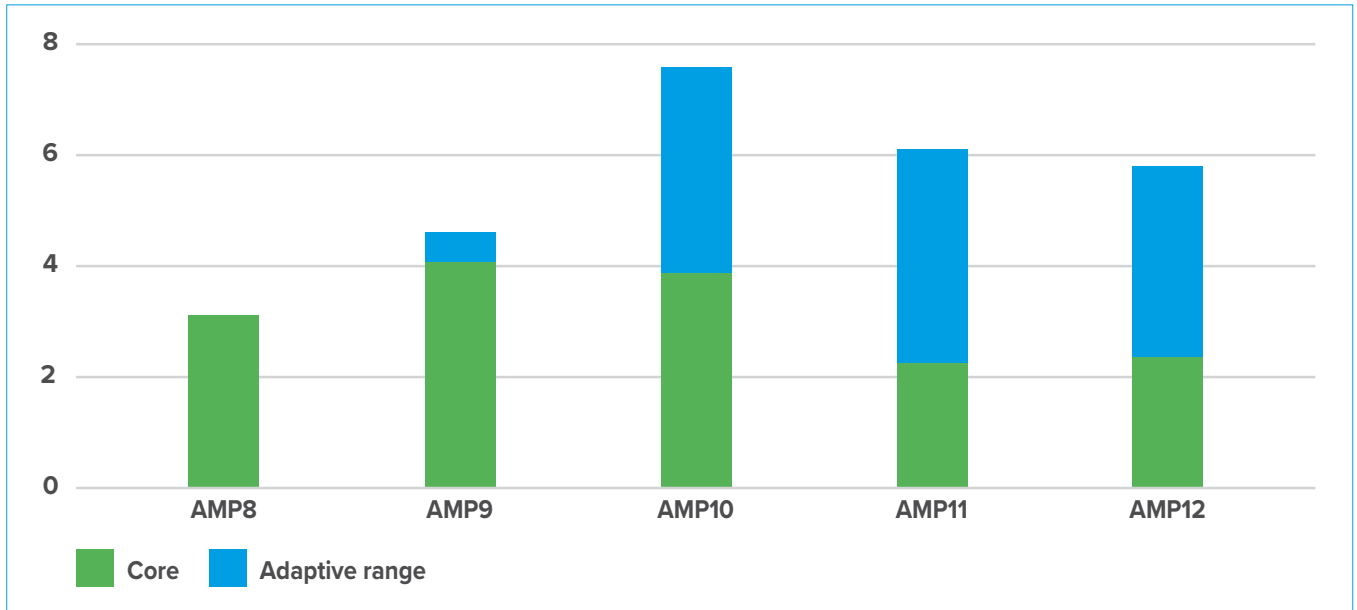


Figure 14: LTDS Core and adaptive pathways: Total enhancement cost (£bn)

Full details of our core and adaptive pathway enhancement costs can be found in the table below.

Table 5: LTDS Total enhancement expenditure (2025–2050)

	AMP8 £m	AMP9 £m	AMP10 £m	AMP11 £m	AMP12 £m	(All AMPs) £m
Water core pathway	1,466	2,511	2,426	1,338	1,445	9,186
Wastewater core pathway	1,619	1,565	1,421	884	780	6,269
Core pathway	3,086	4,075	3,847	2,222	2,225	15,455
Adaptive pathway 1	0	141	-190	0	0	-49
Adaptive pathway 2	0	309	134	36	-7	472
Adaptive pathway 3	0	4	4	2	2	11
Adaptive pathway 4	0	5	5	3	3	16
Adaptive pathway 5	0	13	565	92	105	774
Adaptive pathway 6	0	28	781	832	562	2,203
Adaptive pathway 7	0	0	666	663	660	1,989
Adaptive pathway 8	0	0	2,980	2,977	2,974	8,931
Total adaptive	0	487	3,714	3,849	3,533	11,583
Full total	3,086	4,562	7,562	6,071	5,758	27,039

Note 1: Adaptive pathway 6 includes costs for Adaptive pathway 5

Note 2: Adaptive pathway 8 includes costs for Adaptive pathway 7



The enhancement activity and relevant costs associated with each adaptive plan is illustrated below.

Linkage to business area		Total additional cost £bn	Total cumulative cost £bn	Associated adaptive pathway activity (above core)
Wastewater (Network flow management)	Adaptive pathway 8	5.7	27.2	Increased and then significantly increased investment associated with additional wastewater storage tank and network flow capacity to absorb more frequent and more intense stormwater surges.
	Adaptive pathway 7	1.5	21.5	
Water (WRMP Situation 4)	Adaptive pathway 6	0.4	20.0	Further increased investment in water supply capacity, alternate sources and focus on demand management.
Water (WRMP Situation 5)	Adaptive pathway 5	2.3	19.6	Increased investment in water supply capacity, alternate sources and focus on demand management.
Wastewater (Recycling wastewater and nutrient removal)	Adaptive pathway 4	0.1	17.3	Further increased investment in wastewater treatment capacity.
	Adaptive pathway 3	0.5	17.2	Increased investment in wastewater treatment capacity.
Wastewater (Network flow management)	Adaptive pathway 2	1.8	16.7	Shift in focus from rainfall separation to additional storage options.
Bioresources	Adaptive pathway 1	-0.1 ¹	14.9	Shift in focus to incineration as a primary disposal mechanism (cheaper than preferred "core" option).
	Core pathway		15.0	Note: Prices in 22/23 price base

Figure 15: LTDS: Additional adaptive pathway cost and activity core

The impact upon bills from our planned enhancement costs can be seen in the chart below.

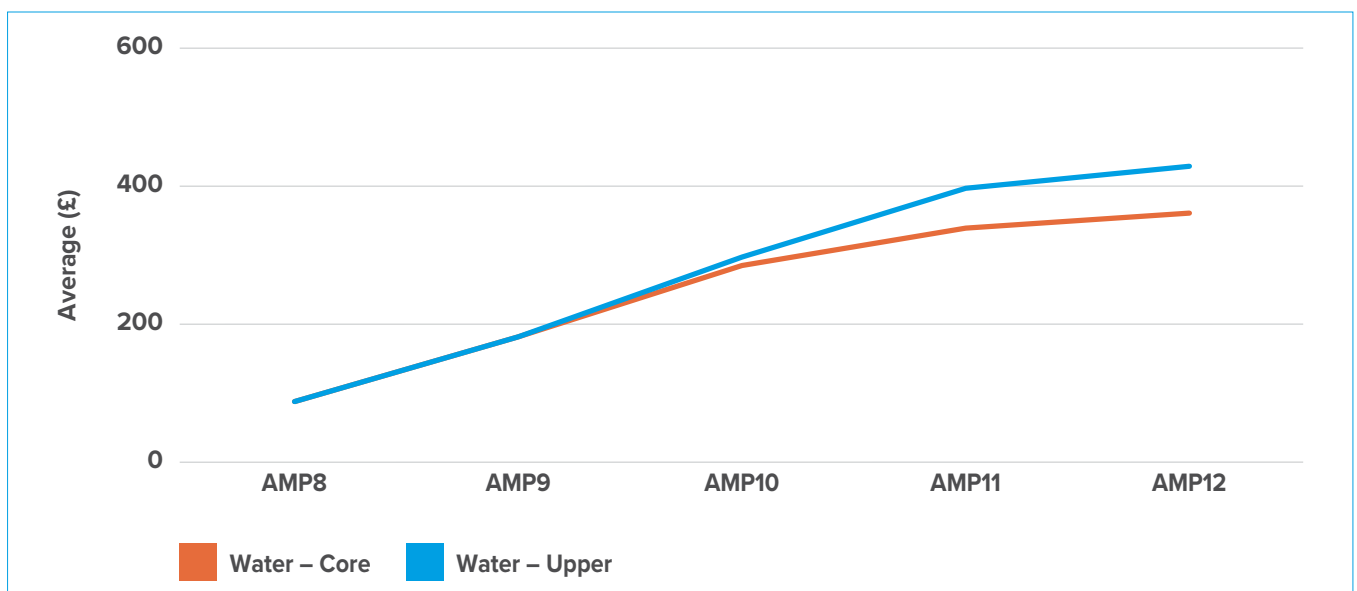


Figure 16: Water Enhancement Adaptive Pathways: Impact on Average Customer Bills to 2050 (22/23 prices)

The impact upon our wastewater bills of our wastewater-related adaptive pathways can be seen below.

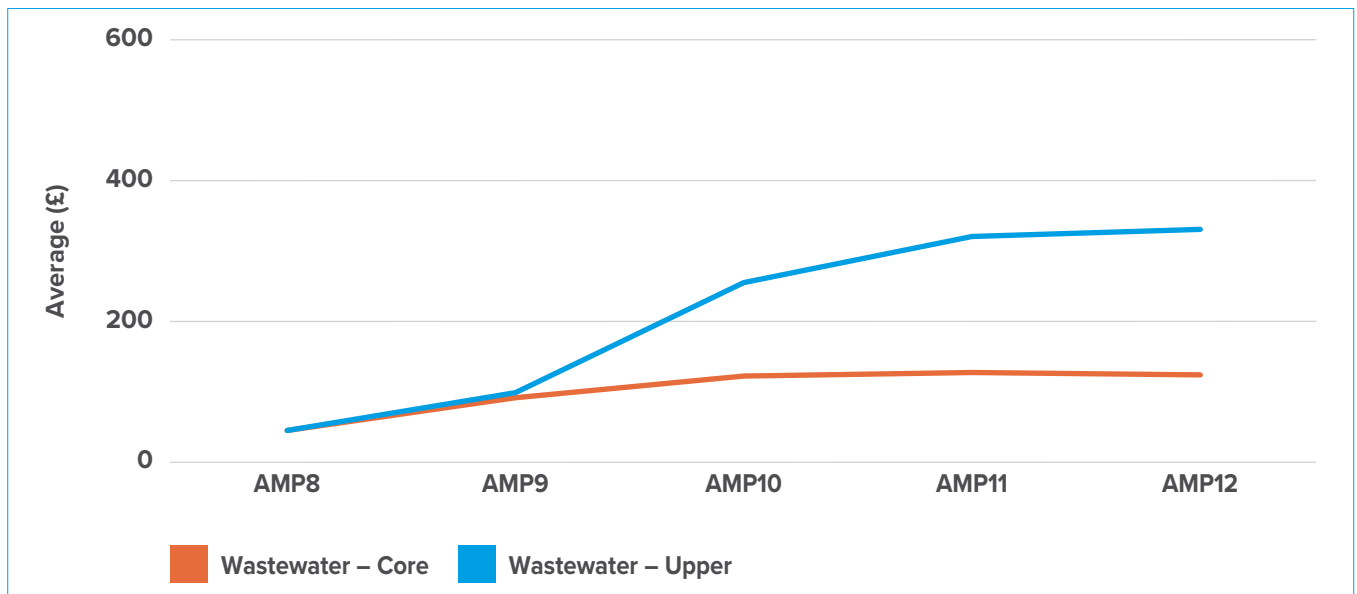


Figure 17: Wastewater Enhancement Adaptive Pathways: Impact on Average Customer Bills to 2050 (22/23 prices)

2.6. Long term use of markets and alternative delivery

Our plan for 2025 to 2030 is our largest ever and we plan to deliver £1.3 billion of investments through DPC and alternative methods – including our smart metering and bioresources programmes, which fall outside of Ofwat’s DPC model. Taking this approach will reduce spending between 2025 and 2030 and defer and reprofile impacts to customers’ bills.

For example, the Hampshire Water Recycling and Water Transfer project (the largest part of our Water for Life Hampshire programme) is included in our core pathway and will create 90 million litres of water a day by 2034.

We intend to award a DPC contract to a Competitively Appointed Provider (CAP) between 2025 and 2030. This provider will then build, maintain and operate our new asset over 25 years.⁷ The CAP will incur the capital costs between 2025 and 2030 and we will start paying for the asset when it is in service. Customers’ bills will increase from 2030 when they start receiving services from the new asset.

This approach will improve the profile of bills to align better with when we will be providing the extra services for our customers. It also means we can take advantage of innovations and possibly lower financing costs from alternative providers. It also lowers our deliverability burden – meaning we can focus on customers’ other priorities and our core services.

Several large projects in our core pathway would default to DPC because of their size or because they are following the Strategic Resource Option (SRO) process⁸. This includes the Thames to Southern transfer from the South-East Strategic Reservoir Option (SESRO). We also expect to follow alternative delivery routes for other projects that are not eligible for Ofwat’s DPC process.

Our LTDS includes these projects at their full capital cost, to ensure we identify the total likely costs we might need to incur. (More details about our approach, including the investments being considered for Alternative Delivery are in [SRN17: Direct Procurement for Customers and Alternative Delivery models technical annex](#)).

⁷ We are currently considering whether the scope for this DPC project should be DBOFM or DBFM.

⁸ [The RAPID gated process and the proposed water resource solutions - Ofwat](#)