

Elements of the plan

Securing Long-Term Resilience



South West
Water



Bournemouth
Water

Elements of the plan



Engaging
Customers



Addressing
Affordability
& Vulnerability



Delivering
Outcomes
for Customers



Securing
Long-Term
Resilience



Targeted Controls,
Markets & Innovation



Securing Cost
Efficiency



Aligning Risk
& Return



Accounting for
Past Delivery



Securing Trust,
Confidence &
Assurance

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Introduction

Resilience is the ability to cope with, and recover from, disruption, and anticipate trends and variability, in order to maintain services for customers and protect the natural environment now and in the future.

We are aware that for our service to be considered as resilient we must demonstrate a mature understanding of the level of financial, corporate, environmental and operational risk we face, and the consequences of those risks being realised.

This requires our business to ensure the right skills, leadership, systems, processes and infrastructure are in place to support delivery of a robust, affordable, and reliable service to customers.

It is vital to ensure resilience is considered in the round. As outlined in the current UK Government guidance 'Keeping the Country Running', provision of a resilient service can be delivered in a number of different ways.

Our business plan promotes long term resilience, securing great customer service across all of our value chain and revenue controls at an affordable price. We have a long track record of delivering a reliable and resilient service from decades of careful risk assessment, planning and targeted investment.

Resilience is a key theme in our business plan and forms one of our four guiding principles outlined in our long term vision to 2050.

Providing a resilient service is founded on strong operational resilience and high standards of financial and corporate governance. Continuous Board assessment and oversight of resilience risks, through a proven and established governance framework, ensures the delivery of a resilient and reliable service, now and in the future.

We are confident that the PR19 plans have been informed by

- A robust and systematic assessment of the resilience of our systems and services
- Customer views on managing resilience
- A comprehensive and objective assessment of interventions to manage resilience in customers' long term interests.

The purpose of this document is to illustrate our innovative and integrated approach to identifying and appraising all the diverse risks to resilience. We will provide clear evidence that we have objectively considered and assessed the full range of resilience management options.

Our proposals reflect customer preferences and are supported by proposed stretching commitments to customers. We have developed a plan that delivers long term resilience in the round and long term value for money for customers.

Business plan navigation

This document is part of the overall business plan providing key information about our proposals and how it answers the initial assessment of business plan tests.

Securing Long-Term Resilience

LR 1 How well has the company used the best available evidence to objectively assess and prioritise the diverse range of risks and consequences of disruptions to its systems and services, and engaged effectively with customers on its assessment of these risks and consequences?

LR 2 How well has the company objectively assessed the full range of mitigation options and selected the solutions that represent the best value for money over the long term, and have support from customers?




Answers to these questions are summarised in the **Summary** chapter of this document, with signposts to further detail and evidence within this document, and where appropriate, other documents forming part of the overall business plan submission – see **Document map**.

Business plan navigation continued











Document map

The primary documents within the business plan submission are illustrated below. Other supplementary information, reports and documents are also referenced within these documents and can be accessed using a link in the document, where appropriate.






Business plan to 2025

	Business Plan		WaterFuture Customer Panel Report		Customer Summary		Investor Summary
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Elements of the plan

	Engaging Customers (this document)		Addressing Affordability & Vulnerability		Delivering Outcomes for Customers		Securing Long-Term Resilience (this document)		Targeted Controls, Markets & Innovation
	Securing Cost Efficiency		Aligning Risk & Return		Accounting for Past Delivery		Securing Trust, Confidence & Assurance		Board Assurance Statement

Revenue controls

	Appointee Summary + Tables and commentary		Water Resources Wholesale Revenue Control + Tables and commentary		Network Plus Water Wholesale Revenue Control + Tables and commentary
	Network Plus Wastewater Wholesale Revenue Control + Tables and commentary		Bioresources Wholesale Revenue Control + Tables and commentary		Residential Retail Revenue Control + Tables and commentary

Business plan to 2050

	2050 Vision		2050 Environment Plan		Draft Water Resources Management Plan		Drainage and Wastewater Management Plan
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Executive summary

There have been a number of high profile events in recent times that have highlighted the challenges associated with the delivery of water and wastewater services in extreme conditions, from severe flooding through to periods of cold, hot dry weather and drought.

As recently as March 2018, the South West of England faced the first ever red weather warning for snow and wind, coupled with extreme cold temperatures and followed by a rapid thaw.

During the summer of 2018 we experienced a period of drought, high temperatures and exceptionally high demand. These two extreme events, in quick succession, served to demonstrate our operational resilience, testament to decades of careful risk assessment, planning and investment, but also the improvements needed to continue to provide a resilient service to customers.

For more information, see



Ofwat 'Out in the cold' report



South West Water response to Storm Emma

A resilient service improvement (RSI) project is already underway to tackle lessons learned from these excellent stress tests of our business. This project also focuses on developing our service response to ensure customers can enjoy the same excellent level of service, anytime of day and regardless of the challenges faced.

The extra resilience afforded by our integration of Bournemouth Water, allowed operational resources to be redeployed to business areas most in need.



For more information, see
Pennon Plc Acquisition of Bournemouth Water

Our proposed New Appointment Variation (NAV) to provide the Isles of Scilly water and wastewater services will provide much needed resilience to the Isles of Scilly community.



For more information, see
Isles of Scilly business plan

As a key member of the Local Resilience Forum (LRF) we are able to rely on this network to not only to provide resilient support for our own business, but also for us to support the local community and other LRF members. A good example of this is seen in our purchase of temporary flood barriers which we use for protecting our own assets but are also available for the LRF to use.

We are committed to continuing our strong **track record of providing a resilient service**. Our customers consistently tell us that they expect a service they can rely on, irrespective of the pressures and challenges faced. We have worked closely with them to develop our plans to tackle resilience, ensuring that we address their priorities, set ourselves as stretching targets as possible, and maintain affordability for current and future customers.

Our innovative interactive video sent to all of our online 'MyAccount' users received over 16,000 views on long-term water resource planning.



Our interactive water resources video

This helped inform the development of our Water Resources Management Plan over our long term planning horizon to 2050. We have also developed a long-term planning approach for wastewater with the publication of our first ever Drainage and Wastewater Management Plan.

For more information, see



For more information, see
Water Resources Management Plan



For more information, see
Drainage and Wastewater Management Planning – Process Overview and Progress

Executive summary continued

In developing our wider plans for delivering a more resilient service we have used our research and engagement with customers to determine an economic level of service, ensuring our proposed expenditure and performance improvements are value for money and address our customers’ priorities.

We consider resilience in the round – understanding the financial, corporate, environmental and operational risks we face, their co-dependencies and consequences.



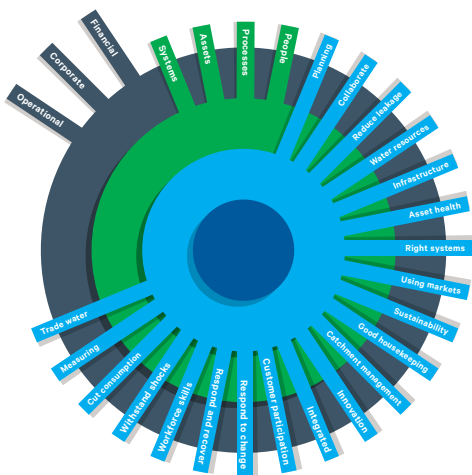
For more information, see **Resilience**

We have a mature approach to resilience management which is embedded in our culture. We ensure we have the right skills, leadership, systems, processes and infrastructure in place to support the delivery of a robust, affordable and reliable service to our customers today and for the long term.

We are acutely aware of how essential the continued provision of reliable, uninterrupted water and wastewater services are for our customers, communities and our regional environment.

Our service delivery and investments support our region’s economic growth and the wider well-being of our communities. We seek to work closely with government, regulators, stakeholders and other parties in developing our plans, supporting related investments and initiatives within national frameworks and policies, to ensure strategic objectives are achieved in a coordinated and cost effective way.

Resilience in the round



We continually look to improve our approach and have initiated new and innovative thinking in this area. For example, working with academia, regulators and other utilities we have led the UK based project for the EU funded SIM4NEXUS research project, which is developing new tools

for a more integrated, multi-partnership approach to long-term resilience planning.

Understanding future threats to our business and how our customer and stakeholder expectations and service requirements are changing is a key element of resilience planning. It requires an intelligent, integrated and innovative approach which are being developed through this exciting research project. **This project shows our leadership in taking a strategic, multi-stakeholder partnership and systems level approach to long-term resilience planning.**

This is further illustrated in our work with Exeter University developing a centre for water, waste and environmental resilience post 2020. This centre will deliver integrated and world-leading, trans-disciplinary research with the water and wastewater sector, and its supply chain. The centre will pioneer holistic approaches to complex challenges, and ‘whole systems’ understanding to develop cost-effective and future proof solutions for the sector.



For more information, see **UK research partnership investment fund: Innovation Centre for Water, Wastewater and Environmental Resilience**

Our plans for ensuring a resilient service during 2020-25 and beyond are ambitious. They include a balanced mix of solutions for both the short and long term. As well as specific investments in new and existing water and wastewater assets and systems, such as flood protection, cyber security and two new water treatment works for the Bournemouth area, we will promote natural resilience solutions through our catchment based approaches.



For more information, see **Upstream Thinking**



In conjunction with the WFCP we have also developed a biodiversity scorecard aimed at incentivising additional environmental improvements.



For more information, see **WaterFuture Customer Panel Report to Ofwat**

Executive summary continued

Our Environment Plan to 2050 describes our long-term ambition in this area. We work closely with our delivery partners to develop the monetising of predicted benefits, using robust data to understand the impact of our interventions on ecosystem goods and services and ensuring a sustainable long-term approach.



For more information, see [Environment Plan to 2050](#)

We will continue to develop plans for inter company transfers of water resources to water stressed areas in the south of the UK through our work with the West Country Water Resources Group.

To measure our success in delivering a resilient service, we propose two new additional bespoke measures in addition to two existing measures. These align to our customer priorities and reflect the specific challenges we face operating in our region, with many catchments at risk of flooding and a topography which places additional challenges on our supply network.



For more information, see [Delivering Outcomes for Customers](#)

Our overall approach is underpinned by our organisational resilience – reflected in our people and our financial viability.

Our investment in recruitment, training and development ensures that our people have the necessary capability to provide the services our customers expect, and that our leadership demonstrate strong and effective governance.

Member of Energy Utilities and Skills Partnership

150 apprenticeships since 2011



Our financial viability is reviewed, tested, assured and reported to our Board regularly and published in our annual reports and accounts. We have a strong track record in this area, consistently meeting the requirements of a listed company and the financial parameters stipulated by our regulators. The Board oversee the management and mitigation of risks to financial resilience and has overseen the development of an **innovative sustainable green financing framework**.



For more information, see [KPMG financial resilience assessment](#)

Our Board has taken account of the diverse range of pressures on our business to inform the development of long-term needs and solutions.

The risk management framework embedded in our business areas aligns closely to Ofwat resilience planning principles.

Resilience planning principles

- ✓ Resilience considered in the round for the long term
- ✓ Resilient ecosystems and biodiversity considered
- ✓ Resilience decisions informed by customer engagement
- ✓ Broad consideration of all intervention options
- ✓ Seek best value solutions for customers
- ✓ Customer preferences on resilience inform outcomes
- ✓ Board assurance over resilience assessment and management

Through our extensive engagement and testing with customers we have strived to achieve the best possible balance of activity and investment that meets the needs and priorities of our diverse range of customer and stakeholder groups.

This has included an extensive review of different solutions to meet the challenges we face including working with partners and other organisations. We believe the plan we have chosen delivers the best value for money over the long term.

Our overall resilience assessment has been validated by independent assessments by PA Consulting.

Key messages

- ✓ Long established successful track record of resilient service provision
- ✓ Board led oversight and governance of established approach for resilience assessment and management of risks
- ✓ Review of Board resilience assessment and management of risks externally tested with customers
- ✓ Independent assessments of operational, financial and corporate resilience
- ✓ Steps being taken to enhance resilience where required through targeted community programmes as part of an organisation wide RSI project
- ✓ Four specific performance commitments to deliver tangible improvements in resilience for customers
- ✓ Strong incentives to drive resilience improvement
- ✓ Resilience lessons learned published to enable sharing across the industry
- ✓ Bournemouth Water integration and Isles of Scilly proposals are enhancing the resilience of the wider South West region
- ✓ Customer support for approach to resilience and phased investment, giving value for money over the long term
- ✓ Strong balance sheet and innovative sustainable green financing framework
- ✓ Demand side behavioural change programmes delivering long term resilience
- ✓ Innovation Centre for water, waste and Environmental Resilience enhancing both our own resilience but also for the wider sector
- ✓ Partnerships with third party organisations such as British Red Cross and Local Resilience Forum further enhancing the resilience of our community

Background

South West Water customers enjoy the benefits of a trusted and reliable provider of their water and wastewater services. This is testament to decades of careful risk assessment, planning and targeted investment. This has consistently and effectively identified and addressed the short, medium and long-term risks to ensure a resilient service provision.

A strong track record of ensuring resilient services

This was recently evidenced in our success, in responding to the service impacts from unprecedented 2018 Red Weather Alert 'Beast from the East' incident. We are committed to building on this success by continually improving our approach and ensuring all of our stakeholders continue to benefit from a robust, responsive and reliable service.

For more information, see



Ofwat 'Out in the cold' report



South West Water response to Storm Emma

Prior to privatisation, faced with drought restrictions, supply interruptions, poor drinking water quality and environmental performance, the then water authority (and government) had to act to protect services, the interests of customers, the environment, our stakeholders and regulators. Significant investment was required in new water resources with the construction of Wimbleball, Colliford and Roadford impounding reservoirs, the refurbishment of ageing infrastructure and clean-up of crude sewage outfalls around the South West coastline. Improvements to risk management processes and day to day operational procedures and business processes were essential.

The confidence and trust of customers in the services they received at that time was very low. The required changes to the water industry and the major programmes of work presented significant deliverability and affordability challenges both for the local authority, the newly established water company South West Water and the customers in the South West region. In reality, the need for such significant change and the major programmes of investment to address known issues and risks could have been anticipated. The impacts on our local communities and customers from the lack of preparedness could have been anticipated and addressed more proactively than they were.

This background is a dramatic contrast to our position today. Our approach to risk identification, assessment, building resilience, managing and evaluating our performance is well developed and mature. Whilst we have benefited from the historical improvements and investments described above, the growing regional population and increasing demands on our services, ever tightening drinking water and environmental quality standards, has driven a continuing need to review, evaluate, plan and deliver, to ensure that the impacts on our customers are minimised.

Our approach is one of continuous improvement where we actively seek new more effective, efficient and innovative ways to deliver services. Our track record of delivery testifies to the success of this approach, including:

- Continually engaging with our customers to ensure their priorities and concerns are understood and central to our plans – their acceptability of our 2015-20 plan was 84% and 79% and for 2020-25 88% and 92% in South West Water and Bournemouth Water respectively
- Engaging with water industry peers, other industries, academia, independent experts and international partners to ensure our understanding of risk is as comprehensive as possible and the options to mitigate them are fully appraised
- No drought restrictions imposed on our customers for 22 years as a result of our effective long-term water resource management planning
- Consistently in the top performing companies for drinking water quality
- No widescale drinking water quality incidents during the last two decades
- No prosecutions for unsatisfactory drinking water quality for over 10 years
- Leakage levels reduced by 40% since the mid 1990's
- Ground-breaking delivery of advanced treatment technology at our new Mayflower Water Treatment Works representing a paradigm shift to the approach to water treatment internationally and securing the supplies for customers for generations to come
- Delivery of £2bn Clean Sweep programme removing coastal crude sewage outfalls and supporting Bathing Water compliance of 98% (meeting the government targeted 'sufficient' standard)
- Wastewater treatment standards improved to near 100% compliance

Background continued

- Incidence of sewer flooding reduced and the delivery of innovative sustainable drainage solutions
- Delivery of major flood defence schemes for our strategic water and wastewater treatment assets in Exeter, with the former protected during the floods of 2012 which brought rail services to a standstill
- Industry pioneers in delivering a unique catchment management programme Upstream Thinking, and now about to commence its third cycle of catchment intervention
- Customer satisfaction with overall service 91% (South West Water) and 96% (Bournemouth Water) High level of employee engagement at 68%, above the UK average
- Effective response to 2010/11 severe cold winter impacts on services and the unprecedented Red Warning severe weather event during winter 2017/18 as highlighted in the Ofwat review of water companies response to the 'Beast from the East', 'Out in the cold', June 2018
- Customer bill increases kept below inflation throughout 2015-20 and lower now in real terms than they were 10 years earlier
- Assessed as being at the frontier of efficiency for water service at PR14
- Assessed as delivering frontier efficiency for wastewater service delivery at PR14
- Delivering fair returns for investors, with industry leading RoRE during 2015-20, by delivering totex savings, lowest effective financing rates and net ODI rewards
- Maintaining an efficient level of gearing at circa 60%
- Sharing our success with our customers and encouraging them to take a stake in the future of our business through our unique WaterShare framework.

We recognise that significant disruption to the services that we provide can have far reaching effects for our customers, the environment and our local economy.

Case Study

Storm Emma

In March 2018, the South West of England was issued with the first ever red weather warning for snow and wind, coupled with extreme cold temperatures and followed by a rapid thaw. The freezing conditions and snowfall across the region put our water and wastewater network under significant pressure and resulted in an unprecedented number of bursts and leaks.

In the days leading up to the cold weather we put in place a number of measures to ensure that as a business we were as prepared as possible for the impact of the freezing conditions. This included ensuring that we had increased levels of stocks and chemicals at sites, arranging for additional 4x4 vehicles to be available to teams across the region, and manning 11 of our more remote, less accessible water treatment works on a 24/7 basis so that staff were on site to resolve any issues that occurred.

Once the red weather warning came into effect, Devon and Cornwall experienced significant snowfall and icy conditions, with many major and smaller roads closed by the Police, or blocked by abandoned cars which made travel across the region extremely difficult. This also meant that many of our head office and contact centre staff weren't able to travel into work. Nonetheless, many of these staff who lived close to the areas affected volunteered to support the delivery of alternative water supplies, and staff who were able to safely walk into our head office supported the contact centre by taking customer calls and helping to co-ordinate the response from our Exeter based regional service centre.

The sub-zero temperatures caused many of our own and customer's pipes to freeze, which then began to leak following the rapid increase in temperatures and thawing of the ground. The bursts and leaks increased the volume of water we produced and teams from across the business and our supply chain worked around the clock, sometimes walking for miles through deep snow, to locate and fix the most significant leaks and bursts.

Where there were protracted supply interruptions to customers, we ensured that alternative water supplies, including tankers and bottled water, were provided. In total 265,000 litres of bottled water were transported to stores across the South West, along with 20 bowzers (each storing 500 litres), and 20 tankers (each storing 1,000 litres) and then distributed to those communities with supply issues. At no point did the demand for alternative water supplies outstrip the available supply, and in fact surplus bottled water was returned to stores across the region.

Throughout the severe weather event, South West Water worked with the Devon and Cornwall Local Resilience Forum (LRF), a coordinating group run by the Police to ensure communication and consistency in our response to various emergency situations. →

Background continued

Case Study continued

Numerous groups and businesses across the region are represented in the LRF, including the Fire Service, NHS, Western Power Distribution and local Councils as well as community groups, such as the Red Cross, who we worked with to proactively distribute bottled water supplies to vulnerable customers in North Devon.

Like our customers, we place real importance on protecting the environment, and following the incident, we arranged for plastic water bottle recycling points in areas where bottled water had been deployed as an alternative supply. We then delivered some of these bottles to a local primary school for their art projects, and arranged for the rest to be responsibly recycled by Viridor.

The event provided us a real life opportunity to test our capability to deal with extreme events. We held a number of workshops with key managers and staff involved to capture lessons learnt. A number of improvement areas have been identified and are already underway, with others being addressed through our longer-term transformation project, Resilient Service Improvement. We have published these on our website.



Our view of resilience

As well as our historical context, our unique location and regional characteristics define the challenges which we respond to, as we deliver our day to day services and plan for the sustainable delivery of services for the long-term benefit of our customers, stakeholders and future generations.

These characteristics engender resilience management as a business as usual activity and are very much part of our organisational culture. That is why we are a key member of the Local Resilience Forum.

We recognise that resilience of our service delivery (operation) is intrinsically linked to our corporate and financial resilience and ensuring strength across each of these dimensions is essential. This is reflected in our holistic approach to managing resilience. Our established processes ensure that we consider threats and risks to resilience across all of these dimensions, taking account of wide and varied sources of evidence as we do so.

These range from tracking performance data, modelling and scenario testing and our leading work with academia, regulators and other utility providers to develop advanced resilience planning tools (e.g. see Sim4nexus case study). Our comprehensive engagement and research with customers is also key to understanding their priorities and support for addressing resilience through our business planning and delivery processes.

Underpinning our long-term success as a business is ensuring we have highly skilled, motivated and flexible people and leaders working for our organisation, who are committed to delivering the best service possible for our customers. One of the ways in which we ensure this is by investing in recruitment, training and development. For example, our established award winning apprenticeship programme has successfully recruited around 150 apprentices since 2011.



Large Apprentice Employer of the Year Award

We see this as key to ensuring the right skills and role succession is in place for the long term. Our programme has recently extended to offer advanced, higher and degree level qualifications and we are working with the Energy and Utility Skills Partnership and other government bodies to develop our offering to reflect the changing requirements within the industry.

Background continued

Whilst we are proud of our record, we recognise there are opportunities to further improve our overall service resilience, not least in the face of changing external influences such as climate change, customer expectations, political and economic uncertainty.

A proven methodology

Our strategy continues to be shaped by our four guiding principles which we set out ahead of the 2014 Price Review in our long term vision and confirmed more recently in **WaterFuture Our Vision 2020-2050**:



These principles provide the framework for shaping our plans to ensure we protect our past success whilst addressing new and emerging risks to our service where improvements or mitigation are needed.

We pride ourselves in our mature approach to managing and addressing risk, and our ability to adapt and improve our approach by reviewing our own performance and best practice.

We have a strong record of managing our business in a way that provides a consistent high standard service to customers. Any business can be affected by factors inside and outside its control which can result in an impact on their operations. Ensuring such impacts are anticipated, planned for and mitigated, is an essential requirement for a modern provider of water and wastewater services.

We consider resilience in the round – understanding the financial, corporate, environmental and operational risks our business faces, and the consequences of them being realised. This places obligations on us to ensure the right skills, leadership, systems, processes and infrastructure are in place to support delivery of a robust, affordable and reliable service to our customers.

We are adept at identifying and controlling those risks most likely to arise and impinge on the normal day to day activity that comprises 'business as usual'. Additionally, our forward looking approach ensures that we pre-empt emerging risks and ensure we are well prepared for the future.

Key to developing our plans is our reliance on the best available evidence and using this to identify the most effective options to mitigate identified risks. An example of this is our approach to addressing our customer's top priority – a clean, safe supply of drinking water. Our systematised risk assessment process takes account of identified and potential risks to water quality from catchments through all stages of the water cycle to the point of supply to customers. Using empirical data from a diverse range of sources, this catchment level review of risks and critical points of control is completed for all of our water supply networks. Identified risks are quantified and ranked and this is then used to develop intervention options and ultimately our forward plans for investment. These are tested with customers for acceptability so that our proposals take account of the identified risk, our customers' priorities and affordability.

This functional sub-system level approach is effectively a microcosm of our wider approach to business system level risk management, review, planning, investment and customer engagement, as described in detail later in this document.

The measure of effectiveness of our corporate governance of risks is again evidenced by our performance record and ultimately the avoidance of major impacts on our operation, business continuity and financial stability over recent decades. This helps ensure we strike the right balance of managing risk and resilience and the cost efficiency of response. A recent example of this is our use of long term forecasts which enabled us to be the first company to raise with the Environment Agency and Water UK the impending issue of the dry 2018 summer.

At a corporate level we have a robust governance process in place which ensures a holistic top-down and bottom-up approach to identifying, quantifying, tracking and mitigating the risks to our business. This ensures that external and internal risk factors are visible to our Board, ensuring that they are cognisant of the short, medium and long-term risks to our business and able to guide our investment and mitigation strategies. Using preventative control methods we are able to reduce the likelihood of a detriment in our service to customers from a variety of risks. Various measures are used depending on the threat posed which can be categorised into one or more of the four 'Rs' - redundancy, resistance, response and reliability.

Background continued

the need for companies to avoid reliance on single assets

making sure systems and assets are afforded adequate protection



the ability to respond to events and incidents in a timely, proportionate and cost effective manner

ensuring that systems and assets are designed in such a way that operation can be maintained in the event of risks being realised

Resilience in the round must consider not just our assets, but our people and supply chain as well. We ensure that our staff and contractors can operate flexibly and are able to respond effectively to unfamiliar or challenging situations. Looking into the future as the world around us changes we will adapt by improving, refining and extending existing competencies while fostering a climate of innovation to exploit new markets and technologies.

Ensuring our business remains financially resilient is an essential requirement for all of our stakeholders. Our primary focus is to deliver acceptability and affordability of water and wastewater bills for our customers whilst delivering their priorities for service through our investment initiatives. This must be achieved whilst also delivering fair returns for our investors so that we can efficiently finance our debt and equity requirements, remaining attractive to investors. Our continuing focus on delivering a high quality service, as efficiently as possible, ensures that we deliver the maximum value for all stakeholders. This is in the long-term interest of our customers for a truly resilient service. Within the outcome delivery incentive framework we seek to deliver stretching performance commitments which are economic and efficient in the long term, consistent with the interests and expectations of our customers and stakeholders.



For more information, see [Delivering Outcomes for Customers](#)

Industry leading performance in supply interruptions targeted

No supplies interrupted as a result of our sites being flooded

These are also based on sound cost-benefit analysis and our customers willingness to pay. Our active and continual review of financial risk and resilience is integrated with these approaches, with established processes and models to test the sensitivity of key financial inputs and outputs to external risks and factors. Risks and opportunities that arise during the delivery of our plans are considered through our unique WaterShare mechanism which both ensures that risks are mitigated and rewards are shared in a fully transparent way with our customers.

Looking forward

As we look forward to 2020 we are confident in our ability to continue to deliver resilience in the round. Our focus will continue to build on our track record and be led by our desire to deliver our customers' expectations. They rightly expect a reliable water and wastewater service delivered through infrastructure that is unaffected by, or can quickly recover from, disruption. They also expect timely and accurate information and a business supported by effective systems, processes, governance, organisational capabilities, and in a healthy financial condition.

In developing our plans for the next phase in delivering our 2050 vision, we have taken a fresh look at the challenges we are facing as we approach 2020. The completion of an independent review and assessment of our resilience by PA Consulting led us to conclude that a further transformation in our approach to service delivery is necessary to secure resilience for our customers for the long term.

Independent resilience assessment

The independent assessment highlighted the need to coordinate further our risk management approach, more effectively coordinate a number of our strategic planning activities, and develop our plans for people skills and succession. As a result of this assessment we have engaged with our Board, management and staff to analyse in detail our current organisational approach and business processes in order to inform a future vision/state for the organisation we want to be. A road map has been established to identify the change programme to deliver that vision and forms the basis of our change framework for 2020-25.

This change project, Resilient Service Improvement (RSI), has already started, with preparations well underway to take the first steps in our journey through to 2025. As well as addressing areas identified from the independent resilience review, RSI is also delivering business improvements following the lessons learned from the Freeze and Thaw incident during February and March 2018.

Background continued

We welcome the positive feedback for South West Water from Ofwat's 'Out in the Cold' report which documents findings for water companies handling of the water supply issues following the Freeze and Thaw event. The examples of good practice demonstrated during that incident are a reflection of many of the approaches described in this document. However, our view of the incident is more focused on the areas where we need to improve our physical resilience and operational responsiveness to ensure that we are even better prepared should we face similar challenges in the future. Our learning from the exceptionally dry summer of 2018 also builds on this.

Our RSI transformation programme focuses primarily on our operational response and recovery by developing our organisational capability through the more effective use of data, business systems, processes, people skills and working arrangements. This is one component of our overall resilience investment strategy which considers the most appropriate solution to identified resilience risks, which could range from investment in our assets and systems so that they can withstand challenges by increasing defences, or providing additional redundancy if this is appropriate.

Other resilience improvement plans

Our resilience investment programme for 2020-25 will see the delivery of a range of customer centric projects which will further build on our track record of delivering resilient water and wastewater services for all of our customers. For our water service our programme includes:

- The construction of two new water treatment works for the Bournemouth area to ensure the delivery of safe and reliable water supplies for future generations
- Continuation of our work to develop potential supply linkages to neighbouring companies and address the risk of demand shortfalls elsewhere
- Ensuring the long term security and resilience of supplies in our region by managing demand through a range of measures including: water efficiency in our wholesale business - for example by our use of internal markets, a 15% reduction in leakage from current levels, lower per capita consumption and the advancement of smart technology solutions such as our digital AMR metering and smart network strategies
- Additional inter-zonal water supply linkages to bolster supplies most vulnerable during operational challenges or high demand periods
- Additional protection to assets most at risk of extreme floods by building new defences
- Continued engagement with our LRF in addressing our region's strategic risks including coastal and fluvial flooding, bio-hazard risk mitigation, cyber and physical security risk management
- Duplication of critical sections of our mains network where the risk of recovery from failure is most significant – e.g. river, rail and major road crossings

- System enhancements to protect electrical supplies from disruption and provide back-up generation where required
- Replacement of vulnerable control equipment and additional monitoring of our computer systems to prevent cyber crime
- Continuation of our long term catchment management programme, Upstream Thinking, to provide long term and sustainable protection of water quality, resource availability and flood risk
- Upgrading of outdated assets and treatment processes on the Isles of Scilly to ensure islanders enjoy the same benefits of a resilient service as customers on the mainland.

Similarly, we have a substantial programme of resilience focused investments planned for our wastewater service provision:

- Extension of our long-term drainage catchment approach, Downstream Thinking, which will deliver sustainable drainage solutions for our most vulnerable catchments as well as sewer separation in high risk locations
- Use of markets and cross company bioresources trades to improve resilience at lower cost
- Development of our long-term Drainage and Wastewater Management Plans and incorporation of our current Wastewater Drainage Strategy Framework Studies
- Cyber security investments targeting the highest risk sites
- Flood protection for key sites in order to reduce the population at risk
- Increased resilience of wastewater treatment sites at risk of extreme flood events - focusing on Response and Recovery Plans
- Additional protection for sites at risk of coastal and fluvial erosion
- Ongoing investment in our risk recovery capabilities with our LRF partners.



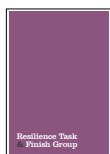
For more information, see [Environment Agency report: Managing flood and coastal erosion risks in England](#)

In preparing our business plan for the 2020-25 period we have refreshed our approach to ensure that we continue to deliver a resilient service, by challenging ourselves to improve our risk management process and systems and learn from our own experience and that of others in the industry. Our overall plan will deliver a true low cost totex solution for ensuring a resilient service to customers.

Background continued

Other resilience improvement plans continued

Our 2020-25 Business Plan takes account of the recommendations of the independent Task and Finish Group which was established by Ofwat to consider what resilience means for the water sector. The outputs of the Task and Finish Group and the UK Government strategic policy are now embedded in the PR19 Methodology.



For more information, see
**Ofwat report: Resilience Task
and Finish Group**

Our plans for addressing resilience in the long term are evidenced throughout our document submission.

Our plan addresses each of the ten recommendations of the Ofwat Resilience Task and Finish Group report published in December 2015:

1. Agree a shared definition of resilience for the sector

South West Water agree with the definition recommended by the task and finish group. Our plan sets out our historical performance in maintaining a resilient service, how we plan and target our investment to achieve this now and for the future. This also includes our approach to ensuring the environmental impacts of our operation are minimised.

2. Increase public engagement and education

Our extensive and innovative research and engagement for PR19 has tested our customers understanding of resilient services. We have pioneered an innovative, interactive video approach to engage customers in water resource planning. We engage our customers on the value of water through our GreenRedeem community water efficiency incentive schemes. Similarly, we engage with local communities, preventing sewer blockages and pollutions through our 'Love Your Loo' initiative.

3. Ensure clear routes for funding legitimate resilience measures

Our plan includes a mixture of resilience measures which we have tested with customers, ranging from engineering 'hard' infrastructure solutions to 'soft' partnership projects. We take a rigorous approach to cost benefit assessment, including the assessment of the natural capital benefits of intervention options, to ensure affordability for customers is maintained.

4. Ensure coherent planning for resilience at both a national and regional level

We were a founding member of the West Country Water Resources Group to help develop a strategic plan for the whole of the South West region. We represent the West Country on the National Steering Group and we are working with Southern Water to develop a new strategic water transfer to their operating area for 2027.

5. Establish wastewater, sewerage and drainage plans

We have an established approach to DWMP. We have prepared new plans for 2020-25 which will be formalised, building on our previous plans and continuing to provide a holistic approach encompassing the needs to growth and resilience in our service provision. Our catchment based programme under our 'Downstream Thinking' initiative embodies our approach.

6. Improve understanding of risk and failure

We have an established continuous improvement process embedded in our resilience management approach. This is used to continually refine our methods to understand risks, failure and their consequences.

7. Ensure services are resilient under different water sector structures

Our Water Resources Management Plan sets out how we are preparing for future bilateral markets in water resources. We have already set up a website that allows third parties to bid in for future water resources. We are similarly developing our trading approach for the bioresources market and implementing internal markets aligned with the regulatory model in order to reveal and deliver efficiency and customer benefits across the value chain.

8. Develop benchmarking, standards and metrics

As described above we have adopted both bespoke and industry standard measures for our resilience performance.

9. Ensure existing plans are stress-tested

We routinely test our resilience capability by carrying out exercises, testing our internal contingency plans and working with partners such as the Local Resilience Forums to test our approach and response to large civil scale incidents. In preparing for PR19 our plans have been independently reviewed and tested by external experts, with identified improvements already underway.

10. Establish a water and wastewater resilience action group

We are supportive of the Water and Wastewater Resilience Action Group (WWRAG) established by Water UK in 2016. Our approach to identification of short and long-term risks is described, along with our consideration of mitigation options, use of innovative solutions and work with customers to shape our plans. This includes natural capital assessments of our investments to ensure that what we plan for is sustainable and beneficial in the long term.

Our vision is to deliver a business that is resilient to threats, shocks and external pressures, whatever their source. We will continue to actively assess risk in the round to ensure that we adapt, learn and improve our approach so that we continue to deliver our services in a responsible, sustainable and resilient manner.



For more information, see
Resilience

Resilience methodology and framework

South West Water has a mature understanding of delivering a resilient service provision for all customers. We consider that we have consistently demonstrated our ability to anticipate risks, prepare for them and respond to disruptive impacts.

Resilience management strategy

Our strategy continues to be shaped by our four guiding principles which we set out ahead of the 2014 Price Review in our long term vision and confirmed more recently in [WaterFuture Our Vision 2020-2050](#).

These principles provide the framework for shaping our plans to ensure we protect our past success whilst addressing new and emerging risks to our service where improvements or mitigation are needed.



The process we use for managing business resilience builds on existing governance structures to ensure we deliver what customers want at a price they can afford. The figure opposite illustrates the delivery methodology, including the rigorous management scrutiny inherent throughout the process. Our business has structures enabling it to be cognisant of external influences and have appropriate processes in place to assimilate information for distribution to relevant departments. Our management approach aligns with the seven resilience planning principles set out in the PR19 Methodology:

1. Considering resilience in the round for the long term
2. Naturally resilient water sector
3. Customer engagement
4. Broad consideration of intervention options
5. Best value solutions for customers
6. Outcomes and customer-focused approach
7. Board assurance and sign-off

Each of the seven principles are highlighted in the relevant sections of this document.

Tangible outputs are created to feed into investment and business improvement programmes. These overarching programmes will ensure tactical delivery of projects support the wider resilience strategy. Underpinning the model is strong corporate governance encompassing internal audit functions, external assurance providers and comprehensive board scrutiny.

In our preparations for the 2020-25 plan we commissioned an independent resilience risk assessment.

This was conducted at a process level by interviewing key employees across each of the assessment areas. The outputs from the gap assessment are used in conjunction with existing business processes to develop the resilience strategies required to meet the challenges which were identified.



For more information, see [KPMG financial resilience assessment](#)

The key steps illustrated in our resilience management process on the opposite page are as follows:

- **Analyse, identify, assess and prioritise.** Risks are identified and monitored on a continuous basis from a wide range of internal and external sources and recorded on our risk register. They are systematically quantified and prioritised.
- **Develop mitigation options, ensure value for money and customer support.** A wide range of mitigation options are considered according to the 4 R's approach of resistance, reliability, redundancy and response. These are tested for customer support, efficiency and affordability.
- **Solution selection and incorporation in to business plan with totex and outcome forecasts.** Using investment optimisation a plan is developed setting out the intervention options and targeted benefits and costs. This includes asset interventions as well as operational processes.
- **Analytics and continuous improvement.** Aligned to our active risk monitoring processes, impacts, benefits and learning from our intervention mitigations is used to inform the current risk profile and additional improvements that may be required.
- **Delivery, governance and reporting.** Our holistic monitoring and governance framework is used to ensure effective management at all key gateways. This is independently assured through established audit processes.

Each of these steps is described in detail in the following pages of this section.

Resilience methodology and framework continued

Resilience management process

Ofwat resilience planning principles	Key steps	Business processes	Features
	Assessment and prioritisation of risks	<ul style="list-style-type: none"> Monitor external risks: Environment, climate change, political, economic, supply chain, terrorism, regulatory, stakeholders, demographics, technology Monitor internal risks: Performance monitoring, asset health, forecasts, modelling, scenario testing, gap analysis, risk appetite, impact, consequence, interdependencies Confirm risk factor and interdependencies across business Quantify risk consequences, probability and impact Capture on Corporate Risk Register 	<ul style="list-style-type: none"> Using the best available evidence Assessing a diverse range of risks and their consequence Independent resilience gap analysis Looking beyond the water industry
	Option development	<ul style="list-style-type: none"> Solution development process aligned with established industry planning principals Assess whole life costs and benefits Establish customer willingness to pay Establish customer priorities Balance plan over the long term 	<ul style="list-style-type: none"> Consider a wide range of mitigation options Resistance, reliability, redundancy, response alternatives Ensures value for money solutions Clear understanding of benefits and outcomes Supported by customers
	Solution selection	<ul style="list-style-type: none"> Shape investment programme and priorities Build improvement initiatives in to operational business plans Investment Manager programme optimisation tool Natural capital assessment Business improvement programme (PUROS, iOPS, RSI) Consider inter-boundary and market opportunities 	<ul style="list-style-type: none"> Ensure best long term options Supports sustainability Incorporate solution into investment programme or business system or operational improvement programme Delivers business outcomes Aligns with long-term vision
	Continuous improvement	<ul style="list-style-type: none"> Active risk monitoring, assessment and prioritisation Track delivery of benefits of improvement/mitigation programmes Review outcomes and benefits from mitigation interventions Exercise processes, stress testing 	<ul style="list-style-type: none"> Continuous improvement Flexible and responsive to emerging issues Optimised risk management
	Delivery, governance and reporting	<ul style="list-style-type: none"> Short and long term business plans Capital scheme delivery Operational improvement programmes - e.g. PUROS, iOPS, RSI Governance framework Internal and external audit Internal and external reporting 	<ul style="list-style-type: none"> Clear business plan and delivery model Robust risk management framework Assurance with three lines of defence Transparent and reliable reporting to stakeholders

Assessment and prioritisation of risks

Principle 1: Considering resilience in the round for the long term

Systematic and integrated understanding of service and systems risk across the entire business

Assess resilience of systems and the services provided, in the round

Understand the interdependencies across operational, financial and corporate aspects of the business

Consider short, medium and long-term risks

Assessment of risks

Using our established risk identification process, South West Water has a comprehensive understanding of the risks facing our business at both the macro and micro level. In our experience it is unusual for a major event to result in a systems failure; but more likely that smaller errors or failures occur which, when combined, can have a more significant impact. If these remain unchecked there is potential for significant disruption as key systems or processes fail. There are multiple barriers to defend against failure, including engineering, people, procedures and administrative controls.

Assessed risks are reviewed in the context of what controls and mitigations are in place. Stress testing is applied to ensure that the controls are suitable and sufficient to reduce the risk to an acceptable level. In this context 'acceptable' must be seen from both the view of the company with finite resources and our customers who fund those resources.

While the customer is willing to pay for and can expect a consistent, reliable service within a clearly communicated range of conditions, occasionally there are rare events outside of the normal conditions. The cost of providing a reliable service is accepted by our customers, but the cost of defending the company against all eventualities at an affordable price, even the most extreme, is not possible. Therefore one of the key challenges for any business is the ability to comprehensively and consistently assess risks enabling both strategic and tactical responses to be planned. A mix of interventions are required guarding against failure (redundancy, resistance and reliability) and providing the ability to respond to disruption and restoring the business to a stable state.

As an example climate change is a long term macro level risk with potentially global impacts. A risk of this type demands a long term strategic response influencing factors within our control, namely mitigating emissions to atmosphere. Even if global emissions were reduced, climate modelling predicts warming with potentially significant impact on localised weather conditions. These include an increased likelihood of more intense storm events and rising sea levels as well as increased risk of drought.

Ensuring resilience in such conditions requires a variety of adaptation measures across the business, including those that extend to customer behaviours. In the case, the business response must be both strategic and tactical; strategic over the long term to reduce carbon emissions and invest in infrastructure to mitigate projected climate change. The tactical element is making sure that there are the necessary resources and systems in place to adapt and to cope with the physical manifestations of climate change.

Strategic risk overview

Climate change is a good example of the considerations made when assessing resilience in the round in relation to a specific threat with multiple impacts. These type of assessments are conducted across the business in various forms, with the outputs used to inform suitable interventions. This process works well at a local level for tactical / operational interventions.

At a strategic level company management and Directors have processes in place that provide an overview of the business position now and over the long term. It is imperative that these processes are comprehensive so as to protect the company from unforeseen shocks. This in turn provides confidence that we are financially, operationally and corporately resilient.



“Severe weather planning seems to be well embedded within the company.”

Ofwat, Review of water companies' response to the 'Beast from the East', June 2018

For more information, see



Ofwat 'Out in the cold' report



South West Water response to Storm Emma

Assessment and prioritisation of risks *continued*

Cross-sector resilience modelling

Understanding future threats to our business and how our customer and stakeholder expectations and service requirements are changing is a key element of resilience planning. It requires an intelligent, integrated and innovative approach which we are developing through the SIM4NEXUS research project, www.sim4nexus.eu. This project shows our leadership in taking a strategic, multi-stakeholder partnership and systems level approach to resilience planning.

SIM4NEXUS is a €22m EU funded research project for which South West Water are leading the UK case study. Our objectives of this project are to:

- Enhance our long term (50 years) integrated approach to business planning, that considers:
 - End-to-end resource management (drinking water / wastewater, supply chain and beyond)
 - Environmental protection and low carbon development
 - A robust understanding of the impacts of new and emerging legislation beyond the water sector.
- Better understanding of how we can support the delivery of the governments strategic priorities:
 - Securing long-term resilience
 - Protecting customers
 - Reduce uncertainties of how policies, governance and institutions affect complex changing environmental systems.
- Enhance stakeholder engagement
 - Reaching beyond the UK Water industry
 - Developing educational tools for use with local educators.

We are adopting a systems thinking approach that provides better understanding of the interrelationships and interdependencies across the Nexus of the South West. It is founded on the development of Complexity Science models, which are used as the basis for development of an overarching System Dynamics Model (SDM) of the Nexus. The SDM assumes a demand led approach to meet the direct demands placed upon each sector arising from society, and the resource flows between the individual sectors required to meet those societal demands.

We appreciate that engaging with customers and other stakeholders in decisions about resilience – particularly resilience to low probability, long-term, but high impact events, can be challenging. This is why we are converting our models into an interactive ‘Serious Game’.

Serious Game visualisation



Screenshot from Serious Game geo-spatial policy impact visualisation

The model looks beyond our normal business operations and includes; political, economic, societal, legal and wider UK/EU market activities. We recognise that these systems will bring additional complexity and new challenges to our business – which is why the development of a modelling platform that can provide greater insight to these components, will help ensure we invest wisely in our business.

To gather this insight, we have worked hard to engage with other stakeholders and policy makers in the South West. These engagements have been conducted through; one-to-one interview with senior business leaders and group workshops aimed at better understanding the interactions of different organisations within the Nexus.

A wide and diverse range of national and regional stakeholders are engaged in the project from across a number of sectors. These are show below:

Water	Land/Food/Climate
<ul style="list-style-type: none"> ● Ofwat ● West Country Rivers Trust ● Exeter University ● UKWIR 	<ul style="list-style-type: none"> ● Natural England ● DEFRA ● South West Tourism Alliance ● Sustainable Food Systems Planning ● National Farmers Union ● LEAF ● Large land owners ● Tenant Farmer's Associations
Energy	Multiple-interests
<ul style="list-style-type: none"> ● Ofgem ● ReGen ● Community Energy Groups ● Cornwall Energy/VISA ● Energy Policy Group 	<ul style="list-style-type: none"> ● Environment Agency ● Local Councils ● Devon Wildlife Trust ● Greenpeace ● Stephens Scown Solicitors ● Centrica Innovations

Assessment and prioritisation of risks continued

Cross-sector resilience modelling continued

We believe the model will give us significant insight into how our actions can influence the three key components of resilience, as identified by the World Bank (2015): 1. avoiding losses; 2. stimulating economic activity; and 3. the development of co-benefits.

The model enables a range of scenarios to be tested within different simulation modules, as summarised below:

Land to Energy: waste transport fuel demand

Within the Land Module waste management is considered and the transport of municipal and other waste materials is calculated to generate a transport fuel demand upon the Energy sector.

Land to Food: land utilisation for agricultural production

Within the Land Module land utilisation per agricultural activity is calculated, this data is used by the Food Module to calculate raw food productivity.

Land to Water: raw water quality and surface drainage

Within the Land Module flow rates and water quality of surface run-off and drainage are calculated for the various land use types. This data is passed to the Water Module for use within drinking water and wastewater calculations.

Land to societal demand: land utilisation and housing demand

The Land Module calculates the total area of land utilised for domestic housing, this data is used by the Societal Demand Module to calculate housing demand due to population.

Land to climate: greenhouse gas emissions and sequestration from land-use

The Land Module calculates total area of land utilised for agricultural activities and natural amenity, this data is utilised by the Climate Module to determine net greenhouse gas emissions from land-use.

Food to Water and Energy: irrigation, livestock and food processing demand

Within the Food Module water and energy demand for arable farming, livestock, transport and food processing is calculated based on land utilisation and productivity, this data is passed to the Energy and Water sectors as demands.

Water to energy: energy demand for water transport and treatment

Within the Water Module the whole urban water cycle is considered which calculates numerous energy demands between treatment and transportation of water. This data is passed to the energy sector as a demand.

Water to land: sludge disposal

Wastewater and drinking water treatment give rise to various sludge streams which are disposed to land. The volume of sludge is calculated within the Water Module and passed to the Land Module.

Water to climate: process and fugitive emissions

The Water Module calculates volumes of sludge produced, chemicals consumed and energy demand, each of these have associated greenhouse gas emissions which are calculated within the Climate Module.

As the project progresses, the Serious Game will be validated by application, testing, verification and usage, with the aim to integrate it with our strategic planning and modelling processes.

Risk register

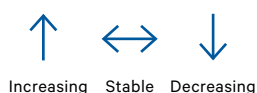
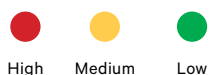
The principal risks identified by the company are listed in the table below. Each risk is assigned to one of four principal categories and aligned with the relevant strategic impact area. The risk is described and scored on a red / amber / green basis with an indicator for increasing / decreasing / stable trajectory. Supporting the principal risk identification and mitigation process are the business risk registers in operation across South West Water.

The business risk registers are managed at a local level and are more tactical in nature, with key issues being escalated within directorates for discussion at the risk forum. The low, medium and high risk level is our estimate of the net risk to the Company after mitigation. It is important to note that risk is difficult to estimate with accuracy and therefore the actual risk may be greater or less than our estimate indicated.

Assessment and prioritisation of risks continued

Risk register continued

Principal risks	Ref	Strategic priorities	Risk description	Net risk level	Trend
Law, regulation and finance	1	Environment Finance and economy	Compliance with the law, regulation, government/regulators decisions including market reform	●	↑
	2	Finance and economy	Maintaining sufficient finance and funding to meet ongoing commitments	●	↔
	3	People and community	Non-compliance or occurrence of avoidable health and safety incident	●	↔
	4	People and community Finance and economy	Tax compliance and contribution	●	↔
	5	Finance and economy	Increase in defined benefit pension scheme deficit	●	↔
Market and economic conditions	6	Finance and economy	Non-recovery of customer debt	●	↓
	7	Finance and economy	Macro-economic risks impacting commodity and power	●	↑
Operating performance	8	Water Environment	Poor operating performance due to extreme weather or climate change	●	↑
	9	Service	Poor customer service / increased competition leading to loss of customer base	●	↔
	10	Water Service Environment	Business interruption or significant operational failure/ incidents	●	↑
	11	People and community	Difficulty in recruitment, retention and development of skills	●	↑
Business systems and capital investments	12	Finance and economy	Failure or increased cost of capital projects/exposure to contract failures	●	↔
	13	Water Service	Failure of IT systems, management and protection including cyber risks	●	↑



The low, medium and high risk level is our estimate of the net risk after mitigation.

The directional arrows indicate our assessment of direction of travel of risk level.

Assessment and prioritisation of risks continued

Financial resilience

In assessing the financial resilience of the Company, the Board report their findings in our Annual Report where they set out an assessment of the Company's financial viability. The most recent assessment is set out below:

The Board has assessed the Company's financial viability and confirms that it has a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over a five-year period. The assessment has been made with reference to the Company's current position and prospects, its longer-term strategy, the Board's risk appetite and the Company's principal risks and how these are managed, as detailed in the Risk Report. South West Water is a long term business characterised by a multi-year investment programme, with the associated revenue stream.

The Company's strategic business plan and associated principal risks are a foundation of the scenario testing. This assessment has considered the potential impact of arising risks on the business model, future performance, solvency and liquidity over the period in question. In making their assessment, the Directors reviewed the principal risks and considered which risks might threaten viability.

Over the course of the year the Audit Committee has considered a deep-dive review of the following principal risks to enable a thorough assessment of the impact of these risks on ongoing viability (the wider risks are reviewed on a rolling basis):

Principal risk	Matters considered by the Audit Committee
Cyber security	Review of the cyber security framework in place
Financial resilience	Ability to manage external shocks or potential market dislocations that could impact on financing strategy
Recruitment and retention	Review of people risks including the ability to attract and retain the right skills to deliver the Company's strategy
Water resources and resilience	Consider the impact of climate change and drought risks on water resources and ongoing flood-related resilience

In stress testing the Company's business plan it was determined that none of the individual risks would in isolation compromise the Company's viability. In performing this stress testing all risks have been monetised with reference to risk weighting, factoring in the likelihood of occurrence and financial impact. In addition, further factors were considered to reverse engineer a scenario that could possibly compromise South West Water's viability, these included:

- All the principal risks occurring in all of the five years
- Lower retail price index (RPI) projections in each of the five years
- Significant one-off costs
- A deterioration in the credit quality of amounts owed to the Company.

The four factors above, which are in addition to the principal risks, have been monetised as absolute financial costs and are not risk weighted on the likelihood of occurrence.

The Board considered the monetary impact of these scenarios on the Company's viability over a five-year period, concluding the reversed engineering scenario remote. The five-year period was chosen given the longer term nature of South West Water's business, for consistency with the length of the business planning cycle.

As part of the Board's considerations additional scenarios concerning viability were reviewed. This additional assessment considered South West Water's regulatory financial ring fence through the following scenarios that are recommended to be tested by Ofwat as part of the business planning process:

- Totex underperformance (15% of totex)
- ODI penalty (3% of RoRE) in one year
- Inflation sensitivities (+/-3%)
- Increase in the level of bad debt (20%)
- New debt financed at 2% above forward projections
- Financial penalty – equivalent to 3% of turnover
- Any relevant inter-company financing scenarios.

These scenarios were considered in isolation and in the following combination:

- 10% totex underperformance in each of the five years
- ODI penalty of 1.5% in each of the five years
- One-off financial penalty of 1% of revenue.

The Directors concluded these scenarios in isolation and the combination noted above did not compromise the viability of South West Water over the five-year assessment period.

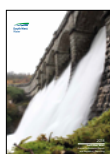
Assessment and prioritisation of risks continued

Financial resilience continued

In making the assessment, the Directors have taken account of the Company's robust capital solvency position, its ability to raise new finance and a key potential mitigating action of restricting any non-contractual payments.

In assessing the prospects of the Company, the Directors note that as the Company operates in a regulated industry which potentially can be subject to non-market influences, such assessment is subject to uncertainty, the level of which depends on the proximity of the time horizon. Accordingly the future outcomes cannot be guaranteed or predicted with certainty.

As set out in the Audit Committee's report, the Directors reviewed and discussed the process undertaken by management, and also reviewed the results of the stress testing performed.



For more information, see [Annual Performance Report 2018](#)

Operational resilience

As indicated in the previous table, operating performance is one of our principal risk categories within which operational risks are identified, reviewed and managed. Operational managers report performance and risks within their areas of responsibility and these are tracked through the risk management processes described.

In addition to this business as usual approach, we commissioned an independent resilience assessment which also encompassed operational risk. The findings of this assessment aligned with our own understanding of our current level of operational risk. The assessment also identified a number of improvement areas which are being addressed through our Resilient Service Improvement transformation programme which is described later in this document.



“I would like to thank South West Water’s continuing contribution to the Local Resilience Forum and acknowledge their involvement at all levels ensuring the partners were kept abreast of the changing situation in particular regard to the affected areas that could and did lose their water supplies.

We saw the activation of the Local Resilience Forum Alternative Water Supply plan which demonstrated a smooth and coordinated response by South West Water, guaranteeing that our public would always have a supply of water, testament to your team’s effective planning. As always you are a trusted member of this Local Resilience Forum and I look forward to continuing our great working relationship. Please pass on my thanks on behalf of the Local Resilience Forum to all those involved in the response.”

Paul Netherton
Deputy Chief Constable
Devon & Cornwall Police
Chair of the Local Resilience Forum'

Option development and solution selection

Principle 4: Broad consideration of intervention options

Plans to manage resilience should consider a full set of mitigating actions and interventions that consider all of the components of resilience, including response and recovery

Explicitly consider options that involve cooperation and collaboration with other companies at a regional or even national level

There are a number of ways to measure value for customers and in the case of interventions designed to maintain and enhance resilience there is additional complexity introduced due to extended timeframes for risk realisation. In practice the lengthy planning horizon demanded by the water industry will naturally require inter-generational decision making to ensure the needs of future customers are met.

Therefore it is imperative that any solutions deliver the best value for customers both now and in the long term. Customers were consulted on their views of inter-generational decisions and a significant number were of the view that the interventions should be funded by those who would stand to benefit.



For more information, see [Engaging Customers](#)

We have sought to balance our investment plan in a way that is fair to existing customers, and the customers of the future by ensuring we will be able to maintain a high quality service without driving up customer bills.

When assessing customer value the main consideration is of course the amount customers will pay over the next five years. Coupled with this there is the value placed by customers on the services we provide, and what it costs to maintain those services. We have a mature cost modelling process that is used as a planning tool, but there are always external factors which will change the actual cost of operating.

Resilience interventions are analysed as with any other investment made by the business, using a software tool called Investment Manager. This programme is able to provide guidance on the investments with the lowest whole life cost while taking into account the value customers place on avoiding the consequence of certain events and their willingness to pay for certain interventions.

To reduce the risk of service impacts we apply the four 'Rs' methodology as endorsed by the cabinet office:

- **Resistance:** preventing damage or disruption by providing the strength or protection to resist the hazard or its primary impact.
- **Reliability:** ensuring that the infrastructure components are inherently designed to operate under a range of conditions, and hence mitigate damage or loss from an event.
- **Redundancy:** this is concerned with the design and capacity of the network or system. The availability of backup installations or spare capacity will enable operations to be switched or diverted to alternative parts of the network in the event of disruptions to ensure continuity of services.
- **Response:** enabling a fast and effective response to, and recovery from, disruptive events. The effectiveness of this element is determined by the thoroughness of efforts to plan, prepare and exercise in advance of events.

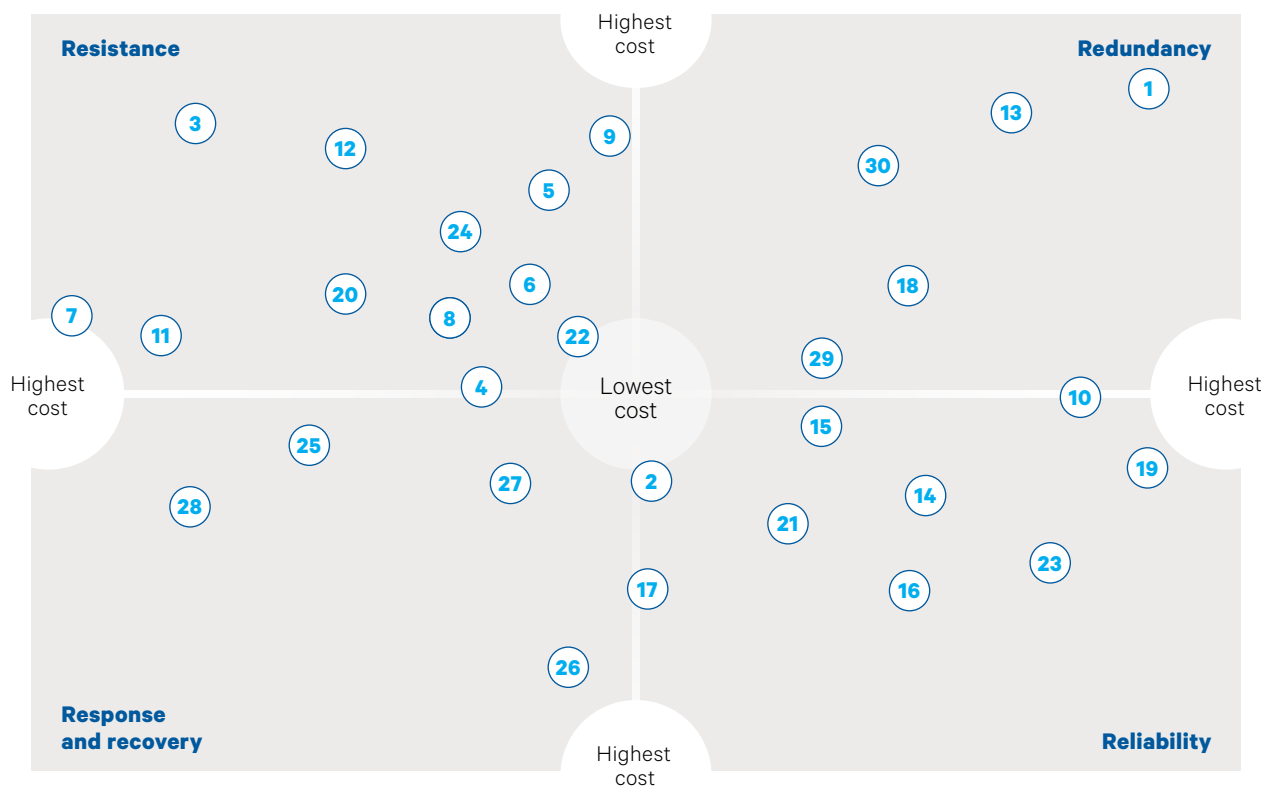
The application of these principles is used to develop mitigations based on the risk profile and associated cost. Initial investment costs are generally highest for solutions that provide alternative assets in the case of disruption and lowest for the provision of reactive temporary interventions until normal service can be resumed. The figure opposite provides a representation of the categorisation and costs associated with a selection of key resilience interventions.

Option development and solution selection continued

Categorisation of resilience intervention options and their cost implications

Intervention type	Risk profile	Examples	Cost
Redundancy	Very high consequence / Medium probability	<ul style="list-style-type: none"> • Duplicate mains • Standby pumps 	
Resistance	High consequence / High probability	<ul style="list-style-type: none"> • Flood defences • Cyber security 	
Reliability	Medium consequence / Medium probability	<ul style="list-style-type: none"> • Maintenance of assets • Staff welfare 	
Response	Medium consequence / Low probability	<ul style="list-style-type: none"> • Temporary flood defence • Mobile water supplies • Recovery plans 	

Key resilience interventions



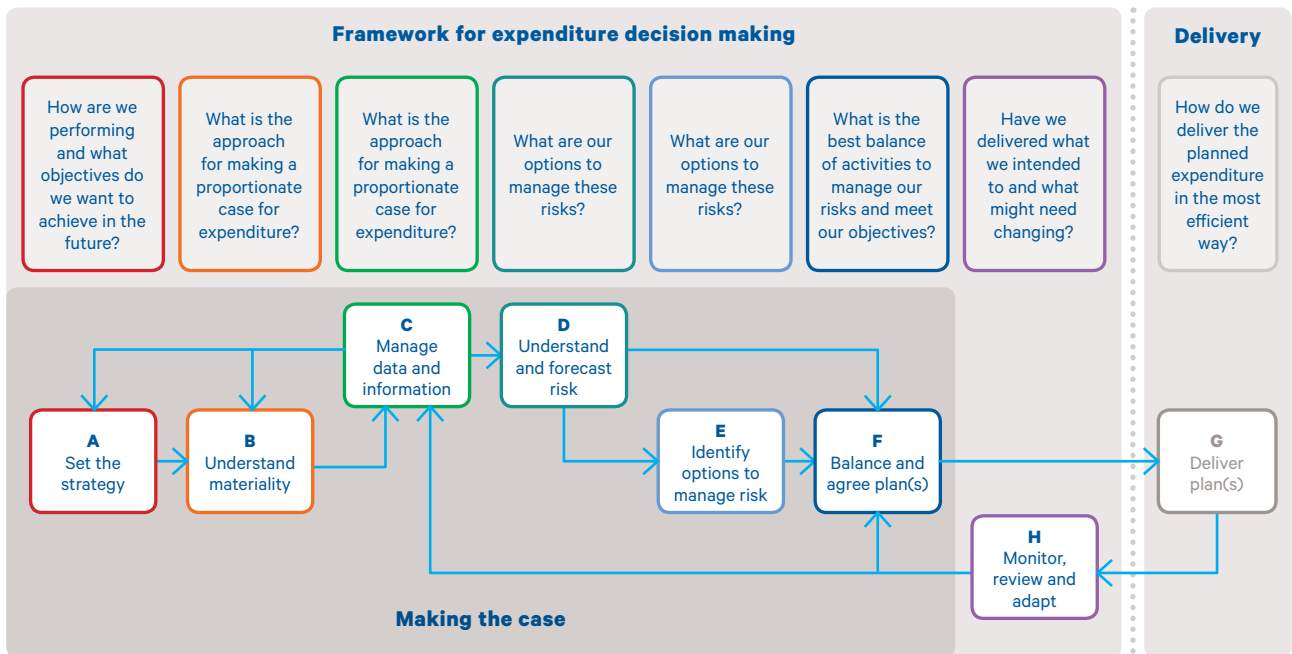
- | | | |
|---------------------------------|--------------------------------------|--|
| 1. Duplicate water main | 11. Gearing headroom | 21. Drainage and wastewater management plans |
| 2. Employee training | 12. Sustainable drainage | 22. Water resources management plan |
| 3. Flood protection (permanent) | 13. Network interconnections | 23. Communication channels |
| 4. Flood prevention (mobile) | 14. Influencing customer behaviours | 24. Emissions reduction |
| 5. Cyber security | 15. Affordability / tariffs | 25. Spares inventory |
| 6. Catchment management | 16. Asset maintenance | 26. SCADA alarm system |
| 7. Liquidity | 17. Data quality and management | 27. Emergency plan exercises |
| 8. Reduction in consumption | 18. Alternative suppliers | 28. Response vehicles (4x4 HGV etc) |
| 9. Leakage reduction | 19. New water treatment technologies | 29. Standby / spare pumps |
| 10. Water main replacement | 20. Site and network security | 30. Backup power generation |

Option development and solution selection continued

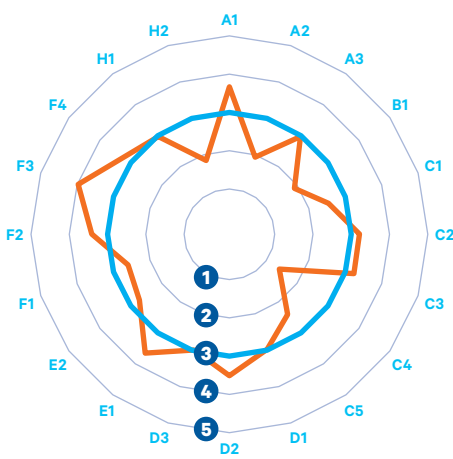
Our investment decision making process builds on industry best practice methodology and is based on the UKWIR Framework for Expenditure Decision-Making (FEDM 2014). This methodology is applied across our entire investment planning and decision making process and requires a step-wise approach to performance review, risk assessment and forecasting, option development and the consideration of optimal totex solution. Delivery options are reviewed to ensure efficiency at each step of the process, along with ongoing review of benefits of scheme delivery used to continually refine and develop the overall process.

The maturity of our approach against the FEDM process has been independently assessed by Mott MacDonald, as illustrated below. Their overall assessment identified strong practice and maturity across a number of areas, as well as identifying some areas to improve.

UKWIR Framework for Expenditure Decision Making (2014)



Self assessment



1 – 5 MATURITY SCALE
 1 = INNOCENCE, 5 = EXCEPTIONAL

Set the strategy

- A1. Understand Customer and Stakeholder requirements
- A2. Define/Update Service Measures
- A3. Define/Update Strategic Direction

Understand materiality

- B1. Define/Update expenditure Planning Approach

Manage data and information

- C1. Define information requirements
- C2. Acquire Data
- C3. Prepare Data
- C4. Manage Data
- C5. Analyse Information

Understand and forecast risk

- D1. Forecast Performance and Service
- D2. Value Service Risk
- D3. Identify Expenditure Requirements

Identify options to manage risk

- E1. Generate Interventions
- E2. Evaluate Interventions

Balance and agree plan(s)

- F1. Analyse Alternative Expenditure Scenarios
- F2. Validate Plan(s) with internal stakeholders
- F3. Validate Plan(s) with external stakeholders
- F4. Ratify Plans(s)

Monitor, review and adapt

- H1. Monitor delivery
- H2. Analyse and feedback information

Option development and solution selection continued

As well as addressing identified risks to service resilience affecting our operation by implementing unilateral solutions, we also actively seek to develop options on a collaborative basis with local partners, neighbouring companies in our region, and also at a national level.

Key partnership schemes are those within our continuing Upstream Thinking and Downstream Thinking catchment based initiatives where we have well developed partnering arrangements with other stakeholders in our region in order to jointly deliver catchment level benefits for a wide range of beneficiaries.

We have worked with Wessex Water over recent decades to improve our joint water resource resilience position by developing the shared Wimbleball Reservoir resource and the associated winter pump storage scheme. The latter has a significant shared upgrade planned for the 2020-25 period.

Similarly, we are continuing to develop long-term water resource resilience options by working with neighbouring companies in the West Country Water Resources Group - in which we play a leading role. We have collaboratively identified a potential future water transfer to Southern Water which would help to address their supply-demand deficit. More details about this can be found in the 'Resilience interventions planned for 2020-25' section in this document and the case study included describes this project and the associated benefits which would be delivered for customers.

Historically we have also delivered resilience improvements for our water distribution network, by providing additional strategic linkages or duplicating key sections of our network such as our Cornwall Spine Main. Similar resilience improvements are planned for the 2020-25 period. Working collaboratively with our neighbour Wessex Water, we have successfully recently delivered a new network resilience scheme for the joint benefit of Wessex and Bournemouth customers. Details of this scheme are also included in the case study section of this document.

Our partnership working also extends to our wastewater business. This is best illustrated with our recent work with the Environment Agency for the Exeter Flood Defence Scheme. In collaboration we have been able to develop a joint scheme which protects our strategic Exeter Countess Wear Wastewater Treatment Works. A case study on this project is also included in this document.

Option development and solution selection continued

Principle 3: Customer engagement

Resilience aspirations informed by engagement with customers, to help companies understand their customers' expectations on levels of service

Understand customers' appetite for risk and how customer behaviour, in matters such as water efficiency, might influence approaches to resilience

During our research and engagement for PR14 we developed the outcome 'Resilience in extreme conditions'. In preparing for PR19, our step change in research and engagement resulted in broadening the scope of this outcome, in response to our customers perceptions of what resilience means to them and our desire to ensure our service is resilient in the round.

As part of our customer research on output performance measures we asked customers what their expectations were for service resilience and what kinds of risks and hazards they thought it was reasonable for us to be prepared for. They considered that resilience is about ensuring customers' demands for water are met during drought and other extreme weather conditions. They were less concerned about issues such as water supply interruption due to power cuts, as they trust that we have plans in place to deal with 'reasonably' foreseen events such as this (e.g. through backup generators).

Customers consider that resilience is more of an issue today than in previous generations due to rising population and changes to weather patterns. They were also clear that they expect us to be measured in our approach to ensuring resilience, recognising that we can't protect against every risk, every time, no matter how unlikely.

Customers told us that our approach to resilience should be about planning for what can go wrong – and either preventing issues from happening, or responding well and getting service back to normal quickly when they do.

Customers indicated during our research on performance commitments (PCs) they are concerned about the impact of changing weather patterns and the associated increased risk of flooding. Whilst they do not want or expect us to protect against all risks and all eventualities however unlikely, we heard again that we should prepare for reasonably foreseeable events. This includes having the capability and resources in place to respond effectively when events do occur, so customers are informed, services are returned to normal quickly, and particularly those in vulnerable circumstances are protected.

In our PC research customers told us that our PR14 outcomes and performance commitments focused on priority resilience matters, but were quite narrow in focus and needed to be much more inclusive of the wastewater side of our operations. In reviewing and refreshing our outcomes for PR19, we recognise that resilience is much broader than just extreme conditions. We have revised the title of our outcome to 'resilience'. We have also refreshed our performance commitments in this area to provide a more balanced approach across water and wastewater, and to deal effectively with all hazards in a practical way.

Our post event surveys provide useful insight from customers about our processes for dealing with disruptive events. Our recent research with customers affected by the March 2018 Freeze and Thaw event provided even more insight into our processes and ways of working in extreme conditions.

We learned that we have effective processes in place to ensure customers have water from emergency tanks and the distribution and direct delivery of bottled water supplies when things go wrong. Our communications are reasonable – although nearly half of our customers told us we could be better at this before and during the event.

Our research showed that those that received our text alert felt very up to date and supported; those that did not receive this relied more on friends, family, our website, and out staff at distribution points. A key lesson learned is that we need to promote our text messaging services more – which we have already started to do so.

“You still have to plan for the future even if it works now.”

OPM Research, Bude,
Aged 45+ SEG BC1C2D

“We're quite shortsighted. We want the tap to turn on and that be that, but South West Water have to think further.”

OPM Research, St Austell,
Aged 25-45, SEG BC1C2D

Option development and solution selection continued

Our Priority Services Register (PSR) customers told us that they are well looked after and supported during events. However, from our post event surveys and Freeze and Thaw research it is clear that large numbers of customers that could be classified as being in vulnerable circumstances are not aware of the PSR. A further key lesson has been to promote the PSR more effectively – which we have also started to do.

In the same research our customers told us it was acceptable for there to be disruption to services given the scale of the extreme weather and that the level of impact and disruption were proportionate to the severity of the weather. Their support for investing significant sums in the network to protect against such severe weather in the future is not strong. Whilst one third (34%) said we should invest more money to prevent this in the future, the rest told us that this is not a high priority – and there are more pressing concerns for us to focus on today than investing to protect against such extreme weather. A balanced response was needed in our plans.

The feedback we received has provided the basis on which we have refreshed our long-term 'WaterFuture' vision which outlined the key customer priorities for services during 2020-2050. This was published in September 2017 and includes key long-term aims around resilience, namely to:

- Increase the resilience of our water network to reduce leakage and minimise interruptions in supply
- Improve the resilience of the sewer network to make sewer flooding a thing of the past.

Based on this feedback we have also refreshed our performance commitments for our resilience outcome. We have replaced our PR14 measure: supplies interrupted due to flooding of sites, with four measures which give a more balanced and rounded assessment of resilience.

Firstly, we have a measure for the number of supplies interrupted for more than 12 hours. This can be due to flooding, or other events such as third-party damage, Freeze and Thaw conditions, catastrophic asset failure, lightning storms, etc. This measure now captures all hazards that can impact water supplies, and by including a duration threshold gives a strong incentive to respond and recover services quickly. This performance commitment is called 'Resilience in the round – water'

We have also introduced the measure 'Resilience in the round – waste.' This is a measure of the number of resilience action plans we have in place – ensuring our sites are resilient to hazards, but also can respond and recover quickly.

The two resilience measures proposed by Ofwat for drought risk and flooding risk will also be used. Our customers support these measures, especially the flooding risk measures.

We have set challenging targets to deliver for our customers. We have tested a range of scenarios around improving resilience and our proposed investment and targets are value for money and cost beneficial, given the benefits in terms of reduced interruptions, flooding and other disruption prevented.

We have presented and tested our resilience plans in regional investment focus groups and our acceptability testing. Customers find our plans to be challenging and support the investment and bill impacts. We have designed and tested Outcome Delivery Incentives (ODIs) to ensure we deliver on our promises here. In line with what customers told us in our ODI and balancing risk and reward research, we have applied financial incentive to our bespoke resilience measures.

Option development and solution selection continued

Principle 5: Best value solutions for customers

Plans to manage resilience should consider the best value solutions for customers in the long term

This may include long term solutions

Investment optimisation process

Customers need to be confident that they will receive a high level of service for the bills they pay. Intrinsic to maintaining this level of service is the proper assessment of interventions and costs over the short, medium and long term. To make sure the interventions selected provide the best value for customers there are a considerable number of factors that need to be considered, not least the balance being struck between risk and affordability.

This takes account of benefits and whole life costs of alternative interventions. We have also undertaken natural capital assessments to test the long-term sustainability of our plans.

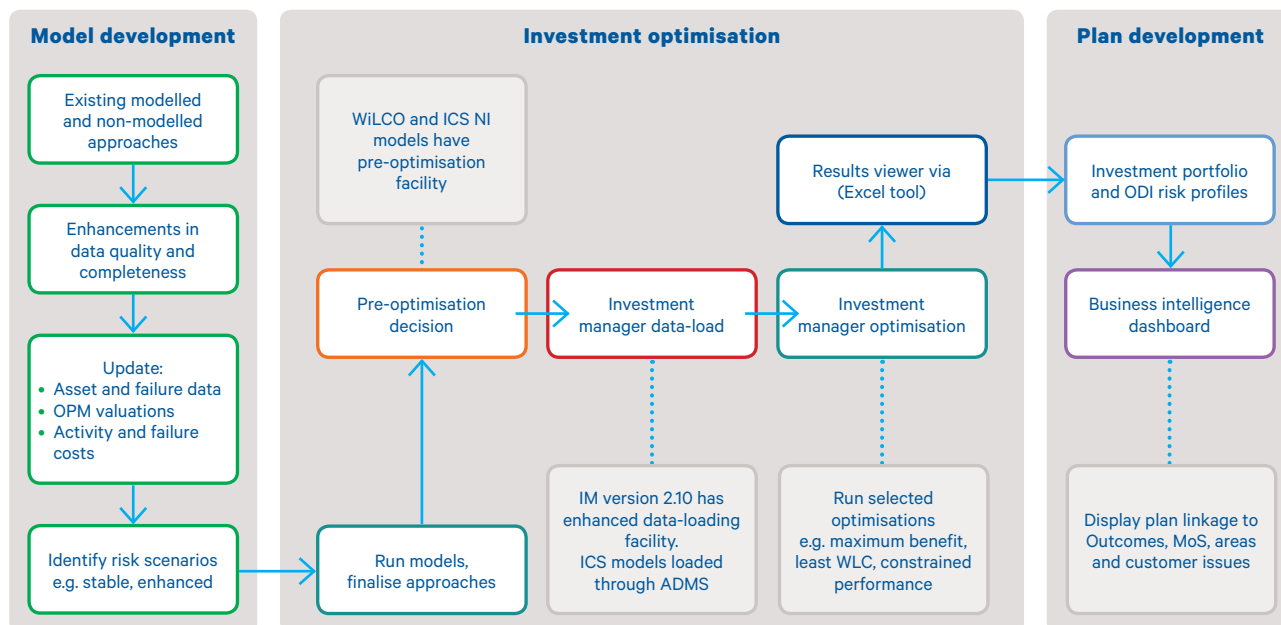
This underpins the approach to developing our whole investment programme, ensuring that we achieve balance, take account of competing priorities and provide the maximum benefits to customers possible within any

wider constraints. The figure below illustrates the overall framework.

The benefits this system delivers include:

- A defined service performance and costing framework
 - Providing a consistent and holistic way to assess all investments
- A transparent process
 - Providing clear and defensible rationale for including or excluding investments
- Systematised and repeatable
 - Powerful way to look at many different scenarios
 - An effective audit trail
- Optimised
 - Ensuring legislative targets are met
 - Driving maximum value for money to customers.

Modelling, investment optimisation and plan development process



Option development and solution selection continued

Investment optimisation process continued

The primary output required by the business is the least whole life cost that delivers performance consistent with our eight outcomes. This starts with translation of strategic priorities into outcomes and plan requirements.

Our business plan needs to be right for customers, stakeholders and our company. The strategic objectives the business plan needs to meet are based on customer priorities, regulatory / legal obligations and business needs. Multiple inputs are combined with strategic objectives mapping across to the business outcomes with underpinning performance commitments. Various constraints are applied to ensure the options selected meet certain requirements such as the overall size of investment and meeting statutory duties.

Once strategic outcomes are confirmed an output performance measure (OPM) framework enables the business to consistently measure performance, risk and compliance. The key benefit of this framework is that there is a direct link between asset health and outcomes, providing understanding of the impact of investment in an asset in terms of performance. To create the OPM values, outcomes and constraints are combined with asset and performance data, creating c.150 OPMs, including a number specifically related to resilience.

The Investment Manager system is also used to balance the investment plan, generating outputs suitable for consulting with internal and external stakeholders. The aim of the process is to identify those solutions which are the best value for money whilst delivering the overall strategic objectives. Every solution is valued over the long term (40 years) and also takes into account non-financial impacts.

Impacts are discounted to net-present value terms which allow costs and benefits to be quantitatively compared. Constraints are overlaid on the solution options to meet business requirements such as bill size, service levels etc.

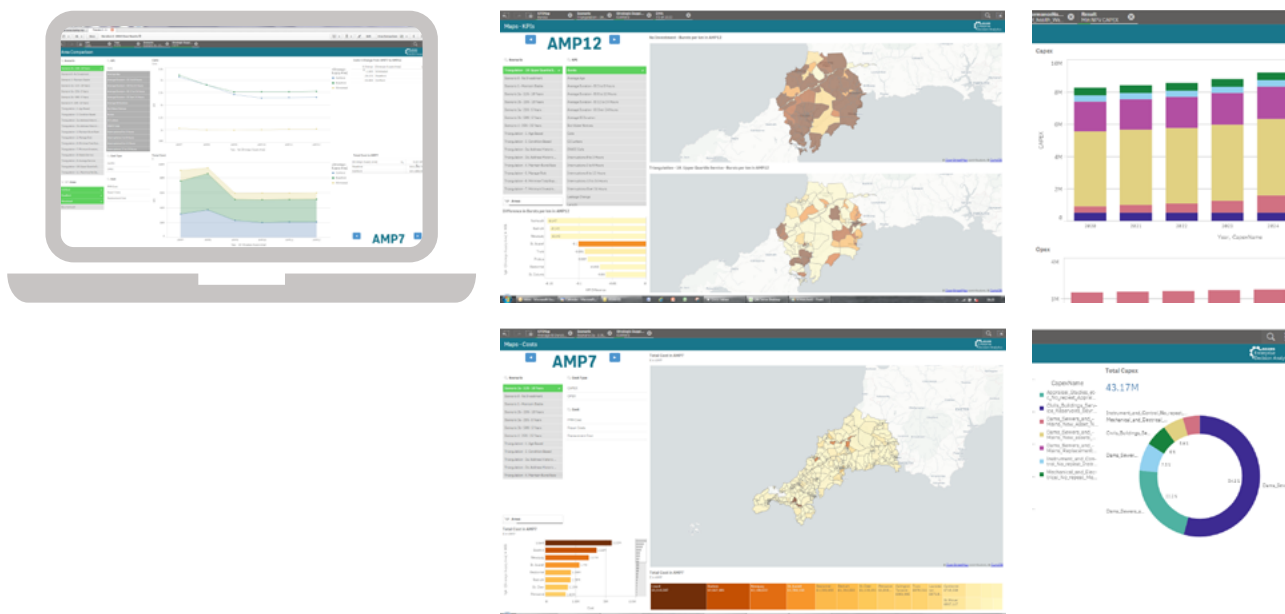
The key steps in the process are:

1. A comprehensive and detailed review of all risks, potential solutions, costs and customer preferences is fed into the initial scenario analysis
2. Scenario analysis enables the business to test a range of options such as consistency of service, most cost beneficial and stretching performance
3. A range of options are generated that meet the scenario parameters
4. Options are overlain with stakeholder views, additional constraints and requirements
5. A draft plan is generated which illustrates the predicted level of performance for a given level capital investment across the business
6. The draft plan is revised after consultation with stakeholders and customers before production of the final plan.

The outputs from the process can be viewed in performance, compliance and risk terms. Availability of these data provides the business with the tools to make informed decisions about the overall shape of the plan and risk exposure.

Data from the investment optimisation process feed into a powerful visualisation tool which provides users with the ability to display a variety of data to meet multiple business needs.

Solution optimisation visualisation tool



Option development and solution selection continued

Investment optimisation process continued

To ensure that value for money is delivered for customers, we adopt an end to end process of option cost review and assurance, along with an incentivised scheme delivery model through our supply chain which ensures the efficiency of the delivered scheme. The economic assessment of intervention options is informed by our internal cost models and databases. This includes a diverse and extensive experience of projects, ranging from minor schemes to those of more significant scale or duration.

Development of our investment cost assessments is supported by our internal Engineering Commercial team using the Cost Evaluation Data Analysis Review (CEDAR) approach. Investment costs are captured, reviewed and assured on an ongoing basis and used to underpin our cost modelling processes within our Asset Management team.

The diversity of our overall investment plan is illustrative of our approach to resilience investment planning which takes account of whole life cost solutions, cost benefit and affordability. This results in a range of short, medium and long-term projects, as well as both opex and capex interventions. Examples of long-term solutions are our Upstream Thinking and Downstream Thinking catchment based solutions, which will provide resilience for water and drainage services over the coming decades.

Principle 6: Outcomes and customer-focused approach

Plans to manage resilience should inform the outcomes they propose

Outcomes on resilience, and the associated stretching performance commitments they set, should also take into account future risks and customer preferences

Our Investment Manager process links investments directly to Outcomes. Within the Investment Manager process, Output Performance Measures (OPMs) are used to quantify the benefits of potential investments so that they can be compared and, with consideration of overall cost benefit, an optimised programme of totex investment is derived.

OPMs are mapped directly to ODIs so that we have clear line of sight between our investment programme and how our eight business plan outcomes will be progressed in the context of our 2050 vision. This allows us to objectively describe stretching performance commitments across our entire plan in the pursuit of delivering the desired outcomes.

Our plans include a range of performance commitments which relate to the delivery of a resilient service for our customers.

Our outcomes were developed at PR14 and were based on consultation with our customers, regulators, stakeholders and WFCP in order to reflect:

- Customer priorities and preferences including willingness to pay studies
- Regulatory and legislative obligations.

The outcomes, including the language and definitions were tested with customers through a series of focus groups with both household and business customers to confirm that the outcomes accurately reflected their priorities.

The resulting eight outcomes covered the full spectrum of our activities. For PR19 we have reviewed and refreshed these outcomes with our customers and stakeholders and as a result we have revised the title of our outcome to 'resilience' to recognise that resilience is much broader than just extreme conditions.

As a result of listening to our customers and stakeholders we have been able to confirm that our refreshed outcomes best reflect the requirements of our customers, stakeholders and regulators. The results indicated strong support and validation of the outcomes and priorities. They were well received by customers, meaning that we can be confident the outcomes continue to reflect customers' preferences.

Whilst sewer resilience and water supply resilience in extreme conditions are both in the top ten of our customers' priorities, we recognise that ensuring resilience is broader than being prepared for extreme conditions. In addition to the common industry resilience measures, we have proposed bespoke measures to assess our resilience in the round for water and wastewater services.

The climate and topography of the South West region combine to make many catchments at risk of fluvial, coastal and/or surface water flooding. Our rivers and coastal areas are sensitive environmentally and economically (for example due to the regions reliance on the tourism economy), so the resilience of our wastewater treatment works is important, as their failure has the potential to affect these sensitive areas. Resilience in this case will be assessed by our ability to protect those works from flooding and/or how quickly we can recover their treatment process should extreme weather affect them.

Option development and solution selection continued

For our water service, the prolonged interruption of supplies, for a duration greater than 12 hours, will be used to measure our resilience in the round. Our research confirmed that customers consider long duration, unplanned and repeated supply interruptions are unacceptable. Customers recognised that this is an important measure of asset health as well as the resilience of our network and response capability.

Performance commitments	Customer priority	Incentive type	Forecast 2019/20	2024/25 level	Beyond 2025
Resilience					
Drought risk (% of population that would experience severe supply restrictions in a 1 in 200 year drought)	6. Water supply resilience in extreme conditions	Rep	0	0	0
Flooding risk (% of population at risk of sewer flooding in 1 in 50 year storm)	4. Sewer resilience in extreme conditions	Rep	31.7	28.3	15.0
Resilience in the round – waste (number)	4. Sewer resilience in extreme conditions 3. Prevent pollution	£+/-	0	100	235
Resilience in the round – water (number)	6. Water supply resilience in extreme conditions 8. Avoid supply interruptions	£+/-	740	540	127

Testing stretching performance commitment levels

In establishing our planned targets for resilience, we have ensured that our performance commitments reflect:

- What customers consider important and value for money
- Stretching targets for the price control period
- Targets that are consistent with legislative requirements.

Customer and stakeholder research and engagement activities; cost benefit analyses; and a robust cost challenge have been key to the development of our performance commitment levels.

Our approach to assessing the economic level of service involves estimating the incremental costs and benefits for all performance commitments.

We have given ourselves a significant cost challenge – applying cost efficiencies to our unit cost estimates to ensure we continue to improve efficiency to deliver the targets.

We have engaged with customers, the WFCP and regulators to collect evidence and discuss targets for our performance commitments. The result has been that we have outcome performance commitments that our customers want and are consistent with Defra's Statement of Obligations, relevant statutory requirements and licence obligations.

We have produced marginal benefit and marginal cost estimates for our performance commitments to understand where potential expenditure and performance improvements are value for money.

For more information, see



Delivering Outcomes for Customers



Engaging Customers

Option development and solution selection continued

In addition to the specific performance commitments within our Resilience outcome described above, there are a range of wider performance commitments across our business plan which will either directly or indirectly support the delivery of resilience improvements for our customers over the short, medium and long term. These range from measures of asset health (for example the number of mains bursts and sewer collapses) to those which indicate our responsiveness (for example operational contacts resolved first time) and others which underpin our long-term resilience strategy (for example the level of leakage and per capita consumption).

For completeness these wider measures are summarised by outcome below.

Performance commitments	Customer priority	Incentive type	Forecast 2019/20	2024/25 level	Beyond 2025
Clean, safe and reliable supply of drinking water					
Duration of interruptions in supply (minutes per property)	8. Avoid supply interruptions	£+/-	00:07:43	00:04:41	00:00:32
Number of mains bursts (AH) (number)	8. Avoid supply interruptions	£+/-	2,640	2,401	2,401
Unplanned outage at water treatment works (%)	8. Avoid supply interruptions	£+/-	1.04	1.04	1.04
Reliable wastewater service					
Internal sewer flooding incidents (number)	5. Reduce sewer flooding	£+/-	135	109	42
External sewer flooding incidents (AH) (number)	5. Reduce sewer flooding	£+/-	1,808	1,123	958
Sewer collapses (AH) (number)	5. Reduce sewer flooding 3. Prevent pollution	£+/-	309	249	202
Sewer blockages (AH) (number)	5. Reduce sewer flooding 3. Prevent pollution	£+/-	7,800	6,500	2,500
Available and sufficient resources					
Water restrictions placed on customers (number)	10. Avoid water resource restrictions	£+/-	0	0	0
Leakage levels (MI/d)	7. Leakage control	£+/-	117.8	100.2	89.3
Per capita consumption (litres/person/day)	16. Smart metering 17. Education on water saving and sewer usage	£+/-	137.2	128.7	120.3
Responsive to customers					
Operational contact resolved first time – water (%)	9. Responsiveness to service problems 11. Customer contact excellence	£+/-	96.6%	95%	100%
Operational contact resolved first time – waste (%)	9. Responsiveness to service problems 11. Customer contact excellence	£+/-	95.5%	95%	100%

Option development and solution selection continued

Principle 2: Naturally resilient water sector

Promoting ecosystem resilience and biodiversity

The natural environment in which South West Water operates is dominated by beautiful and diverse landscapes, a wide range of habitats and ecosystems of significant economic, recreational and amenity benefit.

The provision of water and wastewater services within such an environmentally important and sensitive region is reliant on the continuing health of our local ecosystems as well as an important factor in protecting them. Our operation is uniquely integrated with the regional landscape.

We are keenly aware of the need to work in harmony with our environment and drive enhancements to it, where these provide a more sustainable long-term solution to resilience risks such as water quality, resource availability, drainage and flooding.

As a business we have taken the conscious decision to help improve the environment of the areas in which we operate. Interventions we invest in range from community volunteering days through to driver behavioural equipment installed in our vehicles. One of the programmes receiving significant funding which has direct implications for resilience is Upstream Thinking.



Upstream Thinking

Upstream Thinking (UST) is South West Water's ambitious and innovative Natural Capital-based approach to investment in resilience. Since 2006 this evolving Catchment Management programme, has focused on protecting the rivers and reservoirs of the region from detrimental landscape impacts. Our proposals for the 2020-25 period will encompass 80% of South West Water drinking water source catchments, seeking to deliver long term resilience through a Natural Capital approach on an expansive basis.

The inherent uncertainty of deriving drinking water for treatment from surface waters, and in particular from the lower reaches of large and variable river systems, is the principal risk that UST seeks to address.

Delivery is through third party partners, who have developed significant knowledge of the catchments while creating widespread support and trust from land owners and managers. Their farm advisors engage with farmers and provide advice, business planning, and grants for farm infrastructure and habitat restoration to bring about behaviour change and Natural Capital improvements. This increases the flow of Environmental Goods and Services (EGS) (e.g. clean raw water) from farmlands to deliver improved business performance in the following areas:

- Pro-active management of Drinking Water Protected Areas (DrWPA) at risk and increased raw water usability due to reduced pollutant loads and sustained and elevated base-flows

- Water Treatment Works (WTW) efficiency due to avoidance of shutdowns from pollution, taste and odour failures, and lower asset running costs
- Downstream environmental protection for wastewater treatment and networks, with improved functionality due to reduced catchment peak-flows with impacts on Combined Sewer Overflow (CSO) discharge frequency and volumes
- Long term business protection against future uncertainty (e.g. climate change and emerging catchment threats such as new chemicals)
- Statutory environmental protection and delivery of wider environmental responsibilities (e.g. the Environment Agency's Water Industry National Environment Programme (WINEP)).

This investment supports the customers' priorities of;

- A clean, safe and reliable supply of drinking water
- Reliable wastewater service
- Resilience
- Protecting the Environment.

The wide range of external stakeholders engaged ensures that the proposed programme has broad support resulting in a high confidence of success.

The risks of not making this investment include increased maintenance and operation costs, bringing forward future investments in water storage and supply prematurely, reduced resilience and future environmental degradation risks.

Option development and solution selection continued

This nationally recognised initiative comprises a number of projects designed to deliver benefits to the company while also increasing the quality of the local environment. As part of the programme we have started the process of developing natural capital accounts (ONS, 2017)¹, with the intention of assessing ecosystems goods and service in such a way as to enable a monetary value to be placed upon them i.e. the value society places on environmental quality.



Sweep

There is complexity inherent in monetising predicted benefits over a significant period of time (40 years plus). As a result we have worked closely with our delivery partners at a catchment level to gather the robust quantifiable data needed for a reliable assessment to be made. Once these data are in place and the links between interventions and environmental benefits verified we will be able to consistently measure how much changes in ecosystem goods and services resulting from interventions are worth to society.

We are undertaking this valuation work as part of the NERC funded South West Partnership for Environmental and Economic Prosperity (SWEEP) project. Highlights include:

- Wave Forecasting
- North Devon Marine Pioneer
- Leak Detection
- Dartmoor and Exmoor Natural Capital
- Landscape Pioneer and North Devon Biosphere
- Sustainable Drainage
- Managing Green Space
- Whole Catchment Water Management
- Mainstreaming Environmental Growth
- South West Marine Planning.

We are collaborating with teams at the Universities of Exeter and Plymouth, and Plymouth Marine Laboratories, to conduct a catchment level Natural Capital accounting exercise with the objective of quantifying the benefits that are expected in relation to the proposed interventions planned for 2020-25 in our Upstream Thinking programme. A substantial amount of data has been analysed covering the period of planned interventions in each catchment followed by the projected environmental improvements resulting from them in the long term (2020-45).

Delivery partner organisations have been instrumental in providing intervention data relevant to the catchments they are responsible for, including the type of work planned:

- Woodland creation
- Woodland management
- Grassland management
- Peat land restoration
- Soil management best practice
- Range of agricultural practice initiatives.

For more information, see



Upstream Thinking



Environment Plan to 2050

There are various benefits associated with interventions for both people and the environment for example; improvements in water quality, reduction in flood risk, changes in base water flows and improved recreational areas. Quality control of data is imperative as any assessment has to be based on realistic, justified information. The outputs from this work will complement the existing business planning process providing a more holistic view of both interventions and benefits.

Another well established part of Upstream Thinking is working closely with the agricultural industry across Devon and Cornwall. Agriculture is a significant part of the economy in our areas of operation and of national importance for the self sufficiency of the country, but there can be unintended consequences from modern farming practices. One area of concern is excess fertiliser washed from farmland entering watercourses and reservoirs, resulting in algal growth. To alleviate the phosphate load in feed streams we have engaged with farmers positively, demonstrating how they could save money by reducing fertiliser use but without compromising yields. The following case study demonstrates how working with the local farming community improved the water quality at a reservoir in Cornwall and saved the farmer concerned a considerable amount of money in fertiliser.

Similarly, we seek to work in harmony with the environment in delivering long term drainage solutions through are Downstream Thinking initiative, an integral part of our Drainage and Wastewater Planning (DWMP) approach, as illustrated overleaf.

¹ ONS (2017). Principles of Natural Capital Accounting A background paper for those wanting to understand the concepts and methodology underlying the UK Natural Capital accounts being developed by ONS and Defra

Continuous improvement

Using the outputs from a stress test

Ultimately all risks have to be considered in terms of impact to the services we provide, so the outcomes of stress tests should also be related back. Broadly these fall into direct and indirect impacts depending on the type of event experienced. Storm Emma, the winter 2018 Freeze and Thaw event referred to in the media as the 'Beast from the East', is an example of an occurrence on the edge of our planning horizon (1:60 year weather event) that directly impacted customers, primarily due to interruptions to drinking water supplies.

Our established incident review process requires both a 'hot' and 'cold' debrief after the incident is formally closed. This ensures that we continue to improve our assets, business systems and response capabilities.

For the 2018 Freeze and Thaw event, a number of post incident review sessions were completed due to the scale and duration of the incident.

We find that this form of learning and improvement is the most beneficial due to the inherent limitations of exercise or scenario based stress testing.

Indeed, we asked Professor Ian Bateman to review our response.



“The SWW response appears to have been one of excellence across a wide range of inter-related and extreme challenges.”

Professor Ian Bateman, University of Exeter

In the example of the Freeze and Thaw event, our hot debrief was led by company Directors with workshop participants from across the organisation. Additional facilitated sessions were led by PA Consulting in order to inform the development of our transformation programme. The outputs of this are published on our website.



For more information, see [Freeze and Thaw: lessons learned and action plan](#)

External independent resilience assessment

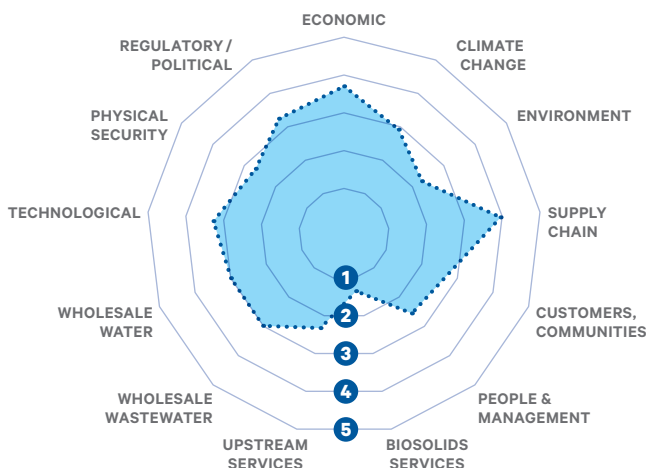
Risks of varying types are assessed and managed every day across South West Water. Coupled with this there are well established processes for measuring, communicating and escalating business activity which may indicate a heightened likelihood of risk realisation. To assist the business in articulating how resilience in the round is achieved we have worked with experts at PA Consulting to produce a comprehensive overview of the company position. The key message from the resilience gap assessment is that there are no areas of the business that are unacceptably exposed to the risk of failure.

The assessment was divided across the 14 key categories noted in the Ofwat independent Task and Finish Group publication, which ensures all parts of the business corporate, financial and operational are assessed. Of the 14 categories of risk listed, 13 were assessed as part of the gap analysis undertaken by PA Consulting with the final 14th financial assessment being undertaken by KPMG.

Summary of findings

The key message from the independent resilience gap assessment is that the business is in a strong position as there are no areas where significant gaps have been identified. General themes were teased out from the interviews conducted with a cross section of employees with responsibilities that directly support company resilience. Additionally, desk top studies were conducted to identify interdependencies and any areas of potential risk not captured during the interview process. The figure below illustrates the risk positions for each of the 14 categories.

Summary risk assessment



1 - 5 MATURITY SCALE WHERE 1 = INNOCENCE, 5 = EXCEPTIONAL

Financial resilience assessment

KPMG were commissioned to undertake an assessment of our financial resilience. Our Board has overall responsibility for financial resilience and has conducted different scenarios and stress tests that confirm that we are financially resilient. KPMG have confirmed that the scenarios tested cover severe, plausible and reasonable outcomes for key variables and in any scenarios we can be considered financially resilient.



For more information, see [KPMG financial resilience assessment](#)

Continuous improvement continued

The overall conclusions from the assessment carried out by PA Consulting were as follows:

South West Water has excellent staff who are knowledgeable and committed to the business and its customers. The quality of the South West Water workforce manifests in the approach taken in each area to ensure that South West Water continues to provide services to customers in the short to medium term, and that there are appropriate processes and structures in place for South West Water to operate as an effective whole. Our assessments of all thirteen areas only highlighted two areas where there are longer-term risks that could affect the resilience of: Biosolids and Upstream Services. We have set out below these overarching themes for ease of reference:

1. Risk. The company has strong risk management processes in place and understands the risks in key areas. However, the extent to which the company understands the linkages between risks is less clear. More cross service understanding of the risks such as the impact of drought on water and wastewater services needs to be developed.

2. Strategy. Some areas of the business have clear and coherent strategies that have been approved by the South West Water Board – the Supply Chain strategy is good example of this. Other areas have agreed strategies, but these are not written – Regulatory for example – whereas some areas, such as Bioresources, will be using agricultural market to reduce the use of artificial phosphate by farmers. There are clear benefits to having a defined, approved and written strategy for each area. It provides focus and coherence for the staff in that area by setting out a roadmap of what the business is trying to achieve over the long term, including in relation to furthering resilience. A strategy also provides a way of assessing the benefits of actions being taken, i.e. are they furthering South West Water achieving its strategy in that particular area. Further, having a strategy necessitates keeping it under review – at the very least annually – and thereby instilling the discipline of horizon scanning, which is a key part of determining the challenges that the business may need to address in order to stay resilient.



“South West Water has excellent staff who are knowledgeable and committed to the business and its customers.”

John Parsonage, PA consulting

3. Co-ordination. Several assessments, notably Climate, Environment and Technology, raised the challenge of coordination and coherence across the South West Water business. Areas such as these, i.e. those that straddle different business units across South West Water, will require those units to adopt approaches that reflect an agreed strategy and outcome. South West Water should ensure that it is encouraging effective and open communication across the business to ensure that key outcomes, such as maintaining security good practice, are recognised and reflected in the processes and structures within each business unit. Coordination is also closely linked to the strategy theme highlighted above, as the strategy for each individual area should be reflective of, and coherent with, South West Water’s overall business strategy. A good example of this is the People and Management area where it was acknowledged that there is still work needed to ensure that the South West Water HR plan aligns with and underpins the overall South West Water business strategy.

4. Succession planning / single points of failure.

As we readily acknowledge above, South West Water has excellent staff who are knowledgeable and committed. However, because there are limitations to the structures and processes in place to support the resilience of certain areas, e.g. the lack of written strategies or risk management tools, there is, necessarily, greater emphasis placed on the knowledge and experience of South West Water staff. That collective knowledge is clearly vital to South West Water, but is also a risk. By its very nature, collective staff knowledge is only available if the relevant staff are available to the business. South West Water acknowledges that it has an aging workforce and retrieving, collating and distributing the knowledge and experience of its workforce so that it is available to all should be key priority for the business if it is ensure that it stays resilient over the medium to long term.

Continuous improvement continued

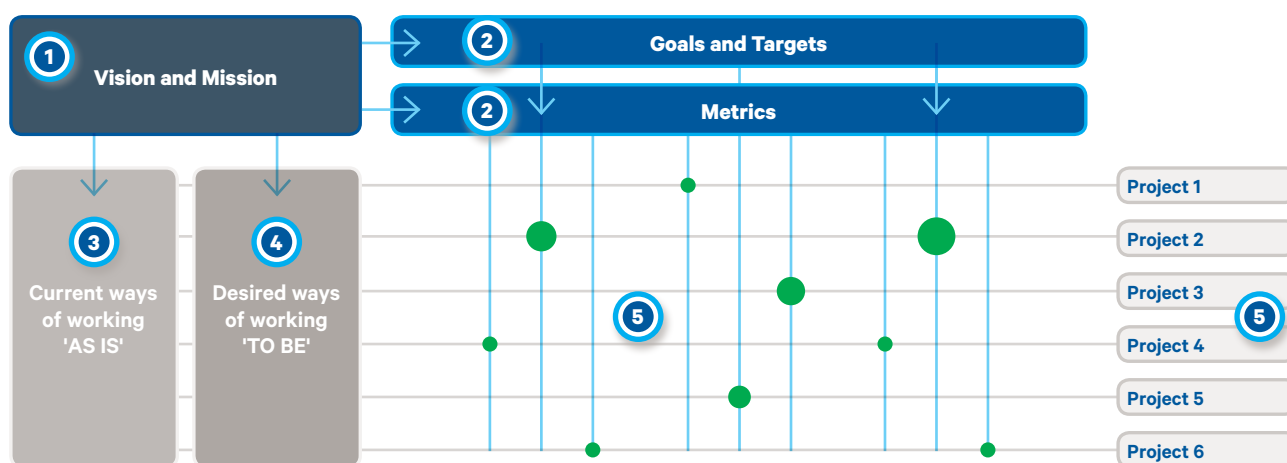
Summary of findings continued

The independent risk assessment completed by PA Consulting highlighted the need to develop a clear action plan to strengthen short and long-term resilience in some areas of our business. Key findings from the initial risk assessment highlight the need for our business to further develop our approach to risk management, business area strategy development and review, the coordination of activities across different business units and our plans for people skills and future succession.

Building on the business knowledge and expertise gained by PA Consulting from their initial top-down assessment, we developed a bespoke and targeted 'bottom up' assessment methodology to complement this. Our assessment was aimed at establishing a full understanding of the readiness and preparedness of the business for aligning to the challenges identified and ensuring our long term resilience.

The bottom up assessment used a structured approach working with the PA Consulting 'One Page Strategy' (OPS) methodology, which is illustrated in the diagram below.

One page strategy and roadmap development



The ultimate output from this work is an overall road-map which sets out the vision and priorities for the South West Water business and how we are going to deliver it. This also provides a clear line of sight from our overall outcomes in to the day to day activity within the company.

The OPS process engaged with over 200 participants across the business including front-line staff, management, support staff and Board Directors, with various workshops which address the following steps in developing the overall OPS:

- 1 The strategic priorities and vision set by the South West Water Board
- 2 The associated targets for the business to realise the vision
- 3 Using the outputs from the risk assessment to guide discussions which identified areas of our business which would need to be transformed in order to respond to the drivers for change – setting out a clear 'AS IS' position and our desired 'TO BE' vision
- 4
- 5 Detailed analysis and review of current strategies, projects and activities to ensure their alignment with delivering our overall strategy and vision and identifying areas where new projects are required

Following this step wise approach, the next phase of work was to document the OPS and define the resource needs, accountabilities and priorities for the necessary change programme, identify project dependencies, synergies and ensure transparency of business wide activities to ensure priorities are being addressed. Finally, establishing a clear governance, delivery and engagement framework for the change programme has been essential.

Underpinned by the OPS, a change programme has been established. This will be our platform for change as we head towards and journey through 2020-25. Governance, accountabilities and resourcing requirements are currently being put in place.

As well as addressing areas identified by PA Consulting during their review, the RSI project is also leading the implementation of the lessons learned from the 2018 Freeze and Thaw incident.

Continuous improvement continued

Summary of findings continued

Our assessment of resilience identified the need to ‘stress test’ our responsiveness to challenging service conditions to ensure our preparedness and ability to maintain service for large scale or long duration incidents.

We periodically run exercises to test our response capability and procedures in place to maintain service continuity.

The Freeze and Thaw and unprecedented met office red warning which affected Devon and Cornwall at the end of the winter provided the perfect opportunity to test our ability to contend with an extreme event.

Following the event we held a ‘hot-debrief’ session with key managers and staff who were involved in the incident to capture lessons learnt.

We ran a dedicated workshop with PA Consulting to overlay the lessons learnt with the earlier perceptions of the ‘As is’ and ‘To be’ outputs developed under the first phase of the OPS development.

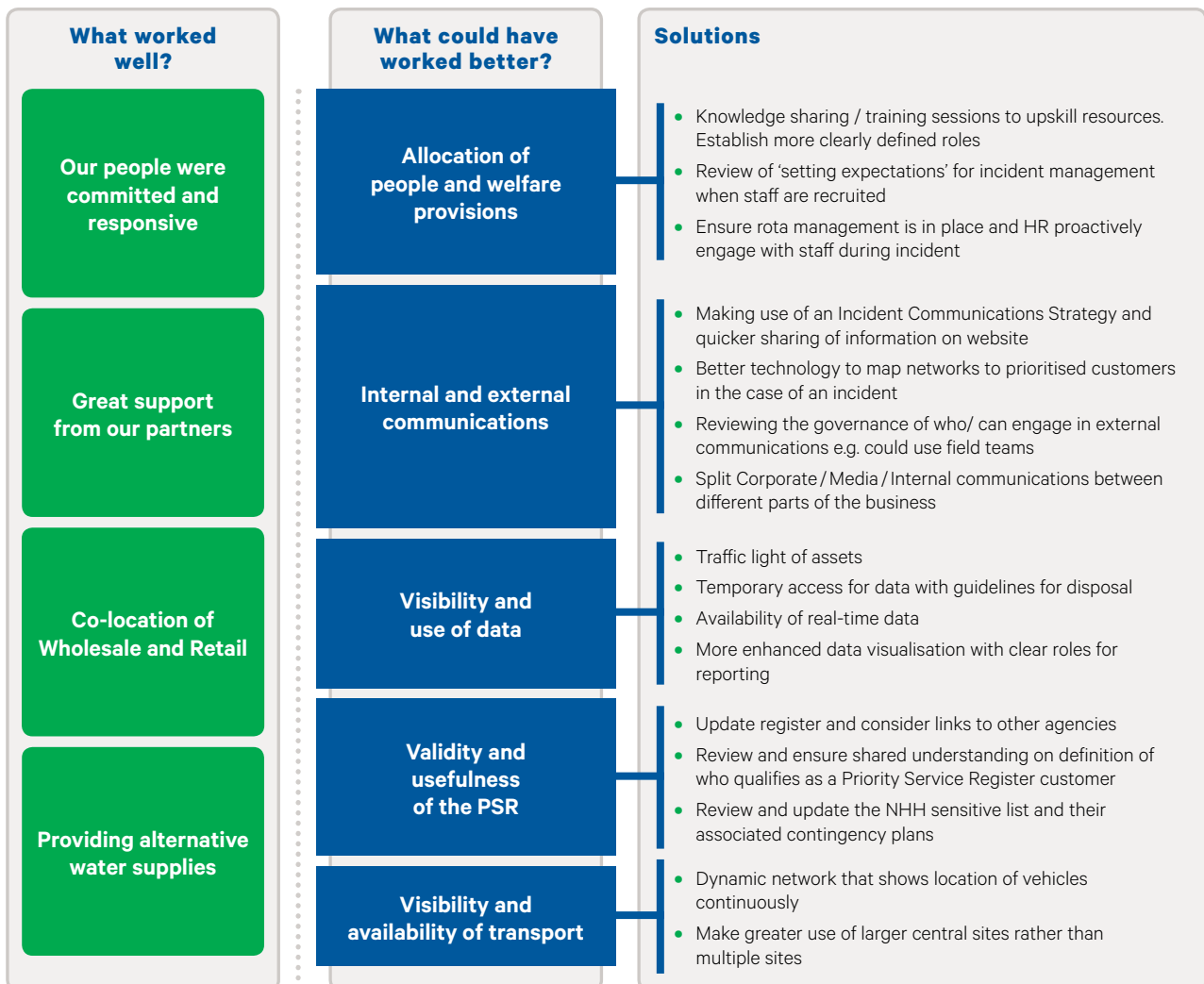
The workshop identified a number of improvement areas which are set out in the figure below. Key areas identified concerned priority service customer validation, communications and data visibility, logistics management, human resource deployment and welfare provision.

Most of these had already been recognised as areas for improvement in the development of the ‘To be’ vision in preparing the OPS. The findings have been incorporated into our programme.

Many of the improvements had already been identified during the early phase OPS workshops but the Freeze and Thaw experience provided the opportunity to validate earlier perceptions and develop the specific improvements needed and their priority.

Priority areas are already being progressed under a number of early start improvement projects. In addition to these priority areas, a number of infrastructure and non-infrastructure asset improvements which will also improve our resilience are being progressed.

Freeze and Thaw incident review findings



Delivery, governance, risk and management assurance

Principle 7: Board assurance and sign-off
Robust and systematic assessment of the resilience of the company's systems and services
Customer views on managing resilience
Comprehensive and objective assessment of interventions to manage resilience in customers' long term interests

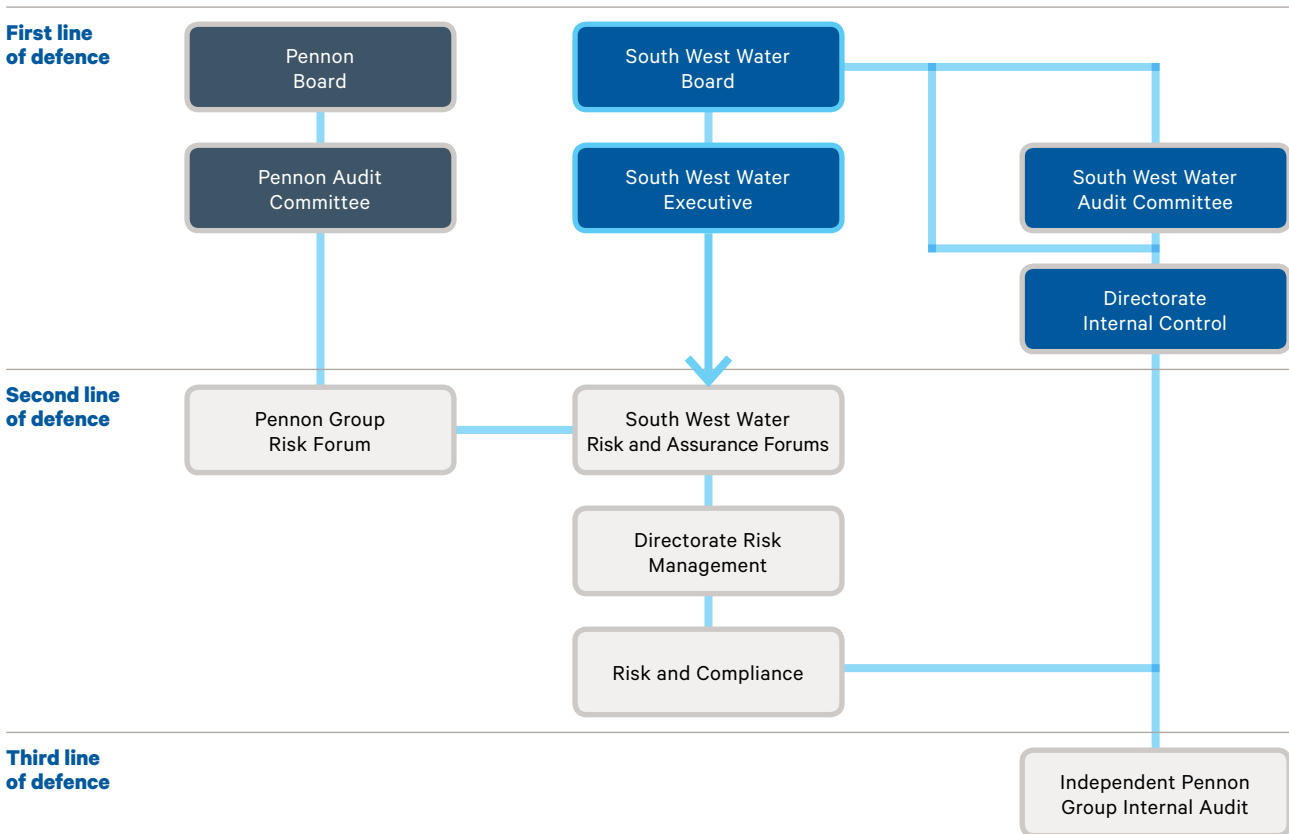
South West Water faces a variety of threats which, if they were realised, could materially impact our ability to provide water and wastewater services. The effective management of existing and emerging risks is therefore essential for long-term company resilience.

South West Water has a mature integrated risk governance framework (see figure below) which is embedded into the existing corporate governance structures and culture. Our risk management approach incorporates both top down and bottom up processes, ensuring a common understanding of the risk exposure and how they may impact on the achievement of business outcomes.

A consistent methodology is applied to the identification, evaluation and management of principal risks which considers both the likelihood of the risk occurring over a five-year period and the potential impact from a stakeholder and customer, financial, management effort and reputational perspective. Principal and other risks are captured in risk registers which are regularly reviewed and challenged.

We manage risk exposure, in line with our Board's desired risk appetite and tolerance levels, through the operation of a robust internal control environment which is aligned to the three lines of defence model. The Board, via the Audit Committee, obtains comfort over the effectiveness of the internal control environment through the reporting of outcomes from a variety of internal and external assurance providers. An explanation of each of the lines of defence is provided in the table overleaf.

Risk management framework



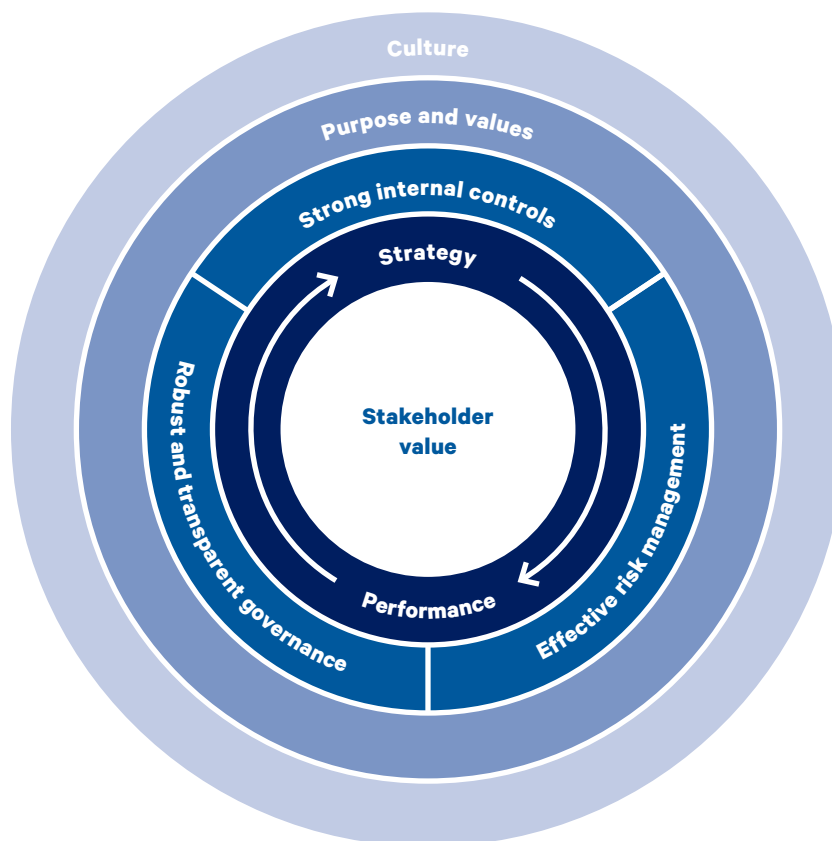
Delivery, governance, risk and management assurance continued

The key elements of the risk management process include			
		Key risk management responsibilities	Key assurance activities
First line of defence	Board	<ul style="list-style-type: none"> • Sets South West Water's strategic objectives • Establishes South West Water's risk appetite • Determines South West Water's principal risks • Ensures an effective internal control framework. 	<ul style="list-style-type: none"> • Quarterly reviews of South West Water's principal risks against the determined risk appetite.
	Audit Committee	<ul style="list-style-type: none"> • Reviews the effectiveness of South West Water's risk management framework • Reviews the adequacy of the internal control framework. 	<ul style="list-style-type: none"> • Perform quarterly 'deep dive' reviews on principal risks • Approves South West Water Internal Audit Plan • Receive reports on the outcomes of key assurance activities.
	South West Water Executive	<ul style="list-style-type: none"> • Day-to-day management of South West Water's principal and operational risks • Establishes the relevant South West Water-wide risk management processes and procedures • Maintaining the internal control framework. 	<ul style="list-style-type: none"> • Perform a thorough appraisal of the South West Water's risk profile quarterly • Monitoring of the South West Water's performance against KPIs and financial performance • Establishes and reviews policies, procedures and delegated authorities.
Second line of defence	South West Water Risk Forum	<ul style="list-style-type: none"> • Provides review and challenge over subsidiary/functional principal risks and mitigation strategies • Alignment of the top down and bottom up risk management process • Horizon scanning on emerging risks and opportunities. 	<ul style="list-style-type: none"> • Quarterly review of South West Water and subsidiary principal risks on a quarterly basis • Deep dive reviews of specific risks. Topics include; cyber security, health and safety and financial markets and liquidity.
	Directorates/ functions/ managers	<ul style="list-style-type: none"> • The identification and assessment of subsidiary level risks • Implementation and execution of appropriate risk mitigation strategies, aligned with the agreed risk appetite • Monitor compliance with internal control framework. 	<ul style="list-style-type: none"> • Review of subsidiary/functional principal risks on a quarterly basis by executive management teams • Risk and Compliance functions undertake compliance activities over ISO standards and other key business processes • Self-certification of compliance with internal control framework.
Third line of defence	South West Water Internal Audit	<ul style="list-style-type: none"> • Provide independent, risk based assurance on the effectiveness of the internal control framework • Coordination of independent assurance activities. 	<ul style="list-style-type: none"> • Regular reporting to Audit Committee and South West Water Executive on the effectiveness of internal controls and the outcomes from other third line assurance activity.

Delivery, governance, risk and management assurance continued

The Board and its governance framework

The Board acts as the main governing body for the purpose of oversight for the Group with additional supervision of the regulated business of South West Water being provided by South West Water's own Board. Our approach to governance is an integral part of our culture, guiding how we do business and create value for our stakeholders.



Stakeholder value

We deliver sustainable value for our stakeholders by providing high quality environmental infrastructure and customer services.

Strategy

Our strategy is to lead in the UK's water and waste sectors, invest for sustainable growth and drive value through efficiency.

Performance

Our financial and operational performance is driven by our strategic sustainability objectives.

Robust and transparent governance

We are committed to operating to the highest standards of corporate governance.

Effective risk management

We have a mature integrated risk management framework which is embedded into existing governance structures and ways of working.

Strong internal controls

We keep the effectiveness of our internal control environment under regular review and seek to continually improve our approach.

Purpose and value

Our purpose and values of 'being trusted, responsible, collaborative and progressive' will help drive our strategic priorities over the long term.

Culture

We are developing a culture characterised integrity and transparency, ensuring we are trusted and valued by all stakeholders.

Delivery, governance, risk and management assurance continued

Investment planning, scheme delivery and review

In addition to our established risk governance framework we use senior management and director committees to approve funding for investments such as capital projects, key improvement initiatives and change programmes. Following delivery, the committees also review project outputs and benefits to ensure these have been delivered as planned. The findings are used to inform our future plans. For example, for resilience mitigations this could be a re-assessment of the profile for the risk in question, which would then be re-appraised in our risk management process.

The committees are responsible for agreeing annual investment budgets and priorities, and the approval of specific budgets for promoted schemes during the year. Approval authority levels are dependent on scheme value or importance so that appropriate scrutiny and governance is assured across our whole investment programme and our Board has confidence in and visibility of our planning and delivery processes.

Resilience improvements planned for 2020-25

Internal assessment of risks and interventions, tested with customers and independently validated by third party consultants have resulted in a balanced programme of investments during 2020-25.

This will ensure continuous resilient services for our customers and range from operational, infrastructure and non-infrastructure asset improvements to long-term catchment scale investments.

Water resources

From a water resources perspective, our resilience performance to date has been sector leading. We have not had to implement any restrictions on demand since 1996. In addition our security of supply index – a measure of our ability to meet forecast demand to our levels of service – is at 100%. We are also classified as low risk by the Environment Agency in their Water Resource Management Plan process.

Our work has shown that our supply area should meet levels of service to customers in a 1 in 200 year drought based on our historic demands, so there is not an immediate need to address a supply – demand resilience issue. That said, we are still planning for the long term resilience of supplies.

We have played a leading role in helping set up the West Country Water Resources Group with a view to helping produce more integrated plans for our region, but also identifying possible opportunities to transfer surplus water in the Bournemouth Water area to areas of deficit. This work will continue.



For more information, see
[Water Resources Management Plan](#)

The more challenging natural environment and population growth means we are seeing increased stress on our supply system. This requires us not only to think smarter on how to get more reliability from our system, but also develop our people and tools for the future. Feedback on our Draft Water Resource Management Plan from customers and stakeholders was that in the round they would like us to go further on leakage and water efficiency, despite the cost this could incur.

Our overall approach in this area is to focus on a twin track approach of understanding and planning ahead, together with specific low cost, high value supply and demand interventions to improve resilience.

Amongst these plans is a programme of testing our existing drought options to see how they will perform in the future if we face more extreme droughts. We are also extending our work with the Met Office on future drought analysis. Unlike other parts of the country, the small, flashy nature of our catchments means drought analysis is much more sophisticated. It requires greater innovation in understanding and we will be continuing our partnering with the Met Office to use their expertise to help manage the future risk.



For more information, see
[Drought plan](#)

We will also be undertaking a study of our largest reservoir, Roadford Lake, which supplies a zone of nearly 1 million people, to understand the feasibility of a new pumped storage scheme to improve the resilience to extreme events.

Collectively these studies will help protect the resilience of current and future customers to more extreme droughts.

We are supportive of the move to an overall national framework for water resources and are part of the leadership group developing this with Defra, the EA, Ofwat and others. To support this and the future decision making we are developing innovative risk-based tools that can support our region but also input into the new regional plans that we will see in the 2020 to 2025 period. This will ensure that we better understand risk and avoid where possible less resilient end of pipe solutions. The framework will also upskill our staff for the techniques we will need in the future.

We have already identified a potential water transfer to Southern Water and have developed this collaboratively with Wessex, Bristol and Southern Water. Subject to approval of the Southern Water WRMP, we plan for this to be opened up to the market for competitive delivery in line with the timing of their plans. We do not expect this to have a cost impact on our customers.

Resilience improvements planned for 2020-25 continued

Case Study

Collaboration at a regional level – Wessex and Southern Water transfer

South West Water understand the need for collaboration with other water companies, and have recently helped to establish the new West Country Water Resources Group (WCWRG).

The group allows a more co-ordinated approach to water resources planning within South West England and neighbouring water company areas, and it has provided a useful forum for exploring potential inter-company transfer options.

Prior to the establishment of this group we successfully worked with our neighbours Wessex Water to implement a joint transfer scheme which provides additional resilience for supplies between the two companies. The transfer pipework makes use of a previously redundant main to an abandoned water treatment works.

While we do potentially have available capacity in the South West peninsula our geographical location makes significant transfers of water uneconomical at the present time, but there is potential for water transfer activity to take place in the Bournemouth region. Southern Water has identified through resource modelling that in the future (post 2025), during peak demand periods in drier years, there is a risk of shortfall in supplies in their area. A transfer from a neighbouring company with surplus supplies available offers a potential solution to this risk.

Feasibility work completed by the Environment and Upstream Services team, considering hydrological and licence conditions, has identified that up to 20 megalitres per day could be transferred to Southern Water.

South West Water could potentially provide water for transfer but this would be dependent on infrastructure investment in:

1. Knapp Mill water treatment works to increase throughput
2. The ability to move water around the Bournemouth water resource zone
3. A pipeline to transport water to the Bournemouth / Southern boundary.

In collaboration with the other members of the WCWRG, we have also considered the feasibility of using the Bournemouth distribution system to transport surplus water to Southern Water, from other adjoining companies' areas.

Leakage, water efficiency and metering

In line with the Ofwat PR19 Methodology, and our own findings from customer research in the development of our WRMP, we are targeting a significant 15% reduction in leakage by 2025 at no additional overall cost to customers. We will build on our industry leading track record of leakage performance to drive the delivery of this significant performance commitment and recognise that this will provide long-term benefits for our supply-demand position.



For more information, see
Delivering Outcomes for Customers

Complementing our leakage strategy are our ambitious plans for our internal water efficiency, domestic metering and per capita consumption.

We are developing internal markets within our wholesale business to drive behaviours which focus on the most efficient and optimal use of our resources.



For more information, see
Targeted Controls, Markets & Innovation

An example of this is where the use of potable mains water within our wastewater treatment processes has been reduced by developing alternative waste effluent recycling systems.

Our metering policy will continue the provision of free meters for customers opting for a metered supply, but we will extend this to all unmeasured customers, providing them both a measured and unmeasured bill so that they can make an informed choice.



For more information, see
Addressing Affordability & Vulnerability

We know that this will further reduce per capita consumption (PCC) and overall demand for water. Our work on promoting water efficiency will also help to drive down PCC.

Our deployment of meters will focus on digital technology, complementing our overall smart network vision, as we realise that this will support an improvement service offering in the long term.

Resilience improvements planned for 2020-25 continued

A key element of our strategy is demand side management. We are using innovative incentive schemes to influence customer behaviours to reduce the need for investment. Two such examples are GreenRedeem and Advizzo.

Case Study

Behavioural economics: water consumption

Using behavioural economics to help us connect with our customers and motivate them to save water, money and time.

Influencing customers to save money and water through behavioural economics

There are many areas where customers could be helped to save water – this may be purely by providing them with the information about how much they consume, or by providing incentives for customers who do actually use less. We have been working with two partner agencies, Green Redeem and Advizzo, to conduct pilots across our region with our customers.

greenredeem

Green Redeem

Green Redeem is an incentive scheme, through which people can earn points for pledging to undertake activities that will reduce their water usage.

Customers can access the scheme online and via mobile, where they can see the points earned, the money they have saved or compare their consumption to others in their area. The variety of information and the incentives are designed to engage a wide range of customers. The reward points can be redeemed with partner companies, donated to the overall community score or used to enter a prize draw. In effect, water consumption will be reduced through incentives and information provision including volume/cost and comparative data.



Case Study

Behavioural economics: meter switching

advizzo

Advizzo

Advizzo uses company data to help guide customers towards a more efficient use of water through personalised engagement via a number of routes (e-mail, apps etc.).

The company specialises in using big data and behavioural science, and has reported reductions in usage of between 4% and 7%. The system works by taking information, tailoring it to individual customers and then providing it to them in a digestible format, with easy navigation hints and tips for water saving.

Customers can view their usage and, crucially, see how they compare with other people in their area or with similar profiles. This use of descriptive and injunctive norms has been proven to incentivise customers to change behaviours to bring them back to the peer group average.

If the customer decides they would like to reduce their consumption there are tools and tips they can access on the Advizzo platforms.

There is an additional benefit for more vulnerable customers, as the information provided to South West Water can be used to ensure that customers eligible for a special tariff have been placed on it.

Protecting water assets from extreme events and providing operational flexibility

Identifying the risk of extreme floods affecting our water treatment assets, we will invest to protect a number of key sites from 1 in a 1,000 year flood events.

We also propose to upgrade or replace old control equipment as this is more vulnerable to cyber attack. This will deliver improvements in line with the Security and Networks Information Standard.

An additional risk we face relates to the impact of electrical storms on our treatment operation. We will install additional protection at a number of key sites which will ensure continual running of our sites in the event of severe storms. Additionally, we are reviewing our provision of fixed and portable emergency power supplies (generator plant) and are proposing a comprehensive and targeted strategy to ensure this aspect of our contingency arrangements is as robust as possible for the future.

We are also evaluating the benefits of installing advanced inverter and battery technology at our sites in order to provide more resilience for power supplies. This will also support the need to better balance the challenge of intermittent supply and irregular consumption that has arisen following the growth in renewable energy production.

Resilience improvements planned for 2020-25 continued

Case Study

Energy Storage



South West Water are actively engaged in pursuing this technology and have planned a pilot scheme to test the deployment of containerised inverters utilising battery technology.

The UK Government acknowledges that energy storage projects provide an opportunity to diversify the way we use available power and deliver it when it is needed. The technology provides an opportunity to make the existing grid network more sustainable long term by storing excess energy when it is generated and releasing it when it can be used.

Wind and solar energy are used to generate over 8% of the UK's electricity. The proportion of electricity from these sources, combined with electricity from new wave and tidal sources, is set to increase to 24% by 2020 to meet EU renewable energy targets (Source: Parliamentary POST note 464 May 2014 Intermittent Electricity Generation).

As a nation, we're moving away from coal and gas burning power plants and replacing these traditional technologies with renewable technologies. However, most forms of renewable electricity generation are deemed as disruptive due to their intermittency. The national challenge is to maintain the constant supply with a backdrop of intermittent supply and irregular consumption.

Energy Storage is fast becoming an essential ingredient to securing a future of being able to deliver a constant supply; providing a balanced delivery of energy onto the grid. Such developments are therefore crucial to local residents and businesses; ensuring that they may maintain usage of the energy needed to maintain day-to-day life/business.

Energy storage installations will make a valuable contribution towards achieving each of these objectives

South West Water are actively engaged in pursuing this technology and have planned a pilot scheme to test the deployment of containerised inverters utilising battery technology that will enable the storage of up to 0.09MW/0.096MWh of electricity that can offer grid balancing services and resilience against grid supply outages.

Case Study

New Bournemouth Water Treatment Works

The Bournemouth Water supply area is reliant on two key strategic WTW; Alderney WTW supplies coastal Bournemouth and a wide area of East Dorset, and Knapp Mill WTW supplies Christchurch and areas of the New Forest, as well as the Exxon refinery at Fawley. The latter is a site of critical significance to national infrastructure.

Both WTWs employ old slow sand filter (SSF) treatment technology as their primary purification process, with the recent addition of ultra violet (UV) disinfection following previous water quality challenges.

The following key investment drivers have been identified:

- SSF technology is recognised as outdated and insufficient to ensure consistent high quality drinking water commensurate with current regulatory expectations and requirements
- SSF maintenance and operation is resource intensive and difficult to automate. Both sites are challenging to operate under certain raw water quality conditions which occur in their surface water sources - the River's Avon and Stour
- Both sites have a history of water quality related incidents (commented on subsequently)
- The SSF treatment processes are also low-rate and occupy large land areas in comparison with modern treatment technologies.

Both sites are aged with the earliest SSFs at Alderney dating back to 1903 and at Knapp Mill from 1930 – both well in excess of their expected asset life (typically 60 years). As a result, a number of assets have been abandoned at each site or would require significant investment to refurbish and upgrade them to meet modern treatment standards and ensure the resilience of water supplies for future generations in the area. Without significant investment the resilience of both sites will continue to decline and operating costs will continue to increase.

Our assessment of the operational risks at both sites, as well as the concern and focus from the water quality regulator, has prompted a strategic review of options to secure the long term reliability of supplies for customers in the supply area.

Whilst the need for investment is clear, full replacement of the treatment facilities has only recently become achievable due to advances in water treatment technology which we are applying to good effect at our new Mayflower WTW in Plymouth.

Resilience improvements planned for 2020-25 continued

New water treatment facilities for Bournemouth customers

Supported by the DWI our most significant single investment in our plans for 2020–25 is the replacement of Knapp Mill and Alderney water treatment works in our Bournemouth Water operation. This builds on the success of our delivery of the new Mayflower WTW serving the Plymouth area in 2018. Both works have reached the end of their serviceable life and the existing old treatment processes are insufficient to ensure that the quality of drinking water supplies to the area can be maintained in all conditions. Knapp Mill is also situated on a flood plain which increases the risk to the treatment operation at this location. Our proposal is to replace the existing process with advanced treatment technology similar to that used at our Mayflower site and we are currently piloting the proposed treatment configuration before finalising the detailed design. Our intention is complete Knapp Mill and commence Alderney during the 2020–25 period.

Improving the resilience of our supply network with improved connectivity

We have identified a number of network improvements to improve the flexibility of our supply network and further develop the inter-connectivity of strategic supply areas. Additionally, we are planning schemes to address areas of single source supplies for key centres of population, and automation improvements to some of our strategic network.

Ensuring a responsive service all day, every day

We are also planning to improve our responsiveness to challenges to our operation by enhancing our operational preparedness and incident management capabilities. This will ensure our response and recovering ability is as efficient as possible. Our existing operational centre in Exeter will be developed to enhance our 24/7 strategic control and decision making capability. This will provide a seamless ability to 'ramp up' our response to incident scale when needed, but our focus will be on proactive management and control such that we identifying emerging issues and fix them before our customers become aware.

We work with our partners within our LRF to provide extra support during events and also use charity organisations such as the British Red Cross to supplement our response, particularly when customers might be considered vulnerable.

We are embarking on a transformation programme under our 'Resilient Service Improvement' project which will result in the delivery of a new service delivery model, based around the key themes of customer service, effective data and systems and our people strategy. The programme will ensure we deliver a responsive, agile and effective service delivery model with a focus on quality, right first time responses and proactive interventions.

Case Study

Wimborne duplicate main

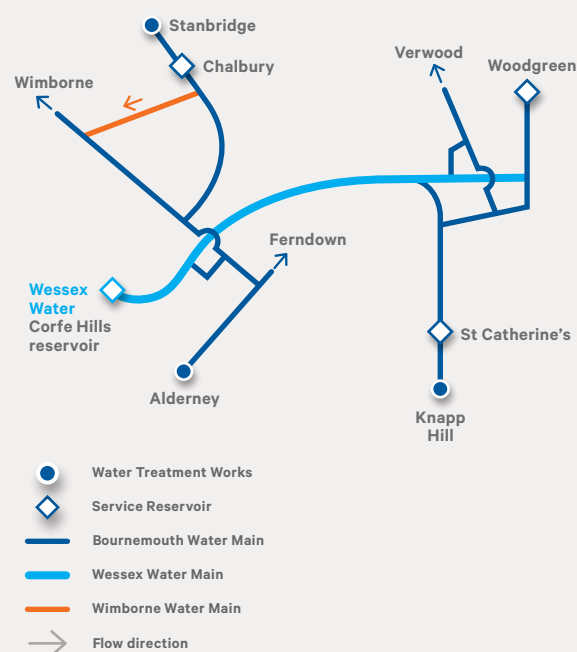
Customers tell us that should an interruption to water supply occur, they should continue to be able to receive water from an alternative source.

Where possible, we are looking to duplicate our larger mains to prevent unnecessary supply interruptions.

Over the past 20 years within the South West Water area, we have already installed a duplicate main in Cornwall to ensure a resilient supply to the west of the region and we are now undertaking further investment to duplicate mains within the Bournemouth Water area.

We are in the process of installing a dual supply to the Wimborne area, reducing the risk of unplanned interruptions and securing supplies for a significant number of properties. The scheme will also readily enable maintenance to be undertaken of the existing main which will have additional benefits of reducing discolouration events in the area.

The new main will enable Wimborne to have a dual resilient feed from both of our Stanbridge and Alderney sources.



Resilience improvements planned for 2020-25 continued

Case Study

Data Strategy to deliver Resilient Service Improvement

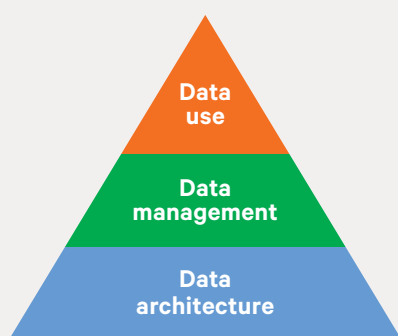
As reflected by our stated PR19 plans, our objectives are to deliver the most efficient and best in class levels of service to our customers. A key component to successful delivery is that we become more data driven.

Over the last year we have undertaken a number of projects beginning with our 'Resilience in the Round' review which provided us with a clear steer on where we can look to improve organisational ability across the thirteen themes.

As a result of this we have recently completed our combined operational performance and data strategy which we are confident will help take us to the forefront of industry performance.

We have developed a clear data strategy on how we use our data to transform performance in a number of areas.

Data strategy



Business objectives including forward view
Description of processes to achieve objectives
Change management approach

Inventory of data at subject level
Data management policy
Governance

Data collection
Data sharing approach
Access and usage

Catchment management

Our programme of natural water catchment management will continue. Now in its third cycle, the programme will encompass 80% of the drinking water catchments in our operating area. We consider this programme as an essential long-term component of our resilience strategy to deliver sustainable benefits to water quality, storage and flooding. Our approach during 2020-25 will further develop our approach to natural capital assessment to ensure that our investments are targeted to maximise the benefits for customers over the long term.



For more information, see
[Upstream Thinking](#)

Similarly our drainage catchment management programme will continue with our targeted sewer flooding improvement programme. We will build upon our work during 2015-20 on Downstream Thinking to carry out sewer separation work at those sites most at risk of impacting the environment or flooding customers during extreme weather events. Key projects to improve surface water drainage include: Camborne and Redruth, Torbay, Plymouth and Exeter where we plan work to prevent flooding and reduce the burden placed on sewers during periods of heavy rainfall.

Resilience interventions planned for 2020-25 continued

Our new Drainage and Wastewater Management Plans (DWMPs) will be formalised, building on our previous Drainage Framework Management Plans. DWMPs are key to cost-effective, sustainable performance improvements and resilience and will bring a range of benefits, including:

- Delivering integrated and holistic long-term planning for both sewerage and wastewater treatment
- Enabling planning for economic growth, resilience, protection and enhancement of the environment
- Facilitating partnership working and co-creation of solutions for multiple benefits to achieve best value to the economy, society and the environment.



For more information, see
[Drainage and Wastewater Management Planning](#)

Wastewater asset resilience

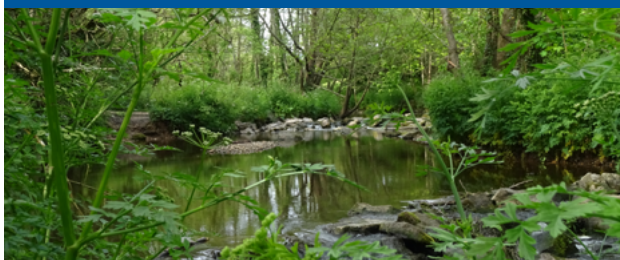
Additionally we will address, on a priority basis for our wastewater services operation:

- Coastal and fluvial erosion risk
- Cyber security for our key strategic wastewater assets
- Sewer flooding risk – our 25 year goal is to reduce the percentage of the population at risk by more than 50% (33% to 15%). By 2025 we aim to reduce the population at risk to 28% (currently at 33%)
- Wastewater treatment works flood response resilience - we identified sites within the Extreme Flood Outline (1 in 1000 year), flood contour (National Flood Resilience Review, September 2016). We plan to deliver 20 Response Recovery Plans per year following the 4R's approach through the DWMP process.

Resilience improvements planned for 2020-25 continued

Case Study

Catchment management/Upstream Thinking



Protecting water supplies, infrastructure and the environment through catchment management.

Since 2007, South West Water has been working on 'Upstream Thinking' – an initiative that takes a holistic view of the water management of entire catchment areas, Upstream Thinking focuses on achieving improved raw water quality and water storage in the natural landscape to make the provision of drinking water more sustainable. In turn, this will help to control the rate of bill increases in the future and, as a linked benefit, it also restores the natural environment and the ecosystems within it.

Our catchment management projects are looking after the land to protect the rivers. This work is aimed at improving raw water supplies by reducing agricultural run-off and pollution and increasing storage in the catchments through wetland and mire restoration. It is also protecting wildlife in the rivers and on the moors and providing additional environmental protection to South West Water's assets.

The land, rivers and coast of the South West are its natural capital assets. The key principle of Upstream Thinking is investment in Natural Capital to protect and enhance it.

Improvements to natural areas such as the moorlands are direct investments that improve the function of these habitats. Improvements to farm yard drainage and slurry storage, river bank protection measures and chemical spraying workshops for farmers are indirect investments that also protect the natural environment.

In both examples the investment goes to the land manager as a direct payment for an investment that delivers cleaner water (an ecosystem service).

We are also delivering other innovative developments in the area of payments for ecosystem services. We worked with Westcountry Rivers Trust to develop a reverse auction scheme with land owners in the Fowey catchment, Exmoor National Park Authority to deliver an annual payment to moorland owners with restored peatland on Exmoor, and we are developing agricultural pesticide amnesty and replacement schemes.

We will continue to develop the principles of investment in natural capital for the ecosystem services as they deliver a way of developing resilient catchments for the future.

The majority of the water we supply to our customers is sourced from rivers and reservoirs but the process of improving its quality now begins before the water arrives at our treatment works.

Case Study

Love Your Loo

It costs South West Water, and its customers, c. £5million each year to clear around 8,500 blockages on the sewerage network. About 65% of these blockages are caused by baby wipes, hygiene wipes, moist toilet tissue, cleaning wipes, cleansing pads and sanitary products being flushed down the toilet.

In August 2015 the 12-month Love Your Loo (LYL) campaign was launched in six areas to encourage customers to flush only the 3Ps – pee, paper and poo. The objectives were to understand which engagement and communication tools work best to change behaviours and reduce blockages and sewer flooding.

Our strategy was to change customer flushing behaviour in six towns with above average blockage and flooding rates.

A pan-regional profile, via website, customer newspaper and social media, was supplemented by a communications toolkit, for use across all six towns, which included a training module for staff, leaflets, postcards, posters, info graphic, rich media and branded disposal bags to be given free-of-charge to customers.

The campaign provided clear evidence that positive changes in behaviours around the disposal of wipes, sanitary products and non sewer debris down the toilet can be effected through positive face-to-face engagement with customers.

Customers benefit from an improved local environment with less risk of blockages leading to internal and external flooding.



Resilience improvements planned for 2020-25 continued

Case Study

Exmouth Downstream Thinking example

Using the IUDM we developed in AMP5, we have worked collaboratively with Devon County Council to resolve surface water flooding, sewer flooding and pollution in the catchment.

There has also been close liaison with East Devon District Council and the Environment Agency around the Tidal Defence Improvements work to ensure that any synergies and overlaps are identified.

Around 30 houses in Phillipps Avenue, Orchard Close, Green Close and Bassetts Gardens have had special water butts or underground tanks installed at their homes.

The project is now working with St Joseph's Catholic Primary School in Regents Gate, to install rainwater harvesting and other sustainable drainage solutions. This will allow the scheme to be progressed through to delivery by 2019/20, subject to Planning Permission.



Photographs from top to bottom:

Local resident washing clothes in rainwater; An underground rainwater harvesting tank being installed in Exmouth; Local resident, watering his plants with rainwater.

Case Study

Flood prevention in Camborne and Torbay

South West Water has been actively working to develop sustainable solutions to urban drainage problems.

To deal with external sewer flooding South West Water has been actively working with the Environment Agency, local authorities and other stakeholders to develop sustainable solutions to urban drainage problems as part of Defra's pilot project in the Camborne and Torbay areas.

The activities carried out have ranged from the identification and correction of illegal connections between businesses and the sewer system, awareness-raising work within the community and training for key stakeholders such as developers, business owners and highways staff.

Looking ahead, legislation may be required to confirm responsibilities for urban drainage and Sustainable Drainage Systems (SuDS). In the meantime, South West Water will continue to work proactively with local councils and other partners on joint initiatives such as these.



Case Study

Downstream Thinking

What's the problem?

Today, our towns produce more surface water than ever. Climate change, house-building and individual developments such as driveways, patios and extensions all contribute to this.

Flooded sewers

Too much water in our sewers causes flooding and pollution.

Carbon costs

Pumping and storing the water is expensive and uses a lot of land and energy.

Regulatory complexity

Several different organisations are responsible for different aspects of flooding.

What's the solution?

Planning for the long-term at a catchment scale, using Sustainable Drainage Systems (SuDS) to alleviate sewer flooding and reduce pollution of streams and rivers, and working in partnership.

Control at source

Stop rainwater entering the sewers, and put it to good use instead.

Work with nature

Ponds, ditches and rain gardens filter and store rainwater.

Partnerships

Sharing plans and pooling budgets and expertise.

EXAMPLES OF HOW WE ARE MAKING THINGS BETTER



Building understanding

Working with other flood-risk management authorities to develop integrated models and really understand the causes.



WaterShed projects

Piloting source control and natural solutions in our region.



Working together

By working with others we can resolve the whole issue, not just one part of it.

RESULTING BENEFITS



Quantity & quality

Less sewer flooding and pollution and reduced CSO spills.



Customer & environment

Greener urban environments which provide amenity and biodiversity benefits.



Sustainability & service

Lower costs, less energy usage, reduced carbon and increased system resilience.



Resilience improvements planned for 2020-25 continued

Bioresources

Good sludge management is a vital part of a resilient wastewater service as it serves the upstream treatment processes which are exposed to increasing extremes of climate. Protecting biosolids product quality is essential to provide products that are competitive and desirable in the agricultural recycling market. Ultimately, biosolids product quality protects the agricultural recycling route, which is the most cost-effective solution for customers and the local rural economy.

As well as our planned maintenance, the bioresources market creates new opportunities for innovative solutions that can improve the resilience and efficiency of bioresources services and the wastewater treatment provision that they support.

Maintenance driven improvements have been made to our bioresources asset reliability and availability, but continuation of this progress is needed.

Market approaches are already underway – we have set-up the principles of a shared (non-exclusive) resilience pilot arrangement with Wessex Water to avoid duplicating resilience provision to cope with asset downtime. We have also undertaken a cross border tankering pilot with Wessex Water to understand the logistics of transfers and compliance matters which can be applied to future arrangements with any suitable third parties.

We will also formally approach the market in 2020-25 to assess resilient and cost effective enhancement solutions that could work in the South West.

Our maintenance plans will continue to provide a resilient base service in terms of assets, but resilience is not just about assets or markets, but also how we operate and plan.

Organisational resilience - our people

We understand that our success in delivering a resilient service today and for the long term relies as much on us having the right people and skills in our business as it does on other activities like ensuring resilient assets or systems.

We instill strong values on our people. This starts even before we recruit new employees, with our work with schools, colleges and universities. Our company ambassadors support educational syllabus delivery, curriculum and training development and various training opportunities across all tiers of education. Illustrative of this is our ongoing partnerships, including that with the South Devon University Technical College which offers specialist programmes alongside traditional english, maths and sciences, working closely with industry such as ours to ensure future potential new recruits are well equipped for our business.

During 2020-25 we will continue initiatives such as these to ensure we meet future skills gaps and drive the required performance improvement culture for our business. Our values and culture will also continue to be reflected in our expanding apprenticeship programme, illustrated in the following case study.

Case Study

Workforce / skills / apprentices

Apprenticeships are a fantastic way to earn a living, gain valuable work experience and sought after qualifications.

The training of young people through apprenticeships is a key part of ensuring a sustainable supply of talent for the future. Since introducing our apprenticeship programme in 2011, 150 apprentices have joined the company. Getting our workforce onboard has been key to the successful introduction of our programme, particularly in areas such as mentoring and coaching.

As our experience and plans have grown, our apprentices and the company have achieved recognition from the wider business community. Around 5% of our workforce is now made up of apprentices and we boast an 80% conversion rate to permanent employment for those in front line roles. Apprenticeships were introduced to help us in our succession plans and they now form a key part of our business planning cycle, and greatly improve skills resilience.

South West Water provides roles in 15 operational and business disciplines and, from April 2017, the way in which apprenticeships are funded will fundamentally change. To mark this step change South West Water will now offer advanced, higher and degree level apprenticeships which can be undertaken by new recruits or existing members of staff.

We are currently working alongside EU Skills and other government bodies to develop and deliver a series of trailblazer apprenticeships to reflect the changing requirements in apprenticeship training and in our industry.

We are also spearheading the adoption of similar schemes within the rest of Pennon Group as well as stakeholders such as our H5O alliance.



Resilience improvements planned for 2020-25 continued

Our Resilient Service Improvement (RSI) project has a specific work programme on skills and staff development. This embeds a people strategy into the business but importantly against the resilience and service risks we face now and in the future.

To set the right incentives, we back-to-back our PR19 targets into staff objectives. Staff are already set objectives linked to the delivery of performance. As we move into the 2020-25 period, this will include the new targets we have and values that underpin our business.

Our people strategy is illustrated below:



Underpinned by the Pennon Vision and Values
 Bringing resources to life by being **TRUSTED, RESPONSIBLE, COLLABORATIVE** and **PROGRESSIVE**



As well as our impressive range of existing partnerships described elsewhere in this document, we will actively promote and contribute to new ones where these have the potential to improve our performance and deliver benefits to our customers.

We will continue to play a leading role in the Defra PIONEERs understanding how expenditure in catchments affects the environment. This offers significant long-term benefits within our region, but also to other water companies, as it examines how to bring different expenditure in a catchment together to get greater benefits.

Our partnership working will continue across both water and wastewater activities with our catchment based programmes, where our fully integrated programmes of work cross government, private, environment and educational sectors will continue to drive solutions to resolve or mitigate long-term service risks such as flooding or deteriorating water quality.

Extending this experience we are also fully supportive of the Isles of Scilly Community Venture which seeks to develop a Smart Islands vision for the island community. With our ambitious plans for the islands, we will be seeking to shape our solutions to align with the vision and drive synergies with other initiatives (such as solar PV installation) where this possible and beneficial.

Resilience improvements planned for 2020-25 continued

Case Study

Isles of Scilly Community Venture

The Isles of Scilly Community Venture is a Community Interest Company which aims to serve its community. The purpose is ‘to carry on activities which benefit the community and, in particular, to deliver products and services to business and residents on the Isles of Scilly, that share the benefits of a range of projects, that are targeted at achieving the aims of the Smart Islands programme and are in line with a low-carbon and sustainable future for the Isles of Scilly’.

Since its creation, the Community Venture has been funded through the European Regional Development Fund to develop renewable energy sources on the islands and provide low-cost electricity to customers on the islands through an ‘Energy Share’ electricity tariff. Solar panels have been installed across the islands, with other renewable sources such as waste to energy and intelligent smart grid technology to optimise renewable generation being developed and explored. Over time, the vision is for the Smart Islands programme, Smart Energy Islands to provide a range of services to allow the residents of the Isles of Scilly to use renewable, cheap electricity including the use of electric vehicles as low carbon car share and community transport.

The Smart Islands venture has a number of touch points with the proposed investment South West Water will be delivering on the islands over the coming years and in particular;

- Smart network operations for water and wastewater
- Smart metering and water efficiency incentivisation
- Bioresources anaerobic digestion and/or gasifier.

The Smart Islands programme and the Isles of Scilly Community Venture offer a unique opportunity of a multi-utility model of assets managed by a community interest company and with mechanisms in place to share the benefits back to the community. This approach offers a rapid transition to a low carbon future, creating resilience in providing products and services while delivering sustainable value for the community being served in meeting its own needs – all delivered locally. The potential for other communities is significant; whether it is another island community, rural communities, urban communities or new build towns and communities.



For more information, see [Isles of Scilly business plan](#)

Using innovation to deliver long term resilience

We have recognised that resilience is not going to be delivered solely by the traditional supply chain alone.

With Exeter University we have developed an Innovation Centre for Water, Waste and Environmental Resilience.

This draws together business and research in a way that has not been undertaken before to tackle the problems we face be it from pollutants in the environment such as micro-plastics and microbial resistance to upskill and retrain in new AI and augmented reality technology.

The opportunities go beyond private business. A cutting edge facility such as this could provide benefits and cost savings to government agencies also undertaking research to ensure we have a better environment.

Whilst South West Water customers will benefit from the development of the centre, the bigger prize is perhaps a more national focus. And that prize will not only be lower costs to customers or taxpayers, but also through better research and development of solutions to ensure a better, more resilient, environment.

Resilience improvements planned for 2020-25 continued

Case Study

Delivering a better environment through innovation

Why do we need change?

The environment is the foundation of our business. In the UK, it is estimated that annual costs of water and wastewater management exceed £8bn per annum; problems caused by flooding and water pollution cost taxpayers, in the face of Climate Change, an additional £3bn per annum; and the potential costs of emergency water restrictions could amount to tens of billions per annum. Thus, water and wastewater management is costly and these costs will rise if business as usual approaches continue. On a global scale, these challenges are even more acute.

A resilient and cost-effective water and waste sector is fundamental for a prosperous and sustainable future, and research and innovation will play a critical role in addressing both existing and future challenges.

How do we deliver change?

Currently, research and development in the sector is dominated by 'engineering' projects, focusing primarily on the built environment and development of technological solutions for management of water in urban and semi-urban areas. However, we argue that, in order to understand the 'whole water system', to optimise the benefits of better utilisation of the natural environment, and reduce the negative environmental consequences of water and waste management, the future must be holistic and involve expertise from (but not limited to); physical geography, environmental economics, behavioural psychology, biosciences, engineering and the social sciences.

In partnership with the University of Exeter we are promoting a new approach that brings these disciplines together with an investment of over £20m.

The Innovation Centre for Water, Waste and Environmental Resilience will deliver integrated and world-leading, transdisciplinary research with the water and waste sector, and its supply chain. The centre will pioneer holistic approaches to complex challenges, and 'whole systems' understanding to develop cost-effective and future proof solutions for the sector. Initial research objectives have been co-created by the University of Exeter and our staff within themes and programmes of research and innovation.

Innovation Centre for water, waste & environmental resilience



Why do our customers benefit?

The future is raising a range of new questions we need to answer. How do we deal with micro-plastics in the environment? How will water quality change under climate change? How do we meet the government's new 25 Year Environment Plan? By drawing the research together we can reduce costs of understanding the linked issues and use that to help develop integrated win-win solutions that don't just focus on traditional engineering.

The customer benefits however go much deeper. To meet the future challenges requires different future skill sets in the water sector. The centre allows us to train staff on new technology such as robotics or artificial intelligence. It allows us to unlock the potential for use of socio-behavioural solutions for example to promote water efficiency, or reduce chemicals entering the environment.

What opportunities does the centre have for the whole water sector?

The opportunities for the Centre go beyond our own customers and apply to the whole water sector. The scale of the opportunity for the sector is significant.



For more information, see
**UK research partnership investment fund:
Innovation Centre for Water, Wastewater
and Environmental Resilience**

Summary – Initial assessment of plan questions

South West Water has an impressive track record of providing a resilient service for customers which extends over several decades.

Our success is indicative of a robust approach to identifying and mitigating risks that threaten the provision of reliable water and wastewater services, so that services are not impacted.

We use the best available evidence to assess risks and priorities, whether these are from our internal performance monitoring or work with other water companies, stakeholders, regulators and other industries. We continually seek new and innovative ways to improve our approach by exploiting new technology, showing leadership in the industry and working in new partnerships.

Our provision of a resilient service is founded on strong operational resilience in addition to high standards of financial and corporate governance. Continuous Board assessment and oversight of resilience risks through a proven and established governance framework enables the delivery of a resilient and reliable service, now and in the future.

Our approach is fully informed by our industry leading customer research and engagement and our work with the WFCP. We understand our customers' concerns and priorities, we have shared with them our understanding of risks and consequences, and how these could be addressed. We have presented customers (and the WFCP) a range of options to mitigate the risks to a resilient service in their priority areas. In doing so, they understand the implications of affordability, short, medium and long term options. Their feedback is integral to our plan and has shaped our proposals for 2020-25. Customers have indicated a high acceptance of our plan, confirming that we have responded effectively to their priorities.

Our proposals for 2020-25 include a range of resilience improvements across our whole value chain, with a unique mix of asset focused interventions, natural catchment based solutions, behavioural and partnership initiatives which will help to ensure resilience now and in the long term.

Our proposals represent the best value for money we can achieve. We are pledging to deliver below inflation increases in customers bills, and lower bills in 2025 than 15 years earlier. Despite this we are targeting stretching performance improvements in the areas our customers value the most.

Our Board is fully committed to ensuring every customer receives a reliable and resilient service today and in the future.

We consider that we are an industry leader in our approach – our performance record testifies to this, and we are seeking to continue this in the future. We are confident that our approach and 2020-25 plan is high quality and addresses the resilience test area questions in the PR19 Methodology.

LR 1 How well has the company used the best available evidence to objectively assess and prioritise the diverse range of risks and consequences of disruptions to its systems and services, and engaged effectively with customers on its assessment of these risks and consequences?

This is explained in detail in our 'resilience methodology and framework' section of this document.

In summary the Board oversees a well established fully integrated risk and assurance governance framework that has delivered a consistently reliable and resilient service for our customers. This is a living framework that is continually refined and refreshed as appropriate.

The Board led risk management approach incorporates both top-down and bottom-up processes, ensuring a common understanding of the resilience challenges and opportunities that the business is exposed to now and in the longer term. This enables the Board to understand any potential detrimental impact to the achievement of providing a reliable and resilient service to customers.

We also engage directly with customers to understand their views on resilience (see appendix to this document which provides a summary of our engagement with customers in this area) through focus groups and surveys.



For more information, see [Engaging Customers](#)

The results from this research and engagement are then used to prioritise the relative weight of emphasis in respect of resilience. A good example of this is in respect of drought resilience and long term water resource planning where we developed a new innovative interactive video to clearly articulate the resilience risks and to understand customer views on this. This video enabled us to target tailored communication clearly with c. 400,000 customers from South West Water and Bournemouth Water on key issues to inform our Water Resource Management Plan.

The results from this engagement, other asset health resilience discussions at customer focus groups and all other research and engagement with customers has been triangulated, independently assured for inclusion in our customer valuation data set. This is used in our detailed cost benefit analysis to ensure maximum benefit to customers in the areas they value most.

Summary – Initial assessment of plan questions continued

In addition to our assessment of risks, and our customer own assessment, the Board commissioned two independent assessments of our operational, corporate and financial resilience. The results of the independent assessments were consistent with our own resilient assessment that our systems and services are resilient.

The Board regularly require the business to stress test systems and processes which have helped identify areas where resilience could be improved. These improvements were also consistent with the independent resilience assessments.

A key element of our risk assessment process and directly influencing our prioritisation of risks, we also engage directly with customers to discuss the risks we face and to understand their views on resilience, through focus groups and surveys (see appendix to this document which provides a summary of work undertaken). At PR19 we have extended this focus and also held specific discussions on asset health resilience. The customer insights obtained have then been used to prioritise the relative weight of emphasis in respect of resilience and the specific areas of systems and service focus. A good example of this is in respect of drought resilience and long term water resource planning where we developed a new innovative interactive video to clearly articulate the resilience risks and to understand customer views on this. This video enabled us to target tailored communication clearly with c. 400,000 customers from South West Water and Bournemouth Water on key issues to inform our Water Resource Management Plan.

This thorough review of risks and consequences of disruption to services and systems evidences that our business plan has been informed by a robust and systematic assessment of the resilience of our system and services, our customers' views about managing resilience and a comprehensive and objective assessment of interventions to manage resilience in customers' long term interests.

We are confident that our plan is based on a thorough and robust assessment of risks and consequences, informed by interactive discussions and research with customers to ensure a shared understanding and a prioritised approach that reflects their views on resilience.

LR 2 How well has the company objectively assessed the full range of mitigation options and selected the solutions that represent the best value for money over the long term, and have support from customers?

This is explained in detail in our 'resilience methodology and framework' section of this document.

In summary following the Board's assessment and prioritisation of risks and consequences of disruption to systems and services (noted above), a review of potential mitigations to reduce the risk to acceptable levels is undertaken through our risk and governance framework.

The mitigation options available to us have formed a key part of our engagement with customers on resilience. Alongside

developing an understanding of risks and consequences, we sought customers views on mitigation options, taking full account of impacts on service, affordability, and bills, both now and in the future. The results from this engagement, including resilience and asset health resilience discussions, has been triangulated with our wider dataset and independently assured for inclusion in our customer valuation data set. This is used in our detailed cost benefit analysis that determines our programme of investments and balance across risks and services, ensuring maximum benefit to customers in the areas they value most.

Our investment optimisation tool is the primary tool used to assess potential solutions to individual risks and overarching levels of risk over a 40 year planning horizon. This tool houses the cost benefit framework, bringing together both the costs of different individual risk mitigation intervention options and the customer valuations resulting from extensive triangulation of independently assured outputs from customer research and engagement activities. Different constraints are then used to assess different intervention options and levels of residual risk, based on what customers have told us matters most to them.

The outputs of the optimisation are then reviewed and challenged by Board, through the risk and governance framework, and including cross checking against high level objectives including affordability. Further testing with customers then follows, in focus groups, surveys and ultimately customer acceptability surveys, enabling the Plan to be modified as necessary to ensure it meets all objectives and achieves high levels of customer acceptability. The final result is a high acceptance of our plans from customers with 88% support from South West Water customers and 92% from Bournemouth Water customers.

This thorough review of risks and consequences of disruption to services and systems evidences that our business plan has been informed by a robust and systematic assessment of the resilience of our system and services, our customers' views about managing resilience and a comprehensive and objective assessment of interventions to manage resilience in customers' long term interests.

High quality, ambitious and innovative plan

In addition to the summary responses to each of the initial assessment of plan questions noted above, in the following section we have provided further information evidencing the high quality, ambitious and innovative nature of our plan.

All of the information is included in the documents directly from the document map or indirectly from links embedded in documents within the document map.

- Click on these documents to access them through the document map.
- These documents can be found in the reference folder on the sharepoint site.

Summary – High quality, ambitious and innovative plan

High quality plan features	Evidence & activities	Evidence location within plan
<p>The company has assessed long-term resilience in the round in accordance with the resilience planning principles</p>	<p>Integrated risk, governance and assurance framework aligned to Ofwat 7 resilience principles</p> <p>ODI governance framework</p> <p>Investment optimisation, cost benefit analysis and investment planning committee</p> <p>Internal resilience assessment from business risk forums overseen by Board risk committees</p> <p>Independent validation of internal operational resilience assessment by PA Consulting</p> <p>Independent validation of internal financial resilience assessment by KPMG</p> <p>CH2M asset health review</p> <p>Extensive review and challenge by the WFCP and LREI</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience
<p>The company will take an organisation-wide, integrated approach to identifying and appraising all the diverse risks to the resilience of services and interdependencies across different areas</p>	<p>Integrated risk, governance and assurance framework aligned to Ofwat 7 resilience principles</p> <p>ODI governance framework</p> <p>WFCP review and challenge</p> <p>Investment optimisation, cost benefit analysis and investment planning committee</p> <p>Internal resilience assessment from business risk forums overseen by Board risk committees</p> <p>Independent validation of internal operational resilience assessment by PA Consulting</p> <p>Independent validation of internal financial resilience assessment by KPMG</p> <p>CH2M asset health review</p> <p>Extensive review and challenge by the WFCP and LREI</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience
<p>The company will provide clear evidence that they have objectively considered and assessed the full range of resilience management options</p>	<p>Investment optimisation and cost benefit analysis</p> <p>Extensive engagement with customers through customer focus groups</p> <p>WFCP review and challenge</p> <p>Customer consultation on plans to 2025 and 2050</p> <p>WRMP customer and stakeholder consultation</p> <p>EngageOne interactive video sent to all 'my account' users to inform long term resilient supply of water decision making</p> <p>Direct procurement for customers</p> <p>Bid assessment for water efficiency, leakage and PCC</p> <p>ODI governance framework</p> <p>Community resilience improvement programmes</p> <p>Resilient Service Improvement project</p> <p>Extensive review and challenge by the WFCP and LREI</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Delivering outcomes for customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience

Summary – High quality, ambitious and innovative plan continued

High quality plan features	Evidence & activities	Evidence location within plan
<p>The company's proposals will reflect customer preferences and will be supported by commitments made to customers</p>	<p>Investment optimisation and cost benefit analysis</p> <p>Extensive engagement with customers through customer focus groups</p> <p>WFCP review and challenge</p> <p>Customer consultation on plans to 2025 and 2050</p> <p>WRMP customer and stakeholder consultation</p> <p>EngageOne interactive video sent to all 'my account' users to inform long term resilient supply of water decision making</p> <p>Direct procurement for customers</p> <p>Bid assessment for water efficiency, leakage and PCC</p> <p>ODI governance framework</p> <p>Community resilience improvement programmes</p> <p>Resilient Service Improvement project</p> <p>Resilience outcome,</p> <p>Stretching performance commitments and strong incentives to deliver customer priorities for services</p> <p>Industry leading leakage targets</p> <p>Significant reduction in risk top supply interruptions</p> <p>Extensive review and challenge by the WFCP and LREI</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Delivering outcomes for customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience
<p>The company will develop a plan that delivers long-term resilience in the round, which provides the best long-term value for money for customers</p>	<p>2050 Vision</p> <p>2050 Environment Plan</p> <p>88% (South West Water) and 92% (Bournemouth Water) customer acceptance of our plans</p> <p>Resilience Service Improvement project</p> <p>Community resilience improvement project</p> <p>Isles of Scilly</p> <p>Bournemouth Water integration and sharing of best practice</p> <p>Partnership working with Environment Agency</p> <p>Upstream Thinking and Downstream Thinking</p> <p>Biodiversity scorecard</p> <p>Paid Eco Systems (PES) services</p> <p>Behavioural change initiatives on water efficiency (GreenRedeem) and sewer blockages (Love Your Loo)</p> <p>Local Resilience Forum</p> <p>People strategy, skills development and apprenticeships schemes</p> <p>Sustainable balance sheet and finance</p> <p>Collaboration with other utility providers</p> <p>Extensive review and challenge by the WFCP and LREI</p> <p>WaterShare+</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Delivering outcomes for customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience

Summary – High quality, ambitious and innovative plan continued

High quality plan features	Evidence & activities	Evidence location within plan
<p>The company provides robust evidence that customers are not paying twice for resilience given the funding provided in previous price controls</p>	<p>CH2M asset health review</p> <p>Stable serviceability maintained throughout PR09 and PR14</p> <p>Innovation and improved processes driving resilience</p> <p>Behavioural change programmes (GreenRedeem, Advizzo and Love Your Loo) driving demand side improvements to service reducing the need for investment</p> <p>Resilience investment considered in the round</p> <p>15% leakage reduction being delivered with no incremental investment</p> <p>Extensive review and challenge by the WFCP and LREI</p> <p>Resilience Improvement Service project</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Delivering outcomes for customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience
<p>The company will present strong evidence that it has used robust, ambitious and innovative approaches to assess and mitigate risks to long-term resilience in the round. These proposals will be supported by stretching commitments to customers</p>	<p>Integrated Board risk and assurance framework</p> <p>Line of sight from Board to risk identification and mitigation</p> <p>Innovative behavioural change programmes (GreenRedeem, Advizzo and Love Your Loo) being rolled out across the region</p> <p>Further deployment of Upstream Thinking and Downstream Thinking</p> <p>Paid Eco System services</p> <p>Bournemouth Water merger and sharing of best practice</p> <p>Isles of Scilly</p> <p>Stretching performance commitments and strong incentives</p> <p>Independent WaterShare+ Panel oversight</p> <p>Customer share ownership scheme empowering customers to hold us to account on commitments</p>	<ul style="list-style-type: none"> ● Securing long-term resilience ● Engaging customers ● Delivering outcomes for customers ● Aligning risk and return ● WaterFuture Customer Panel report ○ Resilience

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Customer research and engagement

Resilience

In PR14 based on customer views we developed our outcome 'Resilience in extreme circumstances' recognising the importance of a resilient service. Since PR14 we have had a step change in conversations and responded to customers' concerns around resilience.

In our OPM research we asked customers how they felt about resilience and what sorts of risks and hazards they thought it was reasonable for us to be prepared for. Customers told us that to them resilience is about ensuring customers' demands for water are met during drought and other extreme weather conditions. They think less about issues such as supplies cut due to power cuts, as they trust we have plans in place to deal with reasonably foreseen events such as this (e.g. through backup generators).

Customers told us that they believe the resilience of the system is more of an issue today than in previous generations due to rising populations and changes to weather patterns. But customers were also clear that we should be reasonable in our approach to resilience; we can't protect against every risk, every time, no matter how unlikely.

Customers told us that our approach to resilience is about planning for what can go wrong – and either preventing issues from happening, or responding well and getting service back to normal quickly when they do.

In our PC research, customers told us they are concerned about the impact of changing weather patterns and associated increased risk of flooding. And that whilst they do not want or expect us to protect against all risks and all eventualities however unlikely, we heard again that we should prepare for reasonably foreseeable events, and this includes having the capability and resources in place to respond effectively when events do occur – so customers are informed, services are returned to normal quickly, and those in vulnerable circumstances are particularly protected.

In the PC research customers told us that our PR14 outcomes and performance commitments focused on priority resilience matters but were quite narrow in focus and needed to be much more inclusive of the wastewater side of our operations. In reviewing and refreshing our outcomes for PR19, we recognised that resilience is much broader than just extreme conditions, we have revised the title of our outcome to 'resilience'. We refreshed our performance commitments in this area to provide a more balanced approach across water and wastewater, and to deal effectively with all hazards in a practical way.

In our Post event surveys we have learned a lot from customers about our processes for dealing with disruptive events. In Cold snap research we engaged customers affected by the recent Freeze-Thaw event, and this gave even more insight into our processes and ways of working in extreme conditions.

We learned that we have effective processes in place to ensure customers have water from tanks, distribution points and direct delivery when things go wrong. Our communications are reasonable – although nearly half of our customers told us we could be better at communications before and during the event.

Our Cold snap research showed that those that received our text alert felt very up to date and supported; those that did not receive this relied more on friends, family, our website, and our staff at distribution points. A key lesson learned is that we need to promote our text messaging services more – which we have already started to do.

Our PSR customers have told us that they are well looked after and supported during events. However, from our Post event surveys and Cold snap research it is clear that large numbers of customers that could be classified as being in vulnerable circumstances are not aware of the PSR. A further key lesson has been to promote the PSR better – which we have also started to do.

“You still have to plan for the future even if it works now.”

OPM Research, Bude,
Aged 45+ SEG BC1C2D

“We're quite shortsighted. We want the tap to turn on and that be that, but South West Water have to think further”

OPM Research, St Austell,
Aged 25-45, SEG BC1C2D

Customer research and engagement continued

In the Cold Snap research our customers told us it was acceptable for there to be disruption to services given the scale of the extreme weather: the level of impact and disruption were proportionate to the severity of the weather. And they have lukewarm support for investing significant sums in the network to protect against such severe weather in the future. Whilst one third (34%) said we should invest more money to prevent this in the future the rest of our customers told us that this is not a high priority – and there are more pressing concerns for us to focus on today than investing to protect against such extreme weather. A balanced response was needed in our plans.

The feedback we received has provided the basis on which we have refreshed our long-term ‘WaterFuture’ vision which outlined the key customer priorities for services during 2020-2050. This was published in September 2017 and includes key long-term aims around resilience, namely to:

- Increase the resilience of our water network to reduce leakage and minimise interruptions in supply
- Improve the resilience of the sewer network to make sewer flooding a thing of the past

Based on this feedback we have also refreshed our performance commitments in our resilience outcome. We have replaced our PR14 measure around water interruptions: Supplies interrupted due to flooding of our sites with four measures which give a more balanced and rounded assessment of resilience.

- We have a measure of the number of supplies interrupted for more than 12 hours. This can be due to flooding, or other events such as third-party damage, freeze thaw conditions, catastrophic asset failure, lightning storms, etc. This measure now captures all hazards that can impact on water supplies, and by including a duration threshold, gives a strong incentive to respond and recover services quickly. This performance commitment is called Resilience in the round water.
- We have also introduced the measure Resilience in the round – waste. This is a measure of the number of resilience action plans we have in place – ensuring our sites are resilient to hazards, but also can respond and recover quickly.
- We have introduced two resilience measures proposed by Ofwat: drought risk and flooding risk. Our customers support these measures, especially the flooding risk measure.

We have set challenging targets to deliver for our customers. We have tested a range of scenarios around improving resilience and our proposed investment and targets are value for money and cost beneficial, given the benefits in terms of reduced interruptions, flooding and other disruption prevented.

We have presented and tested our resilience plans in Regional investment focus groups and our Acceptability testing. Customers find our plans to be challenging and support the investment and bill impacts. We have designed and tested ODI to ensure we deliver on our promises here. In line with what customers told us in our ODI Research and Balancing risk and reward research, we have applied financial incentives to our bespoke resilience measures.



For more information, see
[Engaging Customers](#)

WaterFuture Customer Panel engagement and assurance

The WaterFuture Customer Panel (WFCP) is made up of representatives from customer, business, stakeholder and regulatory organisations and its role is to provide the independent challenge to companies and independent assurance to Ofwat on:

- The quality of a company's customer engagement; and
- The extent to which the results of this engagement are driving decision making and are reflected in the company's plan.

The Panel also set up two sub-groups to work more closely with the company on research, engagement and vulnerability activities; the Research, Engagement and Vulnerability (REaV) sub group, and on legislative and statutory obligations; the Legislative, Resilience and Environmental Investment (LREI sub group) with both chaired by a member of the WaterFuture Customer Panel.

From the outset of the business planning process, the LREI sub group challenged the company on all aspects of resilience, from understanding customers' appetite for risk, through to ensuring that our proposed resilience investments are informed and supported by customers. This was a frequent discussion area at each LREI sub group meeting and the majority of WFCP meetings.

We shared with the WFCP that resilience is one of South West Water's guiding principles, as detailed in our 25 year future outlook which we published in 2012. More recently in June 2017 we published our progress and plans for the provision and maintenance of a long term resilient and reliable service for customers, demonstrating our in depth understanding of resilience, and our plans to improve it, sharing this with the LREI sub group for review.

We were challenged on the extent to which customers understood resilience, and we were able to share our customer research illustrating that customers, often considering resilience from a long-term planning perspective, expect the service they receive to be resilient to all but the most extreme circumstances. We shared that customers expect us to plan for predictable low risk, high impact events including power cuts, severe weather, pollution and cyber crime amongst others. However, crucially, they recognise that we cannot, and should not try to be resilient to everything, recognising the trade-offs involved in improving resilience.

The WFCP and both sub groups were particularly impressed by the interactive online survey gauging customer support for measures to ensure the resilience of our long term water resources which provided customers with a range of potential supply and demand side options. We were challenged on whether this survey also considered future customers which we were able to confirm as it wasn't restricted to current bill payers.

The outputs of our customer engagement in this area demonstrated that customers are more supportive of demand side (such as metering and reducing leakage) rather than supply side (accessing more water) solutions, which is what we've reflected in our investment plan.

We shared our proposed investment programme with the WFCP and the LREI sub group, highlighting key investments on resilience which the Panel, along with confirming that our investment programme would ensure 100% compliance with all statutory and quality obligations, which included a dedicated fund for resilience.

Following the Freeze and Thaw in March 2018, we shared an overview of our response with the WFCP and the LREI sub group, who were supportive of our response in such extreme conditions, but challenged us to learn lessons for the future. We shared the results of the post-event customer surveys in the areas worst affected which further reiterated customer views on resilience, with the WFCP satisfied that our resilience approach truly reflected the views of customers. We also asked Professor Ian Bateman, a member of the LREI sub group to carry out an independent review of our Freeze and Thaw submission for Ofwat, who was impressed by SWW's response to the Freeze and Thaw extreme event, but further referencing the opportunity to learn lessons.

In October we shared with the LREI sub group how we had appointed an independent consultancy to undertake an assessment of resilience across the whole business. We used the outputs and recommendations of this assessment to develop our Resilience Service Improvement (RSI) project, using input from over 200 employees from across the business, from Board members to apprentices, to develop and deliver a strategy for increased resilience and an improved customer experience. We also confirmed that we had incorporated the findings and our lessons learned from the Freeze and Thaw event into this project, delivering targeted improvements to the issues customers had experienced.

Through the information and research we shared, and the clear priority given to investment in this case, the WFCP were confident that ensuring a resilient service to customers was central to our plan, and confirmed that our approach and proposals to increase resilience in our plan full considered customer views.

WaterFuture Customer Panel engagement and assurance continued



For more information, see
WaterFuture Customer Panel Report to Ofwat



“South West Water seemed to shine on the topic of keeping customers informed which is where many other companies were criticised during the Freeze and Thaw.”

Richard Lacey
Chair, BW Customer View Group

“South West Water managed their response to the Freeze and Thaw admirably.”

Barbara Shaw
CEO, Westward Housing

Board assurance

The Board oversees a well established fully integrated risk and assurance governance framework that has delivered a consistently reliable and resilient service for our customers. This helps us to live up to our values of 'trusted' and 'responsible' in the way we provide service to our customers. The Board led risk management approach incorporates both top-down and bottom-up processes, ensuring a common understanding of the risks and opportunities that the business is exposed to now and in the longer term. Actions and mitigations are scrutinised by the Board to understand any potential detrimental impact to the achievement of providing a reliable and resilient service to customers.

In addition to the oversight of internal assessment of risks, the Board commissioned two independent assessments of our operational, corporate and financial resilience. The results of the independent assessments were consistent with our own resilient assessment that our systems and services are resilient.

The Board regularly require the business to stress test systems and processes which have helped identify areas where resilience could be improved. These improvements were also consistent with the independent resilience assessments.

As a result the Board has overseen the development of a resilient service improvement initiative aimed at addressing known risks where the resilience of our systems and processes could be improved further. One of the work streams included under this resilience improvement initiative is an ambitious collaboration with Exeter University to develop an innovation centre for water, waste and environmental resilience. This along with our partnership with UTC and apprenticeship scheme will ensure we retain and develop a highly skilled workforce with appropriate infrastructure and systems to deliver a resilient service for the long term.

The Board has also attended customer focus groups and workshops to ascertain first hand customer views on resilience. The Board's involvement in the Freeze and Thaw incident following Storm Emma provided valuable insight into the resilience of our service under the most extreme circumstances. Board review of customer feedback from surveys with those communities most impacted by the incident has been invaluable in helping to shape and inform our plans for the future and specific community resilience improvement projects.



For more information, see [Securing Trust, Confidence & Assurance](#)

This direct involvement in this area of the plan has enabled the Board to be confident that **our business plan has been informed by**

- **A robust and systematic assessment of the resilience of our system and services**
- **Customers' views about managing resilience**
- **A comprehensive and objective assessment of interventions to manage resilience in customers' long term interests.**

This is included in our signed Board assurance statement.



For more information, see [Board assurance statement](#)

Professional credentials of third parties

ICS Consulting

ICS Consulting was established in 2000 and specialises in providing consultancy and support services to infrastructure businesses and regulators in the UK, Europe and Middle East. Their expertise covers:

- Customer and stakeholder engagement
- Regulatory economics, covering policy analysis and development
- Economics analysis, including assessing monetary benefits of investment and cost-benefit analysis
- Investment appraisal and optimisation, covering the design and implementation of bespoke asset management systems.

ICS is highly experienced in all aspects of the regulatory and business planning processes in the water industry and supports a number of key periodic review activities, namely:

- Customer research (priorities, willingness to pay, acceptability testing)
- Regulatory analyses (outcomes and incentives design, tariff formulation)
- Investment optimisation and business plan development (cost benefit analyses, scenario planning, business case development)
- Risk assessment (risk appraisal and assessment).

Jacobs

Jacobs Engineering Inc (Jacobs) were appointed as South West Water's core technical assurance partner for Annual Reporting as well as the PR19 process. This is delivered through Jacobs' subsidiary company, Halcrow Management Sciences Ltd (HMS). HMS has global experience in strategic business planning and regulation for water companies. HMS is a ring-fenced company with its own Board of Directors and governance and quality management system. Jacobs became HMS's ultimate parent following the acquisition of its previous owners CH2M HILL in December 2017. Halcrow Management Sciences Limited (HMS) has been a leading provider of technical assurance services to the UK water industry since privatisation in 1989.

Their personnel all have regulatory, water and wastewater engineering, contractual and economics backgrounds and have specialist expertise in all aspects of utility regulation, diagnosis and performance assessment. With this capability, HMS offers a detailed appreciation of the major themes related to effective regulation with a particular emphasis on technical assurance of information through methodology and process review.

Despite changes in the regulatory environment in 2012 to a lighter-touch, risk-based, self-assurance reporting regime, South West Water, along with most companies, opted to secure the services of experienced independent technical advisors to provide assurance to its senior management, Board of Directors and parent company.

Throughout the PR19 process, Jacobs have been working in partnership with South West Water to help ensure that its business plan submission receives suitable levels of independent assurance such that the senior and executive management, Board of Directors and in turn, the customer challenge groups, Ofwat and other stakeholders can be confident about the foundation of the information presented. Their team is led by Graham Hindley who is a Chartered Civil Engineer of over 20 years' experience and is a Director of HMS Ltd.

KPMG

KPMG is a leading provider of professional services, including audit and advisory solutions integrating innovative approaches and deep expertise to deliver real results. They have extensive water industry experience.

They have worked with South West Water over a number of years, acting as financial advisor at PR14 as well as reviewing retail margins, default tariffs and providing retail modelling advice.

They have provided expertise in a range of relevant areas including analysis in respect of options for direct procurement and supporting the development of South West Water's approach to trading in the Water Resources market, including reviewing South West Water's market and procurement code. This follows extensive involvement with multiple companies within the industry providing advice ahead of the opening of the non-household retail market.

Their team includes members who have previously been involved in the development of market frameworks in the industry as well as policy for PR19.

PA Consulting

PA Consulting is an innovation and transformation consultancy and they believe in the power of ingenuity to build a positive human future in a technology-driven world. As strategies, technologies and innovation collide, they turn complexity into opportunity.

Their diverse teams of experts combine innovative thinking and breakthrough technologies to progress further, faster. Their clients adapt and transform, and together they achieve enduring results.

PA Consulting are over 2,600 specialists in consumer, defence and security, energy and utilities, financial services, government, healthcare, life sciences, manufacturing, and transport, travel and logistics. They operate globally from offices across the Americas, Europe, the Nordics and the Gulf.

They have used their expertise to support South West Water in developing our Resilient Service Improvement (RSI) programme – through design, development and in supporting the delivery of the programme.



**South West
Water**



**Bournemouth
Water**

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