Ref 4.1

PR19 Resilience in the Round Overview

September 2018

Contents

PR19 Resilience in the Round: Overview

Executive Summary

Improving resilience to provide an improved service for our customers, now and in the long-term, is at the centre of all that we do.

We were at the forefront of implementing resilience as one of the first water companies in the UK to create a bespoke resilience framework, our Resilience Wheel. This wheel underpinned the development of our long-term strategy Welsh Water 2050 and drove our resilience improvement plans. When Ofwat subsequently released their resilience guidance, our wheel showed clear alignment with their key themes of operational, corporate and financial resilience.

We have identified, assessed and prioritised the risks, trends and challenges we anticipate we will face in the future. This assessment is key to our internal governance process and our long-term strategy, which we developed with our customers.

We have developed affordable and effective mitigation approaches, in partnership with customers and stakeholders, to protect us from, reduce the impact of, or improve our recovery from these shocks and stresses. Our approaches also prepare us for the unexpected events which are likely to be more frequent and extreme in our changing world.

Our resilience approach ensures that our investment has both business wide benefits and wide-reaching resilience value for our customers, stakeholders and the environment.

This appendix gives an overview of our resilience in the round approach. Further information has been detailed in our operational resilience, corporate resilience and financial resilience appendices.

1. Introduction

1.1. Purpose and scope of document

We are creating a resilient organisation by ensuring that all areas of our business are resilient. Within this document we have focused on providing an overview of the resilience work we do across the business. This document sets out how we have considered future shocks and stresses that may impact our whole business and provides examples of our mitigation approaches and their wide-reaching benefits, or resilience value.

This draws together our three resilience appendices; corporate resilience (See *PR19 Corporate Resilience Ref 4.2*), financial resilience (See *PR19 Financial Resilience Ref 4.3*) and operational resilience (See *PR19 Operational Resilience Ref 4.4*).

1.2. Resilience at Welsh Water

We live in a fast-changing world, with changing demographics, a changing climate, and increasing pressure on our infrastructure, people and finances. The impacts of these trends are being seen at individual, organisational, city and national levels.

These changes bring increasingly unpredictable shocks and risks and push systems to their point of failure. Resilient organisations are those with the ability to survive and thrive in these conditions.

At Welsh Water, our vision is 'to earn the trust of our customers, every day'. For our customers, safety and reliability is a basic expectation and a fundamental aim for our service[1,2]. They have told us that prioritising both the reliability and the quality of our service is key in the future[3,4]. They also recognise the need to include new and innovative solutions while also investing in maintenance and ongoing repairs[5].While they have told us that we are currently seen as a highly trustworthy organisation, they also say that if we start to provide a poor service this trust could be rapidly eroded[6]. We therefore recognise that it is essential to plan, invest and prepare for the future to increase the reliability of our service.

We have taken the following working definition of resilience, based on 100 Resilient Cities[7], and published in January 2017:

"Resilience is the capacity of individuals, communities, institutions, businesses, and systems to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience."

We are committed to building our resilience, and as such it is a recurring theme throughout our business and our plans for the future. Building resilience will enable us to grow and thrive in the face of a range of uncertain and unexpected events, and continue to provide the best service possible to customers. In return, if we have the trust of our customers, we can seek their active participation to help us improve the quality and resilience of our services and the environment. For example, by working with us to reduce water usage, tackle leakage and to reduce problems caused by sewer blockages.

1.3. Our resilience journey

Resilience Wheel

We were one of the first water companies in the UK to undertake a comprehensive assessment of its resilience. In early 2017, we commissioned Arup to work with us to create the Welsh Water Resilience Wheel, shown in Figure 1, and used this resilience framework to identify areas of strength and areas for improvement. This wheel was used to underpin our long-term strategy, Welsh Water 2050[8].

We have split our Resilience Wheel into three key areas: people, infrastructure and environment and finance and governance.

- The people theme covers how we work with our customers, look after our employees, and the work we do to protect the health of customers.

- The infrastructure and environment theme covers how we build and manage our assets to be robust, use resources efficiently, and how we work with the natural environment.

- The finance and governance theme covers how we keep our business financially resilient and affordable for our customers as well as ensuring that we have good leadership and assurance processes.
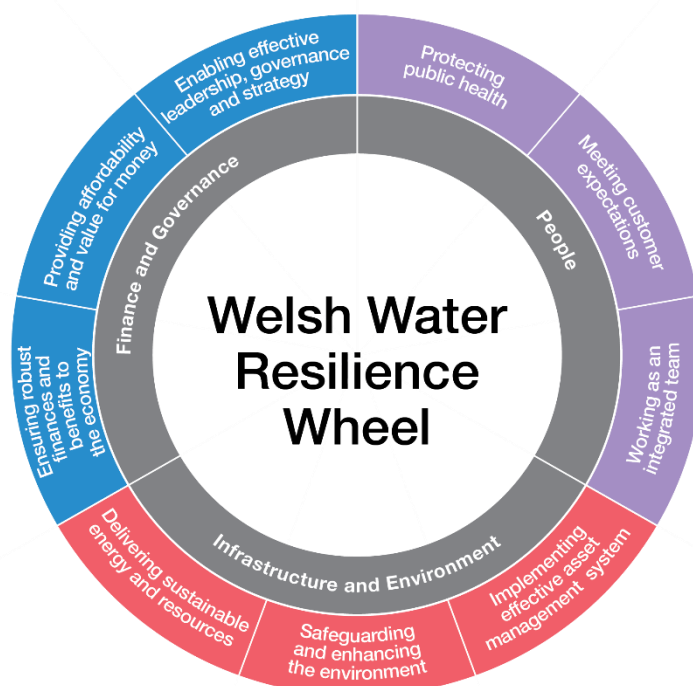

Figure 1: Our resilience wheel showing resilience themes and resilience indicators.

We recognised that to improve resilience we needed to consider the overall approach we were taking rather than just looking at individual actions to mitigate single risks. We therefore embedded the resilient qualities from the City Resilience Index[9] into our Resilience Wheel, to provide us with the framework for our approaches to our resilience work.

These qualities are summarised as follows:

- Reflective: using past experience to inform future decisions
- Resourceful: recognising alternative ways to use resources
- Inclusive: Prioritising broad consultations to create shared ownership in decision-making
- Integrated: bringing together a range of distinct systems and institutions
- Robust: well-conceived, constructed and managed systems
- Redundant: using spare capacity purposively created to accommodate disruption
- Flexible: Willingness and ability to adopt alternative strategies in response to changing circumstances

Developing our Resilience Wheel

To develop our Resilience Wheel and approach, we worked with Arup, a leading multidisciplinary consultancy, and others, drawing on best practice from a range of institutions and cities around the globe. We undertook a literature review of relevant frameworks and guidance documents ranging from local, national and international which were then applied to the water sector. This included drawing on government guidance from the Cabinet Office, international best practice like the City Resilience Index, and private sector research. The range of sources we used to build our framework and process is shown in Figure 2.

For example, we reviewed the UK's Cabinet Office Guidance[10] and the City Resilience Index[11] (developed by Arup with support from the Rockefeller Foundation) and used by the 100 Resilient Cities programme to improve resilience across the world. We built on this learning by visiting cities within the network, including New York and Vejle (Denmark).
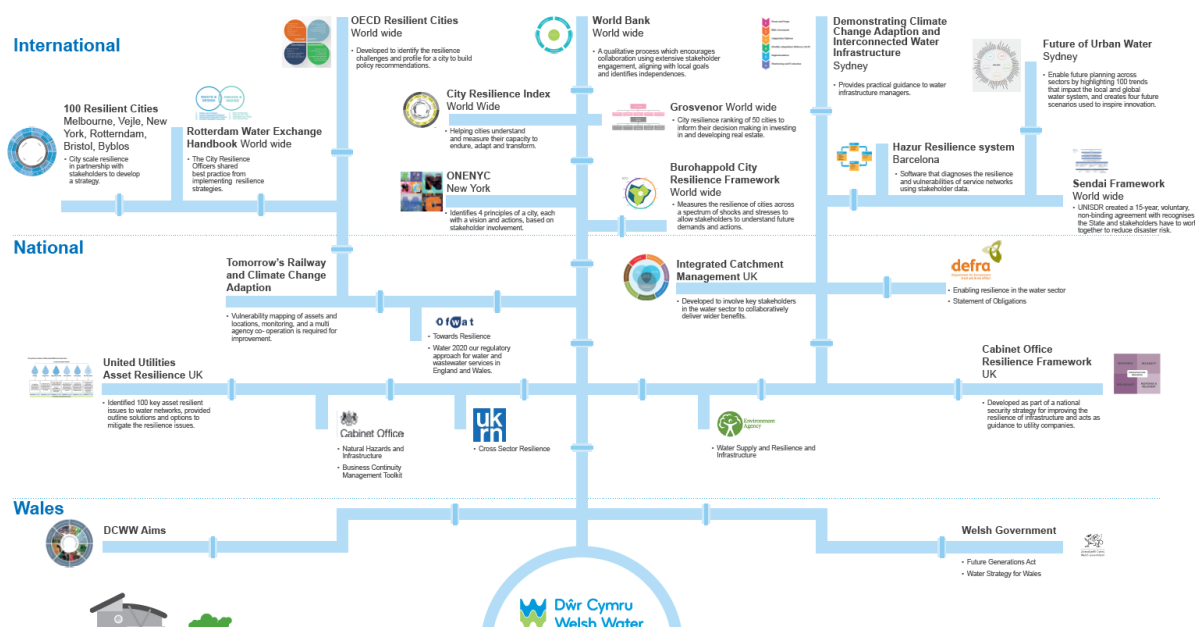

Figure 2: The local, national and global insight we used to develop our resilience framework in 2017

Welsh Water 2050

In response to the long-term trends that we are facing, globally and locally, we have developed our long-term strategy, Welsh Water 2050. Our Resilience Wheel was a key part of the underpinning evidence in the development of this plan. Meaningful consultation with our customers was a key part of developing this strategy, which has helped us clarify, articulate and frame our strategy around the issues that are most important to them.

To be responsive to the needs of both current and future customers, and following extensive consultations with our customers and stakeholders, we intend to make good progress towards delivering on the long-term commitments set out in Welsh Water 2050 during the next asset management period 2020-2025 (AMP7). As such, our PR19 Business Plan forms in itself a part of our long-term strategy. Welsh Water 2050 describes the 18 Strategic Responses needed to address the challenges facing our business in the future.
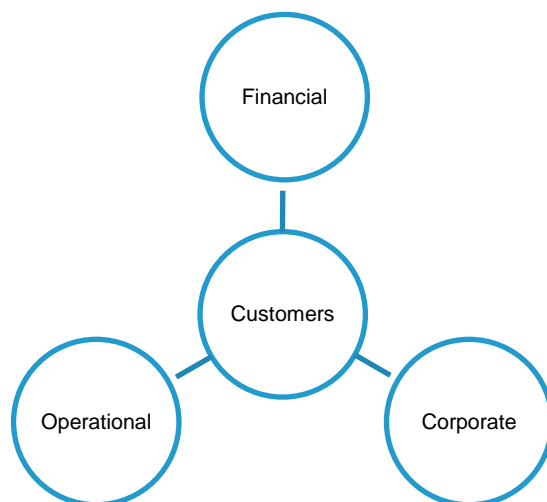
Figure 3: Resilience in the Round from Ofwat, Delivering Water 2020

1.4.   Resilience in the Round

Since the Resilience Wheel was originally produced, Ofwat published its guidance on this topic, 'Resilience in the Round' in September 2017[12] and the final PR19 methodology[13] in December 2017 (Chapter 5: Securing Long-Term Resilience and Appendix 4: Resilience). These documents set out some ways companies might respond to the resilience challenge, though it explicitly encourages companies to innovate in how they approach resilience planning.

Ofwat's definition is "Resilience is the ability to cope with, and recover from, disruption and anticipate trends and variability in order to maintain services for people and protect the natural environment now and in the future." This definition closely mirrors our definition.

Ofwat provides definitions for the three resilience elements:

- Operational resilience: the ability of an organisation's infrastructure, and the skills to run that infrastructure, to avoid, cope with, and recover from, disruption in its ability to provide critical services to customers.

- Corporate resilience: the ability of an organisation's governance, accountability and assurance processes to help avoid, cope with, and recover from, disruption; and to anticipate trends and variability in its business operations.

- Financial resilience: an organisation's ability to avoid, cope with, and recover from, disruption to its finances.

We have created three documents to support our PR19 Business Plan to cover each of these elements, and how these respond to our key resilience challenges.

Our approach maps well to Ofwat's themes of operational, corporate and financial resilience, shown in Figure 4 and we share Ofwat's view that resilience is for the ultimate benefit of customers and the environment. Ofwat's methodology also highlights many of the concepts that fundamentally underpin our approach, such as the concept of resilience value or the resilience 'dividend'. In line with Ofwat's guidance, our Resilience Wheel takes a systems-level approach to resilience.
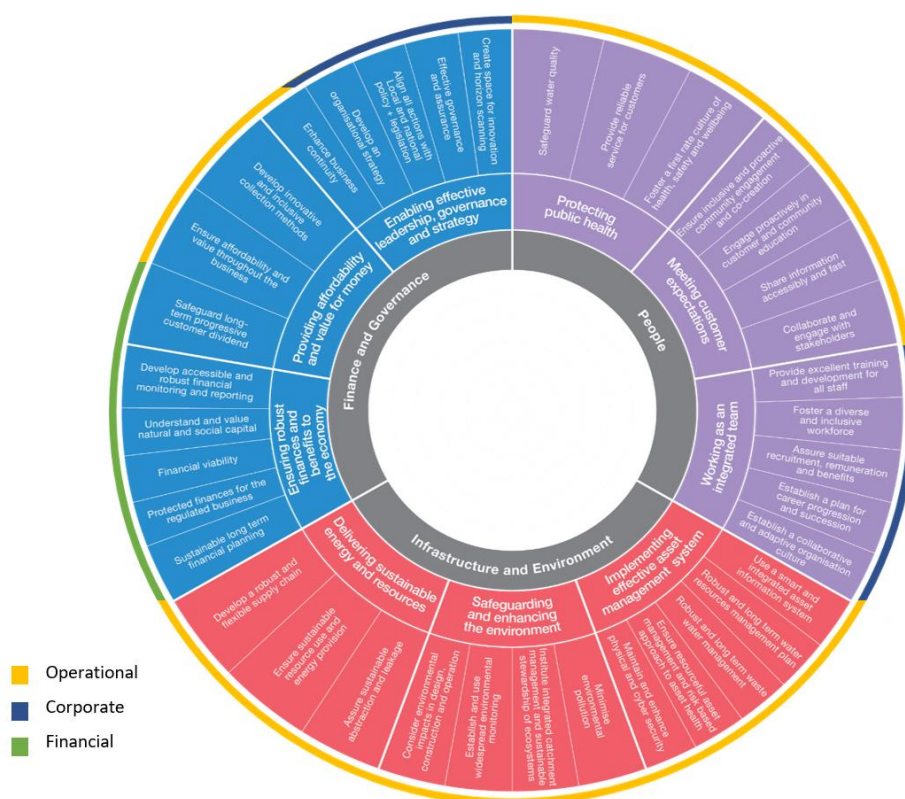

Figure 4: How Ofwat's three themes of resilience are reflected by our Resilience Wheel. The outer ring of orange, green and blue show our indicators which reflect Ofwat's resilience themes

1.5.   Our detailed resilience appendices

This document draws together all the work we are undertaking now and in the future to make our business more resilient and create a reliable and good quality service for all our customers.

Underpinning this document are the detailed appendices on resilience, which provide further details of the shocks and stresses that may impact our business, our mitigation approaches and the resilience value of this work. These are our corporate resilience approach (See *PR19 Corporate Resilience Ref 4.2*), our financial resilience approach (See *PR19 Financial Resilience Ref 4.3*) and our operational resilience approach (See *PR19 Operational Resilience Ref 4.4*). This structure is shown in Figure 5.

Figure 5: The structure of our resilience documents

2. Resilience Challenges

2.1. Context

Across the world the water industry is seeing growing shared challenges, particularly from extreme weather events and the resulting issues of drought, flooding and freeze-thaw. These are the kind of events that will become more frequent as a result of continuing climate change. This is reflected in Ofwat's view that the key challenges are population growth and climate change[14]. The UK has seen recent extreme shock events that have impacted service provision across water companies in 2018, namely Storm Emma and the extended summer heatwave.

On top of these global and national issues, we operate in a unique context. We are one of only two companies that serves customers across two of the UK's government administrations. The unique social, political, economic and geographical circumstances of Wales pose important opportunities and unique challenges for how we operate as a business.

We operate over large, relatively sparsely populated areas where agriculture is often the dominant sector. Whilst the geography of the area that we serve means we enjoy a high-quality environment, it puts pressure on our base operating costs due to the relatively high number of assets per customer and remoteness of many of our sites.

We also experience different weather patterns in Wales and need to ensure our networks can deal with this. For example, we have far higher levels of rainfall compared to the average for England which, when combined with our mountainous terrain, significantly increases the stress on our sewer network.

2.2. Shocks and stresses

We have considered both shocks and stresses when looking to the future. Shocks are one-off disruptive events, such as floods, fires and cyber-attacks, which are often addressed with traditional risk management techniques. Stresses are chronic conditions that weaken the function of systems in the long term such as climate change, demographic change or ageing infrastructure. At certain tipping points these stresses can be felt as shocks.

Although short-term shocks and long-term stresses can be reviewed, assessed and prepared for, in the current dynamic environment the frequency and diversity of these challenges is increasing. This means that we must be more prepared for increasing uncertainty, be flexible and adapt to enable us to respond to currently unknown disruptive events.

We assess short term shock events using our Top Tier Risk Register, and this enables us to identify and manage our key risks. In this register, we review key risks to allow us to identify investment required in key mitigation actions. We also undertake other specific assessments, such as financial stress testing, which uses scenarios to ensure that our finances are robust and have the redundancy to invest in our business to deal with shock and stress events.

We have a system of controls in place designed to manage the most significant risks faced by our business. Our Board not only sets strategic aims and ensures good governance, but also sets our risk appetite and ensures that effective controls are in place for the business. Therefore, the role of our Board is to ensure the business is resilient to external shocks whether environmental, economic, or financial. Where that resilience is threatened, by single points of failure, ageing assets, scarce skills,

or insufficient financial resources, the Board needs to have a plan to achieve the required level of resilience.

Our Welsh Water 2050 strategy is intended to provide a clear long-term framework for our future business planning to become a truly world class, resilient and sustainable water service for the benefit of future generations. In order to achieve this, in our strategy we have considered which shocks and stresses we might be exposed to in the long term which might impact our business. These are:

	Change in customer expectations	Customer expectations are likely to change dramatically with a desire for a more personalised service and control over their use of services and less tolerance of service outages. This will particularly be the case for business customers.
	Protecting essential infrastructure	Ageing infrastructure, a limited supply chain and cyber security are key concerns for future service provision. Technological advances could lead to significant efficiencies in the planning, delivery and operation of new assets.
	Demographic change	Population growth will lead to increased water demand in certain areas and an ageing population may lead to more customers in vulnerable circumstances. However, opportunities will emerge to develop a more diverse age profile in the workforce.
	Changes to the structure of the economy	The growth of the digital, knowledge based economy will create opportunities to provide services in more efficient ways. However, it could also have an impact on the nature of society, and present a challenge to continuing to meet the needs and expectations of our customers.
	Policy and regulatory change	Changes in policy and regulation are expected due to the UK leaving the European Union, devolution and changing quality standards; this creates uncertainty, but provides the opportunity for us to help shape future policy. Improved regulatory methods and innovative policy developments could lead to more efficient delivery of services to our customers.
	Climate change	Climate change will result in more extreme rainfall events, which could lead to an increased risk of flooding and pollution. Drier, hotter summers are projected, which could result in water supply deficits and the potential for increased water demand.
	Environmental change	Invasive species, land use change and an increased risk of environmental pollution may lead to a reduction in water quality and biodiversity. However, co-operative approaches for the delivery of enhanced ecosystems services could lead to better environmental outcomes.
	Protecting public health	Regulatory standards to protect drinking water quality are likely to continue to tighten in the future. We will have a role to play in promoting healthier and more sustainable lifestyles for our customers.

Table 1: Our key trends, or the shocks and stresses that may impact our business in the future.

2.3. Understanding our key challenges

We have worked to assess the shocks and stresses that we may experience in the future and clearly set out our challenges for the next 30 years in our long-term strategy. We worked with experts from Arup and Cardiff University to carry out this horizon-scanning research to ensure we fully understood how these shocks and stresses would change over time.

We set up a panel of experts from Cardiff University to provide detailed research into the potential drivers of major change across the social, technological, environmental, economic and politico-legal (STEEP) realms. They developed a short list of 10 major trends which fed into our final short list.

Arup used this in-depth academic research, along with other key sources such as the National Risk Register and the World Economic Forum's Global Risks Report, to develop a long list of shocks and stresses for our business. They then worked with key colleagues from across our business to map these based on impact and likelihood and develop our shortlist, shown in Table 1.

This in-depth horizon scanning will happen every five years as we update Welsh Water 2050.

We have clear and robust processes to enable us to continually review the progress and success of our approaches to resilience. These processes provide us with the opportunity to update our programmes and provides us with the flexibility to be able to adapt to changing circumstances.

3. Resilience themes

To provide our customers with a robust and reliable service, resilience must encompass all aspects of our business including assets, systems, people, finances and governance, as well as considering social, cultural and environmental perspectives. The following sections detail our Resilience Wheel and the approaches we are undertaking to build our resilience.

3.1.   People

	Protecting public health	This is focused on ensuring that we provide a reliable and robust service for customers in the long-term, with good water quality in a safe manner, improving our flexibility and redundancy.
	Meeting customer expectations	This is focused on collaborating and co-creating with stakeholders and customers, community education, and the information sharing process to enable the provision of critical services to customers. This improves our inclusivity, allows us to deliver improvements we would not be able to deliver alone and increases our customers' trust in us.
	Working as an integrated team	This is focused on ensuring that we have engaged and adaptable people with the skills needed, now and in the future, to provide a robust service in changing circumstances.

Figure 6: The people elements of our Resilience Wheel

Protecting public health: We are working to improve:

- Reliability of our service by upgrading ageing assets;
- Flexibility by working on an interconnected grid system and;
- Acceptability of water for our customers.

Through designing for the unexpected, being reflective and learning from past experience (such as our action plan to respond to learnings from the Storm Emma event in 2018), and ensuring our colleagues' health, safety and well-being, we can improve our system management ensuring that our customers will always have a suitable source of supply, in line with their expectations

More information on this can be found in our operational resilience supporting document (See Operational Resilience 4.4).

Meeting customer expectations: We are working to build trust and integration with our customers through widescale community participation campaigns, such as 'One Last Breath' (reservoir safety) and 'Stop the Block' (not disposing of inappropriate items down the toilet) and at a community specific level on programmes such as 'Water Resilient Communities'. We are working with primary and secondary schools, contributing to their syllabus, and with other groups through programmes such as 'Your Community Works'. We are working closely with stakeholders and customers on projects like RainScape and WaterSource on an inclusive approach to provide wider resilience value to people and the environment.

More information on this can be found in our operational resilience supporting document (See *PR19 Operational Resilience 4.4*).

Working as an integrated team: One of our key areas of focus is ensuring that we have a future-proofed workforce with the right skills now and in the future. To do this we focus on attracting, developing and inspiring people from a diverse range of backgrounds, while actively promoting inclusivity, to ensure we are an employer of choice. We are undertaking a strategic workforce planning exercise with assistance from Energy & Utility Skills to determine the future skills we need to inform our long term resourcing plans. Our competency frameworks will continue to enable us to assess colleagues' skills and our investment in HR and scheduling systems will enable us to deploy people with the right skills and knowledge to where they are needed. We will also work to ensure our culture is collaborative and our people are able to adapt to changing circumstances.

Further details of the work we are undertaking under this theme is detailed within our corporate and operational resilience supporting documents (See *PR19 Corporate Resilience Ref 4.2* and *PR19 Operational Resilience Ref 4.4*).

3.2.   Infrastructure and Environment

	Implementing effective asset management systems	This is focused on ensuring that there are long term plans in place for water and wastewater assets, that all our assets are well managed and that our information systems, cyber security, and physical security are effective.
	Safeguarding and enhancing the environment	This is focused on minimising our impact on the environment, reducing pollution from our service, and improving ecological resilience. Achieved through implementing smart resilience mitigations, such as catchment management, and monitoring to assess the impact and progress on the environment.
	Delivering sustainable energy and resources	This is focused on ensuring sustainable use and reliable supply of our resources and preventing wastage by addressing leakage to ensure that we have everything we need to keep our service robust in the long-term.

Figure 7: The infrastructure and environment elements of our Resilience Wheel

Implementing effective asset management systems: We are working to improve how we protect our critical assets and updating our Resilience Scorecard approach to develop a system-wide approach to asset health leading to more integrated and robust systems. We are developing our long-term asset planning through Water Resource Management Plans, which includes the linking of key Water Resource Zones, and our soon to be developed Drainage and Wastewater Management Plan. We are using technology to support resilience development. Our Smart Strategy is a comprehensive plan for technology and cyber development and implementation, in the future to respond to changing circumstances.

More information on this can be found in our operational resilience supporting document (See *PR19 Operational Resilience Ref 4.4*).

Safeguarding and enhancing the environment: We work to protect and promote the environment though actions such as our Biodiversity Plan, our on-site Biodiversity Champions, and environmental

improvements through our National Environment Programme. We are updating how we manage our wastewater networks to reduce the risk of pollution events linked to blockages by improving modelling, monitoring and automated management. We are also implementing catchment management approaches through our programmes like WaterSource, Brecon Beacons Mega Catchment, and will undertake Sustainable Management of Natural Resources (SMNR) in AMP7. Wherever possible, we will work with our customers to co-create solutions.

More information on this can be found in our operational resilience supporting document 4.4.

Delivering sustainable energy and resources: We are integrating sustainable energy into business as usual, reducing energy use, increasing renewable self-generation capacity, and will keep cost low using demand side management. We are minimising leakage by improving our leakage monitoring and identification and working with customers on inclusive programmes like Project Cartref (Home) and 'Wrap up Wales'. We are working closely with our supply chain to improve our resilience of physical resources and skills, particularly with our Capital Delivery Alliance Partners and Water Network Alliance.

Further details of the work we are undertaking under this theme are detailed within our operational resilience supporting document (See *PR19 Operational Resilience Ref 4.4*).
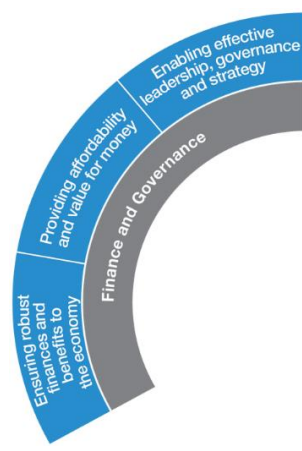
3.3.   Finance and Governance

	Ensuring robust finances and benefits to the economy	This is focused on financial planning, viability and reporting for the long-term to ensure we are prepared for changing circumstances.
	Providing affordability and value for money	This is focused on delivering smart resilience, i.e. multiple benefits for maximum value. This improves our inclusivity, allows us to deliver improvements we would not be able to alone and increases our customers' trust in us.
	Enabling effective leadership, governance and strategy	This is focused on ensuring that we have an appropriate long-term organisational strategy, which is backed up by effective Board leadership, governance processes and business continuity plans, which ensures we will continue to function in all circumstances.

Figure 8: The finance and governance elements of our Resilience Wheel

Ensuring robust finances and benefits to the economy: We have a not-for-shareholder business model which enables us to think long term and re-invest or distribute profits for the benefit of our customers, in such as supporting social tariffs and additional investment for service improvements. We have strong financial resilience with the lowest gearing ratio and highest credit rating (Moody's A2 Stable) for the water sector. We have looked at our business viability over a 12-year horizon, and our Licence and bondholder Common Terms Agreement mean that we do not overextend ourselves by straying too far from our core business. This means that we can plan for long-term improvements and investments required to prepare us for future change. We are working to improve how we deliver natural and social value through the work that we do.

More information on this can be found in our financial and operational resilience supporting documents (See *PR19 Financial Resilience Ref 4.3* and *PR19 Operational Resilience Ref 4.4*).

Providing affordability and value for money: We also have invested extensively in our social tariff programme, working to ensure that our customers can afford the essential service we provide. We continue to undertake innovative approaches to improve this. The Water Resilient Communities programme has seen us co-create a community specific, tailored programme to encourage greater social tariff take-up combined with wider community benefits. We will roll this out further in AMP7.

More information on this can be found in our operational resilience supporting document (See *PR19 Operational Resilience Ref 4.4*).

Enabling effective leadership, governance and strategy: Welsh Water 2050 provides us with a long-term organisation strategy to align our work to. This is supported by our effective governance and assurance processes and our commitment to comply with the UK Corporate Governance code as if we were a listed company. We have also worked to improve our leadership and transparency by complying with, and going further than, Ofwat's 'Board leadership, transparency and governance principles' and sought to implement existing Ofwat tools to improve our corporate resilience. We are implementing additional measuring and monitoring processes, improving our business continuity, to ensure that our company's processes are equipped to effectively deal with all future stresses and shock events. We also have good innovation processes to capture new ideas, which allow flexibility and show a willingness to adopt new thinking and methods of working.

Further details of the work we are undertaking under this theme are detailed within our corporate resilience supporting document and our operational resilience supporting document (See *PR19 Corporate Resilience Ref 4.2* and *PR19 Operational Resilience Ref 4.4*).

4. Our systems approach: transformational resilience

The mission statement adopted by our Board as part of the development of Welsh Water 2050 is "to become a truly world class, resilient and sustainable water service for the benefit of future generations". To achieve this, we have been working to improve our resilience over the past few AMPs. These include programmes with significant resilience value, delivering multiple benefits through a systems approach. This section details our current and future approaches to system-wide resilience and achieving significant resilience value.

4.1. Pursuing projects with a significant resilience value: RainScape

Our RainScape approach is an example of best practice for embedding an environmental foundation to resilience. This programme involves retrofitting surface water systems and providing green infrastructure to slow, treat and return surface water to the natural environment while diverting water from our sewer systems.

We believe that implementing RainScape is the right thing to do in our systems due to the wide-reaching benefits and long-term resilience of this approach. It can provide a best value approach which protects our customers, environment and networks while supporting growth and promoting well-being. Our Llanelli RainScape scheme is an award-winning approach which is the largest retro-fit of RainScape in the UK. In total 42 hectares, or 20% of the urban drainage area, has been diverted away from combined sewers and into natural watercourses. RainScape provides the following benefits:

- Our customers can benefit from RainScape as it protects them from sewer flooding at a fraction of the cost of a conventional engineering solution, helping to keep our service affordable.

- The community can benefit from RainScape as it enhances public spaces, promotes sustainable transport and improves ecology, promoting community well-being. We aim to develop our RainScape interventions through public consultation and engagement with the residents actively participating in the design of the streets. RainScape can also provide room for growth, providing new critical infrastructure allowing opportunities for development.

- Our environment benefits from RainScape as it can promote biodiversity, green the urban environment and maintain flows in our natural waterways. It can reduce the amount of stormwater entering our networks, which reduces the likelihood of CSO spills and therefore reducing the risk of pollution. RainScape is also often the most efficient option, providing carbon savings compared to traditional approaches, reducing our contribution to climate change.

- Our networks benefit from RainScape as this approach reduces reliance on critical wastewater assets and improves the raw water quality in our operational area.

RainScape provides an opportunity to collaborate with other stakeholders, such as local authorities, to get the best outcome for all our investments. It promotes a joined-up, integrated approach to understanding existing assets and risks and how these will be owned and maintained in future.

We plan to update our risk and value process to incorporate and value these wider social and economic benefits ('natural capital') in our cost modelling. In AMP7, we plan to significantly expand

our RainScape approach and remove the equivalent of 22,000 rooftops of surface water from the sewer network. In the longer term, we plan to install RainScape in all cities and conurbations at highest risk of sewer flooding and pollution.

4.2. System-wide benefits of resilience: Achieving resilience as a result of financial performance and good governance

We need to aim for resilient approaches as they can have knock on benefits across the business. For example, we are a unique water company in the UK as we are a not-for-shareholder company. This means that the financial benefits of improved financial performance, through outperformance and efficiency, can be used in the best interests of our customers.

With our strong governance process, in summer 2016 we went out to our customers to ask them what they wanted us to do with these 'customer dividends' through an open consultation with 12,000 customers[15]. This survey told us that only 3% of customers want us to use this money to reduce bills and 47% of customers wanted us to reinvest all of this money (i.e. didn't want to spend any of the money on reducing bills), particularly in communities and social tariffs.

Based on our understanding of customer priorities, this led us to invest further money in five key projects that each improve our resilience:

- We identified areas which were at risk of outages or water quality shocks, one of which was around Hereford. In order to improve robustness and redundancy, we are providing 24-hour treated water storage capacity for the water treatment works.

- We have invested to understand the complex Cardiff catchment, particularly the root cause of flooding in the critical flood risk area of central Cardiff. This has allowed us to create a long-term, robust and affordable strategy, with high-impact upfront investment in our network and a longer-term view to implement a catchment-wide RainScape strategy.

- We have invested in further reservoir safety improvements, improving the resilience of an essential component of the water supply system and reducing the risk for our customers from failure.

- We invested further money in our social tariff programme to allow us to support more vulnerable customers and improve the way we identify and work with customers who are struggling to pay.

- Linked to the Llanishen and Lisvane reservoirs in north Cardiff, we plan to undertake restoration providing more industrial water supply, promoting water efficiency and giving us more capacity to deal with potential future growth or disruption. This project was designed to also provide wider community benefits with a visitor centre and environmental and biodiversity projects, improving our community education work.

We will retain this approach and continue working with our customers to ensure they can influence the 'customer dividend' investment in the coming AMPs.

4.3. Improving our system-wide resilience in the future

Resilience is a recurring theme throughout our PR19 Business Plan, with investments and plans aligned to our Welsh Water 2050 long-term plans or 'Strategic Responses'. There are key projects we plan to undertake in the coming AMP that will influence our business processes, driving more robust company-wide resilience approach to provide significant resilience benefits.

We will work to continually improve our processes, methods and decision making to implement and realise the resilience value across all the programme and projects we undertake. This may be in the form of a resilience project-level decision making tool. We will also look to improve how we measure and assess our resilience progress. This will ensure that key resilience projects are valued and invested in appropriately and will enable all our colleagues to understand how they can contribute to our resilience.

To complement this work, our change programme is being developed to embed long-term resilient thinking across the organisation, and improve our adaptability to deal with uncertainty and change. This will encompass the people, process, information and technology programme needed to change mind-sets and give employees, partners and customers the tools and capabilities needed to deliver Welsh Water 2050 and achieve multiple benefits or "the resilience dividend". This will involve expanding the horizon scanning work we currently undertake and use the findings of this to update our processes and planning, for example how we plan for future skills.

This will enable all our people to be empowered to make appropriate decisions and be resourceful to solve challenges.

5. Driving continuous resilience improvements

The shocks and stresses we have identified are only a current snapshot of challenges that we may face in the future. This means that we will need to be adaptable to future unexpected events that may occur.

We will continue to horizon scan to identify future trends, adapt our approach to incorporate these changes and enable opportunities to innovate. Our plans for AMP7 will help us to improve our resilience. This is shown by our independent resilience assessment of the work we have planned, using our Resilience Wheel, shown in Figure 9.
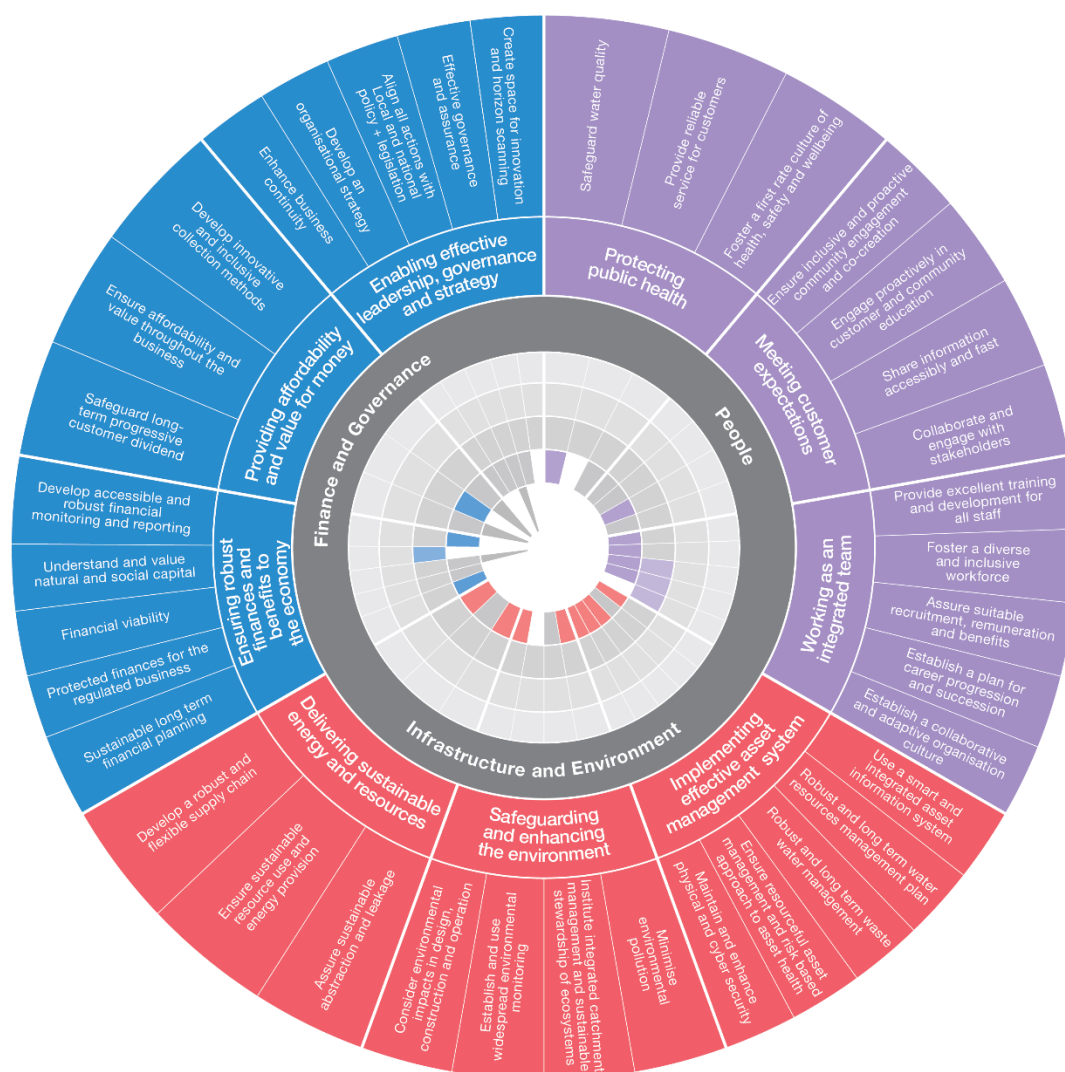

Figure 9: results of independent assessment of resilience against our Welsh Water Resilience Wheel

We will monitor our resilience progress annually against our Resilience Wheel to ensure that we are achieving the resilience value we anticipate. We will need to continue to review and update our assessment of shocks and stress and update our organisational strategy every five years to ensure it continues to be pertinent. During these updates, we will continue to involve the community in the decision making we undertake and in the meantime working in partnership to deliver the current strategy.

Customers have been key to the development of our resilience approaches for AMP7 and beyond and will continue to be involved during the development our plans. We will continue to review and monitor how our approaches and innovation are providing improved resilience. Each year, we will report to customers on the progress that we have made towards achieving our resilience objectives, which we believe will help to foster customer trust.

We will be reflective and continue to implement lessons learnt both from the extreme events we have experienced, such as the Storm Emma event in 2018, and from work we have implemented. For example, we plan to embed the lessons learnt for PR19 customer engagement into business as usual, enabling co-creation and co-delivery with partners and customers to become a normal way of working. This will provide us with long-term engagement channels, allowing us to go out to customers rapidly to seek their active participation and to keep up the pace of change.

Further detailed information on our assessment of shocks and stresses, mitigation undertaken and the resilience value of these approaches are available covering corporate, financial and operational resilience in more detail. (See *Corporate Resilience Ref 4.2, Financial Resilience Ref 4.3* and *Operational Resilience Ref 4.4*)

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