

OUR PLAN

PR19 BUSINESS PLAN
2020-2025



Dŵr Cymru
Welsh Water

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An open letter from the Chairman of Welsh Water to our customers

This business plan is the culmination of over two years' work by the Board of Dŵr Cymru Welsh Water – and we would like to thank all those thousands of customers and other stakeholders, including the Customer Challenge Group (CCG) and our independent Members, who have contributed their views during this process to help make this the most customer-driven business plan Welsh Water has ever produced. Because we have no shareholders, our company culture is always to strive to do a better job for our customers, both now and long into the future.

Our customers' priorities reflect the unique social, topographical and climatic features of the areas we serve, especially in terms of the long-term challenges we face:

- the impact of climate change, such as the increased risks from more extreme and frequent rainfall events for urban flooding and reservoir safety;
- population growth and increased urbanisation, especially around Cardiff, Swansea, Chester and Hereford;
- increased stress on the environment from the potential intensification of land-use and greater risks of floods and droughts;
- tighter quality standards for drinking water and environmental protection;
- preserving the resilience of essential public services with an ageing infrastructure; and
- rising customer service expectations (from households, businesses and developers).

In this document, we set out our plans for bills, service standards, investment and value for money for customers over the five years to 2025, and beyond. We also explain how we intend to report each year on delivery against the overall plan and the 'Measures of Success' contained within it, so our customers and other stakeholders can judge for themselves how we are progressing.

The Board's approach to PR19 and Welsh Water 2050

The Board set out its approach to PR19 at the outset of the process in September 2016. It decided its business plan to 2025 and beyond should:

- be driven by the views of customers, elicited through an unprecedented programme of customer research and engagement;
- be developed in the context of a long-term plan that looked forward a generation – Welsh Water 2050 – similarly reflecting the views of customers;
- set ambitious targets to improve costs, service and resilience for the benefit of customers, harnessing innovation and new ways of working;
- have a particular focus on the needs of customers in vulnerable circumstances, including those struggling to pay their water bill; and
- incentivise through objective, and stretching, performance measures for the business and management to deliver improved value for money and resilience for customers, and enhance the financial, corporate and operational resilience of the business.

During 2017, the Board developed its long-term vision for Welsh Water in 2050, *"to become a truly world class, resilient and sustainable water service for the benefit of future generations"*. It decided to adopt a new long-term strategic planning approach, informed by a review of international best practice in resilience planning (notably the Rockefeller Foundation 100 Resilient Cities initiative). This

approach is based on the Welsh Water Resilience Wheel, which captures all aspects of what it means to be a resilient public service provider – including assets, systems, people, finances and governance. Using this approach, we consulted extensively with our customers and worked with them, the CCG and numerous stakeholders to develop 18 Strategic Responses, which we will need to deliver over the next six five-yearly regulatory periods, in order to meet the challenges and opportunities of the future.

This business plan for 2025 and beyond has been developed from the outset as an ambitious, but affordable, step towards the achievement of the Welsh Water 2050 vision. Customer engagement work has demonstrated very strong support from across our customer base for taking this long-term planning approach, recognising the importance of future investment and innovation to preserve the resilience of the essential public services we provide, which is so important to customers and the environment.

Listening to our customers

Welsh Water is the only private, non-shareholder-owned water company in the UK. Our vision is “to earn the trust of our customers, every day”. As such, it is natural for us to want our business plans to be informed by the greatest degree of customer insight and customer involvement we can achieve, so we can really be sure we are delivering against customers’ priorities and that we strike the right balance between customer bills, service standards and investment in long-term resilience.

For this reason, we have a comprehensive ongoing programme of gathering customer insight, guiding the decisions we make each year. We have built on this comprehensive knowledge base through an unprecedented programme of customer engagement, firstly in the formulation of Welsh Water 2050 and then in the development of our plans for the period 2020 to 2025 and beyond.

This programme of customer involvement over recent years has seen around 40,000 customers sharing their views with us through our ‘Have Your Say’ and PR19 campaigns, at a wide range of shows and events across our region, as well as directly via our online engagement site. We have introduced successful innovations in this process to increase the numbers and spread of customers getting involved – using tools such as our Chatbot questionnaire on social media, our new Online Customer Community and our Youth Board.

We have supported all this engagement with a comprehensive programme of independent market research, using a wide range of qualitative and quantitative techniques to ensure a truly representative view of customer opinion is obtained, especially from the ‘seldom heard’. We have been greatly helped in this by the work of our Customer Challenge Group (CCG) and the Consumer Council for Water (CCWater), who have challenged us throughout the process on the methods used, the coverage achieved, the interpretation of the results and their integration into our planning process.

We have gathered a wide range of customer opinion through this programme, which is reflected in many aspects of the detail of our plan. Overall, certain consistent themes have emerged which have been repeated through the many exercises and engagement channels:

- Affordability is a key concern for customers – but there is no overriding desire to reduce bills at the expense of other considerations.

- Customers would not countenance any deterioration in service levels, even if this were reflected in lower bills.
- Given the overarching consideration of keeping bills affordable, customers in general are prepared to pay to finance investment to ensure the long-term resilience of the essential services they receive.
- The greater the level of information customers have about our company’s unique ownership structure and our plans for the long-term, the greater the overall level of trust in the company and support for our plans.
- Customers expect us to harness innovation and efficiency to keep down the cost to customers, while communicating effectively the benefits of investments for customers and the environment.
- There is majority (but not universal) support for more help for those customers who are genuinely struggling to pay their water bills.
- Customers expect us to protect the environment and contribute more broadly to the well-being of the communities we serve.

In some cases, our customers’ views may be somewhat different to those of the customers of other water companies, probably reflecting our unique ownership model, a particular sense of community in Wales, and also the impact of the overarching long-term policy framework set out in the Well-being of Future Generations (Wales) Act 2015.

Strategic Parameters for PR19

Having carefully considered all this customer sentiment, the Board set 10 key Strategic Parameters for our business plan to 2025:

- **Affordability** – customers as a whole should see a reduction in the average bill in real terms, reflecting the reduction in the allowed “level of profitability” post-2020 (the “return on capital”).
- **Social tariffs** – Welsh Water should aim to expand its funding for social tariffs through its unique “customer dividend”, to help more of those struggling to pay, while keeping the cost of the support from other customers at around current levels (in real terms).
- **Long-term resilience** – should be enhanced, through a significant investment programme targeted at the most urgent Strategic Responses identified in Welsh Water 2050, covering drinking water, environmental protection and future service resilience.
- **Stretching performance targets** – must be set, in particular for service areas where our performance falls short of our customers’ expectations, while ensuring all existing standards of drinking water quality, customer service and environmental protection are at least maintained.
- **Ambitious new service offerings** – should be developed, offering improved value for money across all customer segments – households, businesses, developers, and those in vulnerable circumstances.
- **Innovation, efficiency and collaborative working** – should be maximised in the plan, while taking advantage of new market opportunities wherever possible, so we can deliver ambitious plans at an affordable cost.
- **Demand management** – should be a particular priority, promoted through innovative new approaches, working with customers and communities.

- **Customer-driven** – customers should be given an opportunity to choose between different packages of service and bills, through quantitative and qualitative market research carried out in the spring of 2018, with customers’ overall preferences being reflected in the final business plan.
- **Incentivise performance** – the plan will incentivise management and the business to drive improved outcomes for customers, with all net ‘rewards’ being used for the benefit of customers through a new WaterShare scheme.
- **Financial resilience** – maintained by keeping the gearing of the business at around 60%, safeguarding our access to funding from the financial markets even in the event of severe or combined risk scenarios.

Affordability

Welsh Water has kept the increase in the average household customer bill to below Retail Prices Index (RPI) inflation in each year over the 10 years to 2020 – an unprecedented record. We intend to build on this by reducing average bills by £22 or 5% over the next five years (before the impact of inflation). This bill reduction can be achieved through the reduction in the allowed rate of profitability expected for the sector (“the return on capital” or WACC) and by innovating to materially improve efficiency within our business. In this way, we plan to deliver a substantial bill reduction, while simultaneously increasing levels of investment to improve service performance and long-term resilience.

In addition, we will target more help to those customers who are most struggling to pay their bills, for example by promoting metering where appropriate. We plan to increase the number of customers benefitting from social tariffs from around 100,000 today (by far the highest rate of support in the sector) to around 150,000 by 2025 – this will cost Welsh Water itself around £85 million over the period (‘customer dividend’ money that in other companies would have been paid out in shareholder dividends).

Improved service and value for money

Businesses, developers and households will see improved value for money, in that they will both see lower bills (from the reduced return on capital), and experience improved service levels, receive bold new customer service offerings, and benefit from increased investment to improve the long-term resilience of our public services and the environment.

We have set *stretching performance targets* for the next five years and beyond, following a process of detailed challenge by the Welsh Water Board and the CCG. While maintaining the current very high levels of drinking water quality and environmental performance, we will target by 2025:

- a 15% reduction in leakage levels (which have already been roughly halved in the last 20 years)
- a reduction in the numbers of customers experiencing temporary discolouration or taste and odour issues with their water supply, from 2.8 to 2.0 (contacts per 1,000 customers)
- a reduction in supply interruptions, which are particularly important for businesses as well as households, from 12 to eight minutes a year per customer
- a 10% reduction in incidents of sewer flooding of customer premises each year, which would otherwise be on an upward trend due to climate change, from 300 to 273 a year
- a 20% reduction in pollution incidents (which are predominantly minor ‘category 3’ incidents), from 112 to 90 a year, and

- the number of customers receiving a service below our defined minimum-threshold levels will be reduced by 18%, from 1,500 to 1,230, meaning fewer ‘worst-served’ customers suffering repeated water supply outages, sewer flooding or low water pressure.

Our plan includes incentivisation arrangements for the business (Outcome Delivery Incentives – ODIs) which could result in underperformance payments (equivalent to 1.5% of our return on equity – RORE) or outperformance payments (equivalent to 1.2%). These ODIs have been selected and scaled to reflect customers’ views, as ascertained through a wide range of customer research sources. In aggregate, they are towards the lower half of the Ofwat-prescribed range, which does reflect a general questioning by our customers of the appropriateness of such incentives, given our unique status as a non-shareholder company. In response to these views, we are proposing a new ‘WaterShare’ mechanism, through which half of any net reward would be immediately returned to customers through lower bills, with the remaining half being used for the benefit of customers as ‘customer dividends’ after consultation with customers, regulators and the CCG.

We are also planning to introduce a range of *innovative new customer service offerings*, including:

- a new strategy for a more personalised service for customers in vulnerable circumstances, increasing the number of customers registered to receive priority services from around 26,000 now to 100,000 by 2025;
- ‘WaterFair’ – giving a free service to ‘worst-served’ customers, until we can address or mitigate the root cause of their repeated service failure;
- a free leak repair service on customers’ supply pipes (no longer limited to one free repair every three years);
- a free lead pipe replacement scheme, targeting 7,000 customers by 2025;
- a new Guaranteed Standards Scheme for housing developers, meaning that they will receive automatic compensation if we fail to hit specified performance timescales;
- a unique surface water removal incentive scheme for developers;
- for business and non-household customers, an extended range of co-created ‘value-added’ services, such as water efficiency and advanced metering technology;
- a priority response service for development applications which would end a case of “bed blocking” in hospital; and
- as a major step in demand management, a new service for households to fix leakage on customers’ pipes and appliances, identified through the widespread use of innovative measurement technology (Project Cartref – ‘Home’), to reduce leakage on customers’ plumbing, improve water efficiency and help customers save money.

[Welsh Water 2050 - Resilience in the Round](#)

In the next regulatory period we plan an increased investment of around £2.3 billion across our business (compared to around £2 billion in this period), financed by exacting cost efficiency targets rather than increases in customers’ bills. This investment programme will enable us to make a significant step towards the long-term objectives set out in Welsh Water 2050, in particular in the quality and supply of drinking water, enhanced resilience and improving the environment. Priority investments for the period to 2025 (AMP7) include:

- catchment management plans – working with other land users as our first line of defence for drinking water quality – including the Brecon Beacons Mega Catchment

- comprehensive “zonal studies” investment to refurbish and redesign those priority drinking water networks that give most problems for customers, particularly in terms of acceptability and interruptions – covering 17 zones networks and some 920,000 customers (costing around £130 million as part of a plan covering AMP6, AMP7 and AMP8)
- a substantial extension of our RainScape programme for sustainable urban drainage solutions, covering 10 priority catchments, and reducing sewer flooding
- a major investment programme to enhance the safety of our reservoirs, meeting new requirements to make them resilient to future severe storm risks resulting from a changing climate (costing around £115 million as part of a plan covering AMP6, AMP7 and AMP8)
- a substantial National Environment Programme (NEP4), determined by Natural Resources Wales and the Environment Agency, which will directly improve some 400 kilometres of rivers towards good ecological quality (costing around £300 million, as part of an NEP4 programme covering AMP7 and AMP8)
- delivery of investments to ensure sufficient supply for all customers, in line with the requirements of our Water Resources Management Plan to 2050, in light of expected environmental, population and climate changes
- a major new water treatment works in our most populous south east Wales area, meeting enhanced DWI regulatory requirements and significantly increasing resilience, while improving both efficiency and performance (costing around £90 million, as part of a project covering AMP7 and AMP8) and
- Drainage Area Plans to be developed across the region, with four priority ‘whole catchment’ solutions being implemented in partnership with a range of other land users, through an innovative Sustainable Management of Natural Resources (SMNR) approach

The Board has overseen a process of challenging the design and delivery options to achieve these desired outcomes in the most cost-efficient way, including through the use of demand-management techniques and metering, catchment-level planning and the incentivisation of other land-users.

Delivering for customers – innovation, efficiency and collaborative working

To deliver our ambitious plans for customer service and increased investment in resilience, without needing to increase customers’ bills, we need to harness the power of innovation, efficiency and collaborative working right across our business.

Innovation: our business plan includes a record budget of £68 million for research, development, science and innovation, with examples across all aspects of the plan. Innovation ranges from scientific research and the adoption of new technology, through to making better use of the large quantities of data we have in our business and learning from leading organisations in other sectors and other countries. Some representative examples of innovation that we are planning in the next five years include:

- introducing peak flow wastewater treatment technology to supplement RainScape schemes that we have pioneered – delivering a sustainable solution for urban drainage problems in Llanelli and Swansea for around £130 million, as compared to an estimated £650 million cost for a conventional engineering solution;

- partnership with the Natural Environment Research Council (the only one in the water sector) and with the G4W group of water research centres at UK universities, to develop new solutions and methods of working;
- a leading participant in the international Smart Water Networks Forum of utilities, pioneering SMART network management techniques, based on real-time data monitoring and analysis; and
- successful “best practice” partnerships with leading international water service providers, Oasen Drinkwater in the Netherlands and HOFOR in Denmark.

We will also embrace the opportunities from developing market mechanisms to seek better-value outcomes both for our customers and those of other water providers – and we are already actively pursuing specific prospects for increased cross-border trading, notably in the areas of bioresources and water resources.

Efficiency: since we became a non-shareholder company, Welsh Water has the best record for reducing operating costs of all of the water and sewerage companies in England and Wales (according to Ofwat data). Our business plan includes an ambitious target to further reduce our annual operating costs (“Botex” – including asset maintenance costs) by around 12% by the end of the next five-year period, through a wide range of cost-saving initiatives, better methods of working and using data to better prioritise our activities. This in turn contributes to a saving in total costs (“totex” – including capital investment) of around £300 million or 10% in the next five-year period, as compared to our current level of costs.

In part, we can make these savings through working closely with our Capital Alliance of leading international engineering and design companies. They are working to a rolling, five-year capital programme, with greater incentivisation and opportunity to identify worldwide innovation in design and delivery, while maximising efficiency through maintaining a stable supply chain that avoids the peaks and troughs in workloads which have been evident in previous five-year investment periods.

Working together: a common theme in our innovation strategy is to find better ways of working with partner organisations and customers, so as to deliver our common goals (as set out in the Well-being of Future Generations Act) more sustainably and more cost-effectively. Some noteworthy examples of the scope for collaborative solutions include:

- adopting successful techniques from the Catskills water supply catchment of New York State in the Brecon Beacons Mega Catchment programme, where we will work with a wide range of partner organisations and landowners to improve raw water quality and reduce treatment costs;
- a commitment from Welsh Water, Wales and West Utilities and Western Power Distribution to work together and to share appropriate customer information, so we can all do a better job in targeting help to customers in vulnerable circumstances;
- working with social landlords, government energy conservation programmes and community groups to promote Project Cartref (‘Home’), which will help achieve a 15% reduction in leakage and improved water efficiency, through working with customers to fix background leaks on their pipes and appliances; and
- creating Water Resilient Communities (as in the Rhondda Fach pilot), in which we will work with a wide range of local groups to help us better meet the unique needs of that community,

while they help us to deliver some of our priority objectives more effectively, such as help for customers struggling to pay their bills whom we are unable to contact through traditional channels.

Responding to the view of our customers that we should help bring wider economic and well-being benefits to the community we serve, we will also continue to expand our programmes of environmental education for children in our region, the customers of the future, and our provision of recreation and access to the environment.

Keeping our customers informed and involved

In our business plan, we have set out targets for 47 'Measures of Success', both to 2025 and beyond, against which we can measure progress in delivering our plan. We will publish this information each year for customers and stakeholders in an Annual Performance Report, which will also summarise the progress we have made against the 18 Strategic Responses set out in our Welsh Water 2050 vision.

We are also committed to regularly engaging with our customers throughout the period to 2025 on issues that are of real importance to them, such as how we use any financial surpluses for their benefit via 'customer dividends'. This continuing programme of customer involvement will build on the innovative techniques used for the first time during the planning for PR19 and will be supplemented by day-to-day decision making, informed by our geospatial 'customer sentiment' tracking system. This regular flow of information from customers will both help us to fine-tune our operations during the five-year period to 2025, and also to be well prepared to further develop our Welsh Water 2050 vision and distil future five-yearly business plans from a strong and ongoing understanding of our customers' priorities.

Board assurance

The Board of Welsh Water has provided in-depth leadership throughout the development of this business plan, supported and challenged at every stage by the CCG. The resulting business plan meets the strategic parameters set by the Board last year and it has ensured the targets for cost efficiency, service performance, future resilience and support for vulnerable customers are ambitious, but also deliverable and affordable.

At the end of the process, the Board commissioned independent research into the overall acceptability of the plan for customers, which found that 92% of our customers found the plan acceptable and 95% found it affordable, with consistently high support across all customer groups, including the "seldom heard" and business customers. Customers' perception of the value for money of our final plan increased by 16% to 81%, as compared to their view of the current service – reflecting our plans for lower bills, better service and more investment for the long-term.

Through review of the key risks to the delivery of the business plan, the Board is assured the business will remain financially resilient to severe, combined-downside scenarios, given the maintenance of a gearing level of around 60% in our central case. The Board has also overseen a comprehensive programme of internal and external assurance of the plan itself.

Our plans fully take into account the Welsh Government's Strategic Priorities and Objectives Statement, as well as the Water Strategy for Wales. Our long-term planning approach in Welsh Water

2050 is closely aligned with the Well-being of Future Generations (Wales) Act and has been publicly endorsed by the Welsh Government Environment Minister.

We will continue to publish comprehensive performance information each year, together with open disclosure of our policies for ‘customer dividends’, gearing, executive remuneration and long-term financial viability. By acting at all times as an independent company which follows the UK Corporate Governance Code, we will further build trust amongst our customers and stakeholders, in a way that is entirely appropriate for the provider of an essential public service.

As a result of this exhaustive process, we are confident our ambitious business plan to 2025, set in the context of our long-term resilience vision set out in Welsh Water 2050 and based on our ongoing engagement with our customers, will enable us to continue to meet our obligations as the supplier of an essential public service and to “earn the trust of our customers every day” - not just for the next five years but for generations to come.

Alastair Lyons
Chairman

1 Introduction

Who we are

Dŵr Cymru Welsh Water (henceforth ‘Welsh Water’) has been owned and operated by Glas Cymru since 2001. Glas Cymru has no shareholders and hence Welsh Water works solely to enhance the interests of the customers and communities that we serve.

We provide our customers with clean water that is safe to drink and take their used water away, treating it so that it can be returned safely to the environment.

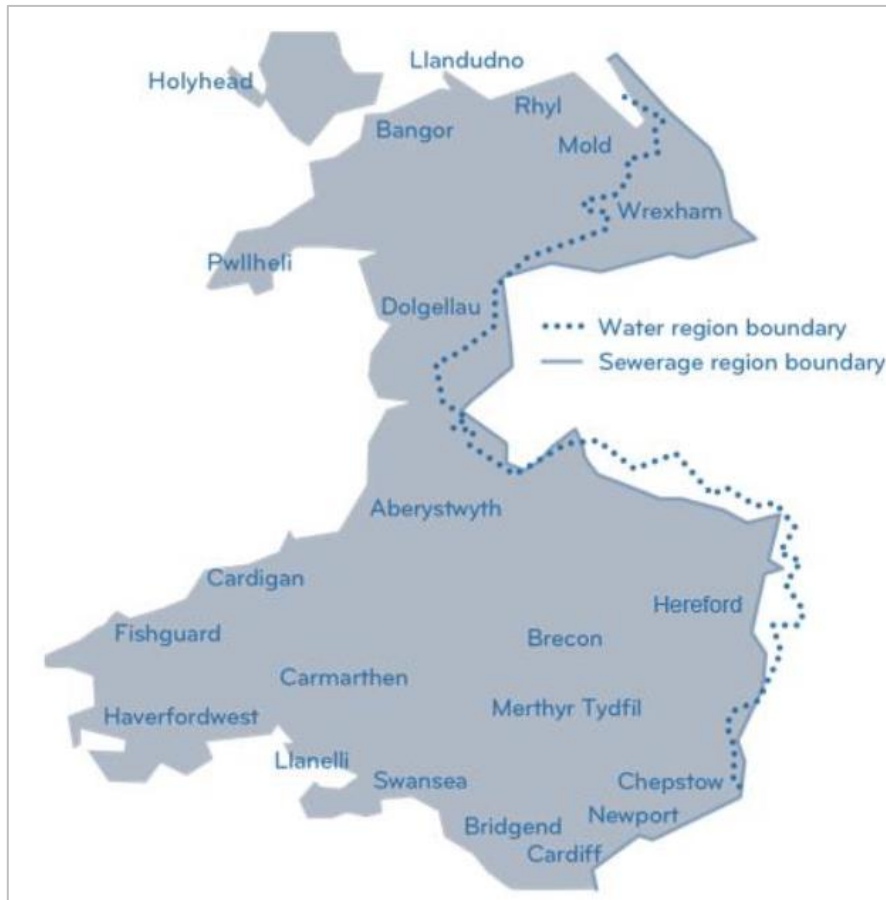


Figure 1: Our operating area

We provide this vital public service to around 3.1 million people in Wales and neighbouring parts of England. Our customers depend on us to deliver high-quality, safe and reliable services every day, no matter what is thrown at us by the weather or other operational challenges.

We also recycle the organic material resulting from the sewage treatment process, generating valuable electricity and gas, and passing on the end product to farmers to enhance the productivity of their land.

A small number of our customers in the north east of our area are ‘sewerage only’, their water service generally being provided by Hafren Dyfrdwy (formerly Dee Valley Water).

For customers, not for shareholders

Glas Cymru was established in 2000 as a single-purpose entity to own, finance and manage Welsh Water. It is a ‘company limited by guarantee’ and, because it has no shareholders, any financial surpluses are used for the benefit of Welsh Water’s customers. Under Glas Cymru’s ownership, Welsh Water’s assets and capital investment are financed by bonds and retained financial surpluses.

As Glas Cymru has no shareholders, its corporate governance functions are the responsibility of its Board, which has a majority of independent non-executive directors, and its ‘members’, around 70 individuals appointed following a process undertaken by an independent membership selection panel. Members are unpaid individuals whose duty is to promote the good running of the company, in the best interests of its customers. Glas Cymru operates as if it were a listed company, meaning that it meets the highest standards of corporate governance and transparency (see section 24 for more information).

The Glas Cymru business model aims to improve value for money for its customers, in four key ways:

- reducing Welsh Water’s asset financing cost, which accounts for around a third of household customers’ bills, by providing secure, long-term credit quality to investors;
- making it easier for us to take a longer-term perspective;
- making it easier for us to recruit and motivate high quality people who like to be part of a non-shareholder business providing an essential public service; and
- helping us to work in cooperation with customers to deliver great service, because of higher levels of trust in our corporate model.

Any financial surpluses, which in any other company would be distributed to shareholders in the form of dividends, are available to be applied to the benefit of customers. Until 2015, they were primarily used to improve financial resilience, by building up reserves (and reducing gearing). During AMP6 they are either being reinvested in the business for further performance improvements and risk reduction, or returned directly to customers through funding for part of our social tariffs schemes. We expect to distribute some £150 million in this way during AMP6 (2015-2020). These decisions are taken following extensive customer and stakeholder engagement, such as the 2016 “Have Your Say” consultation.

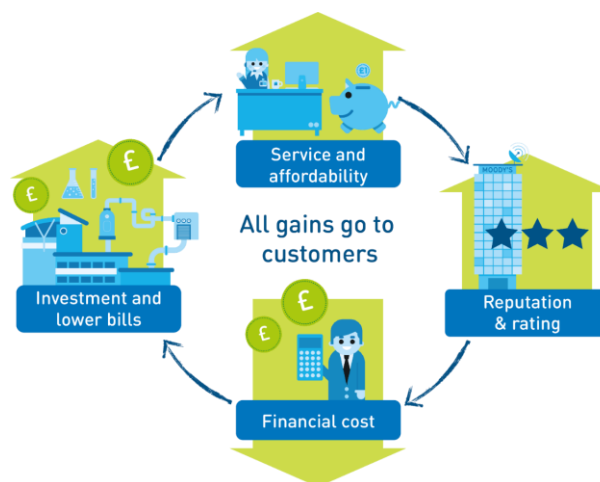


Figure 2: The Glas Model ‘virtuous cycle’

Our vision and culture

Our vision is “to earn the trust of our customers, every day”. This vision is fundamental to the way we work and is particularly appropriate for us as a non-shareholder company – the only one in the water sector in England and Wales. We know our customers depend daily on the essential services we provide, so their trust can be easily damaged when things go wrong.

Our vision has been used to foster a culture of ‘customer-led success’ in our people, with the determination to deliver great services, and do our utmost to rectify the situation when things go wrong. That way we can retain our customers’ trust, which in turn helps us to deliver good performance and lower costs by making our customers more responsive to our messages about the things they can do to help. Our company vision and culture also help us to take a longer-term perspective, as appropriate for the provider of an essential public service, seeking to balance the interests of current and future generations of customers.

Welsh policy and strategic context

A devolved government for Wales has been in place since 1999, and it has gradually assumed powers covering a variety of policy areas including environment and water. A number of pieces of legislation in these areas have been passed in recent times, reflecting the particular needs and character of Wales. (See [Ref 1.3 Supporting government policy and long-term agendas](#) for more details on how we have taken this into account in our plans.)

This legislation includes the Well-being of Future Generations (Wales) Act 2015, which obliges public bodies in Wales to take account, in their planning and decision-making, of the impact of their activities on the well-being of people in Wales over the long-term. Although Welsh Water is not a public body for the purpose of the Act, we support the government’s Well-being Goals as set out in the Act. Indeed, because of our unique constitution, and the long-term nature of our activities as the custodian of infrastructure that is essential to health and well-being, we believe we are particularly well-positioned to do so.

The Environment (Wales) Act was passed in 2016. It established ‘Sustainable Management of Natural Resources’ (SMNR) as the set of principles to be followed by Natural Resources Wales (NRW) and others in delivering the government’s environmental policies. SMNR is defined as “using natural resources in a way and at a rate that maintains and enhances the resilience of ecosystems and the benefits they provide.”

The Welsh Government’s policy for the management of water resources in particular is set out in the Water Strategy for Wales (2013)ⁱ. We have taken account of this document in developing our business plan for 2020-25, as well as the Welsh Government’s Strategic Priorities and Objectives Statement to Ofwat.ⁱⁱ

Our plans for 2020-25 are intended to improve services and value for customers, in the context of the Welsh Government’s ambitions for SMNR, and the well-being of current and future generations. Over time, relevant policies and legal requirements of the Welsh Government are diverging from those of the UK Government. For example, legal requirements applying to new houses built in our area include the requirement to fit sprinklers, the mandatory adoption of new sewers and the introduction of sustainable drainage requirements for new housing developments – none of which currently apply to the water and sewerage companies based in England. This divergence will impact on comparisons of some aspects of our costs and services with those of other companies.

The Welsh Government's policy with regard to the introduction of competition into retail services for non-household customers is now markedly different to that in England. For companies 'wholly or mainly' based in Wales only the largest customers (with consumption over 50 megalitres per year at a single site) are eligible to switch retailers, and only for water-related services (not wastewater), whereas for 'English' companies all non-household customers can switch their retail services provider (for both water and wastewater services). However, our non-household customers fundamentally want the same things as customers of water companies in England – great service at an affordable price – and we are committed to delivering that. Because of the different situation, Ofwat is taking a different approach to the regulation of our non-household retail customers during the PR19 process.

At present, most of these differing requirements apply to our whole operating area (as a company operating 'wholly or mainly in Wales'). However, it is currently expected that, from April 2020, we will need to apply Welsh Government requirements in our Welsh operating area and UK Government requirements in our operating areas in England.

Our operating environment

Our business plan is influenced by the particular characteristics of our operating area, which differentiate us from other water and sewerage companies.

- Our operating area is characterised by a relatively-long coastline, which has implications for our wastewater treatment costs.
- Wastewater treatment for the half of our customers who live along the coastline was built post-privatisation and so was financed through customer bills (this is not the case for predominantly-inland companies).
- Our area has a level of average rainfall that is among the highest in the UK.
- We operate across several distinct, rural, mountainous and sparsely-populated areas, which means more assets (e.g. treatment works and lengths of pipe) per customer.
- The standard of river quality in the region is very high, and there are a significant number of designated bathing beaches along the long Welsh coastline, which means strict permit levels for wastewater treatment.
- A comparatively-high proportion of our water supplies come from impounding reservoirs and rivers, with relatively small volumes supplied from low cost boreholes.
- Most of our raw water is soft and has a high manganese content, which leads to intermittent problems of discolouration and other acceptability issues for customers.
- Our customers have lower incomes on average than most other parts of the UK, and a relatively high proportion of our customers live in areas of economic and social deprivation, increasing bad debt and collection costs.

These characteristics taken together create a unique set of challenges in providing high quality, resilient and affordable water and wastewater services to our customers. Addressing these challenges has, therefore, been key to our development of our business plan for 2020-25 and beyond.

This document

This document summarises Welsh Water's business plan for 2020-25 and beyond. It forms part of the five-yearly regulatory review by Ofwat, a process known as PR19 that will be completed in December 2019.

Our plans for the next five-year investment period (AMP7) should be read in conjunction with our long-term vision, Welsh Water 2050 (Ref 1.4), which was published in March 2018 following extensive customer and stakeholder consultation.

The full details of our plans are contained in the suite of documents submitted to Ofwat as part of the PR19 review in September 2018. These include separate business plans for the retail (household and non-household), and water and wastewater ('network plus') price controls, as well as our strategies for water resources and bioresources (including approaches to markets and trading). This document provides an overview of our overall company business plan for the benefit of our customers, regulators and other stakeholders.

Supporting documents

This PR19 Business Plan is a summary of our full PR19 submission to Ofwat, a suite of documents that provides much more detail on the various elements of our plans for 2020-25 and beyond, and further explanation of the process for reaching the decisions we have made including customer engagement. We are also submitting a full set of assured data tables as required by Ofwat with associated commentaries.

2 Our approach to PR19

Planning for the long-term

The water industry is, by its nature, a long-term business, owning and managing assets such as dams and pipes that have long lives, and needing to promote the interests of future generations as well as the current one. Our previous long-term strategy, Our Sustainable Future, was published in 2008. Since then we have learned a great deal, both about how we can provide services most effectively, and about the emerging threats and challenges to our long-term sustainability.

In 2016, in light of the Well-being of Future Generations (Wales) Act 2015, our Board decided that in order to provide a long-term framework for the next AMP planning cycle (PR19), we needed to:

- learn from best practice internationally and the leading experts on resilience
- review the long-term trends, challenges and threats to providing a sustainable and high-quality service
- develop a set of long-term ‘responses’ that would be required to meet those challenges, and
- develop an updated resilience framework (the ‘Welsh Water Resilience Wheel’) to ensure all elements of resilience were being appropriately managed and reported on – ‘resilience in the round’

Welsh Water 2050

Working with global engineering firm Arup, Cardiff University, and many other partners and stakeholders, we published the resulting strategy document, Welsh Water 2050, for consultation in July 2017. After a major public and stakeholder consultation exercise, the revised and finalised version was published in March 2018.

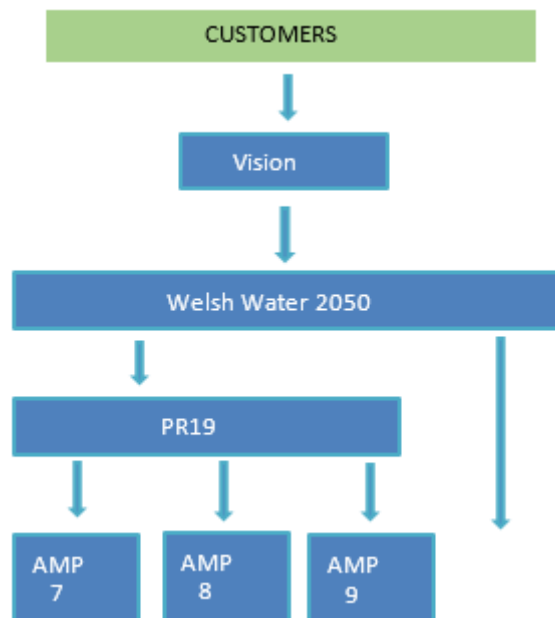


Figure 3: The long-term context for PR19

During the consultation period we:

- received more than 20,000 customer responses to our survey, through an innovative variety of digital and face to face methods, including our bilingual ‘chatbot’
- received detailed and ongoing input from customers through our online community, a range of customer focus groups and our new ‘Youth Board’
- held a successful launch and consultation event with stakeholders, and another workshop involving around 50 of the Members of Glas Cymru and
- received 17 detailed responses from stakeholders

The final Welsh Water 2050 document sets out a new long-term mission for Welsh Water: “to become a truly world class, resilient and sustainable water service for the benefit of future generations.” It sets out the eight major challenges that we expect to face over the next 30 years, and the 18 Strategic Responses that will be required to address them.

Welsh Water 2050 provides the backdrop to the development of our business plans for 2020-25, which will constitute a significant, yet affordable, step towards the achievement of our long-term objectives.



Figure 4: Members of the Welsh Water Youth Board

Customer engagement and the Customer Challenge Group

Customer engagement is an ongoing process at Welsh Water (see section 3) and every decision we take is informed by the interests and views of customers. The Board decided from the outset that our plans for 2020-25 should be founded on a solid evidence base covering the priorities, views and valuations of our customers. We therefore started much earlier than in previous price reviews on a comprehensive programme of research and engagement, developed jointly with the independent Customer Challenge Group (CCG).

Importantly we took on board feedback from the CCG about our approach to PR14 and this time, rather than developing a plan and then asking customers for feedback, we took the results of the research as the starting point for business planning.

We then worked with the CCG throughout the development of our business plans to ensure the key elements of our plan – bill levels, service levels, and outcome delivery incentives – were based on our customers’ priorities. As a final stage in the engagement process, we explored alternative business plan options with customers and then tested the ‘acceptability’ of our final plans with customers. Section 3 explains this three-stage process in greater detail.

The CCG has been critical to the success of this approach. Their role is to provide assurance that the research we have undertaken is of high quality, and the results of that research are reflected appropriately in the company’s plans. Our CCG also has an additional role concerning the way in which customers’ views are best ascertained to inform ongoing business decisions such as how any financial surpluses are reinvested or returned for customers’ benefit, in line with their priorities.

The CCG was established for PR14 and has continued throughout AMP6. A new Chair, Peter Davies, joined the CCG in February 2016, having previously been the Commissioner for Sustainable Futures in Wales.

Board ownership

Our Board has provided leadership in developing our plan from beginning to end, devoting considerable time to understanding the views of customers and challenging the plan as it has evolved. Having considered the views of customers, it set out early in the process a set of 10 Strategic Parameters to be followed in developing our PR19 plan. These were:

- **Affordability** – customers as a whole should see a reduction in the average bill in real terms, reflecting the reduction in the allowed “level of profitability” post-2020 (the “return on capital”).
- **Social tariffs** – Welsh Water should aim to expand its funding for social tariffs through its unique “customer dividend”, to help more of those struggling to pay, while keeping the cost of the support from other customers at around current levels (in real terms).
- **Long-term resilience** – should be enhanced, through a significant investment programme targeted at the most urgent Strategic Responses identified in Welsh Water 2050, covering drinking water, environmental protection and future service resilience.
- **Stretching performance targets** – must be set, in particular for service areas where our performance falls short of our customers’ expectations, while ensuring all existing standards of drinking water quality, customer service and environmental protection are at least maintained.
- **Ambitious new service offerings** – should be developed, offering improved value for money across all customer segments – households, businesses and developers
- **Innovation, efficiency and collaborative working** – should be maximised in the plan, while taking advantage of new market opportunities wherever appropriate, so we can deliver ambitious plans at an affordable cost.
- **Demand management** – should be a particular priority, promoted through innovative new approaches, working with customers and communities.
- **Customer-driven** – customers should be given an opportunity to choose between different packages of service and bills, through quantitative and qualitative market research carried out

in the spring of 2018, with customers’ overall preferences being reflected in the final business plan.

- **Incentivise performance** – the plan will incentivise management and the business to drive improved outcomes for customers, with all net ‘rewards’ being used for the benefit of customers through a new WaterShare scheme.
- **Financial resilience** – maintained by keeping the gearing of the business at around 60%, safeguarding our access to funding from the financial markets even in the event of severe, or combined-risk scenarios.

Throughout the process the Board ensured our plans meet these objectives, are challenging and deliverable, are informed by international and national best practice, and are underpinned by a robust process of internal and external assurance.

Alignment with Welsh Government policy

In developing our PR19 business plan we had regard to Welsh Government policy, as set out in relevant legislation, its water strategy (A Water Strategy for Wales (2013)) and its guidance to Ofwat (Strategic Priorities and Objectives Statement to Ofwat (2017)).

A Water Strategy for Wales (2013) – key themes	Priorities for the economic regulation of the water sector in Wales (Welsh Government Strategic Priorities and Objectives Statement to Ofwat, 2017).
<ul style="list-style-type: none"> • Water for nature, people and business • Improving the way water services are planned and managed • Delivering excellent services to customers • Protecting and improving drinking water quality • A 21st Century sewerage and drainage system • Supporting delivery 	<ul style="list-style-type: none"> • Affordability • Innovation • Long-term • Markets and competition • Resilience • Strong customer focus

Stakeholder engagement

As providers of an essential public service, virtually all organisations in Wales (and the neighbouring parts of England we serve) have a vested interest in our plans for the future. There are a number of key organisations which are closely involved in aspects of our service, and as such we work closely with them on an ongoing basis, and particularly on the development of our plans.

We are regulated by a variety of organisations, notably our environmental regulators (Natural Resources Wales (NRW) and the Environment Agency (EA)), and the Drinking Water Inspectorate (DWI). We also work closely with the consumer advocate – the Consumer Council for Water (CCWater).

During the period of developing our PR19 business plan we have met regularly with all of these stakeholders, both bilaterally and as part of a ‘PR19 Forum’ convened by the Welsh Government, which allowed stakeholders to input into our plans.

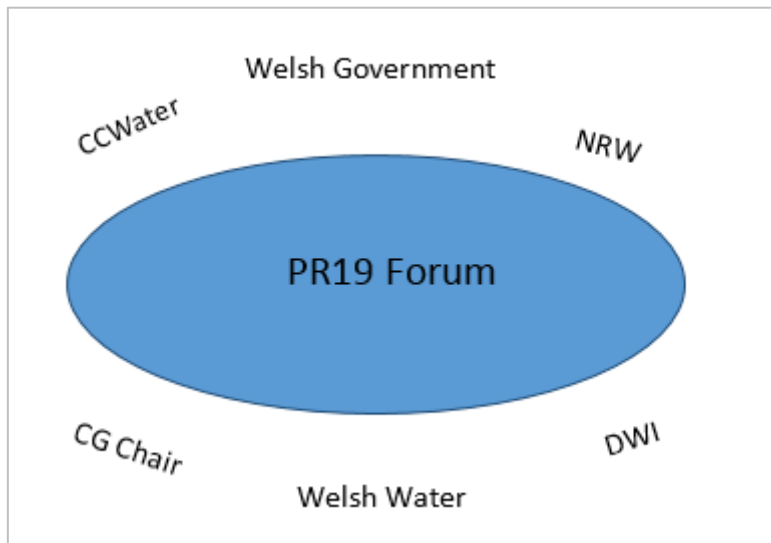


Figure 5: PR19 Forum members

Challenging our plan

Our Board provided leadership in the planning process from the outset, being fully engaged in challenging every aspect of the plan as it evolved. It also oversaw the assurance process, defined risk scenarios, and carefully considered the results and potential mitigation actions. Further challenge was provided by the CCG and our environmental and other stakeholders, including through our Independent Environmental Advisory Panel (IEAP). Our internal governance processes (see [Ref 6.4 Assurance and Governance](#)) ensured the plan was derived from high-quality data, analysis and procedures. The result, we believe, is a plan that was built on strong foundations from the beginning – a sound long-term strategy, customer views, and robust internal data and analysis – and that is both stretching and deliverable.

3 Customer engagement

Introduction

In order to achieve our vision to ‘earn the trust of our customers, every day’, we need to work closely with them, seeing them as participants in the service, not just as passive consumers. The water industry is different from other businesses in this regard. We provide an essential service to our customers, but they also have a role to play – and by working more effectively together we can achieve improved benefits for all. From helping to reduce demand for water, protecting their homes and their pipes in freezing weather, or preventing blockages in the wastewater system, customers can help us to reduce costs and improve performance, which, in turn, keeps their bills lower and means less disruption for them and their communities.

Because of our unique constitution, we have a different kind of relationship with our customers compared to other companies. We have the highest levels of trust from our customers in the industry in England and Wales, which provides an opportunity for us to do more to involve them as active participants (CCWater Water Matters Report, 2017). Accordingly, customer engagement is not something we do for business planning every five years. It is an ongoing process, constantly seeking to improve our understanding of customer needs and priorities, and feeding back to customers on our performance, and on how they can help us.

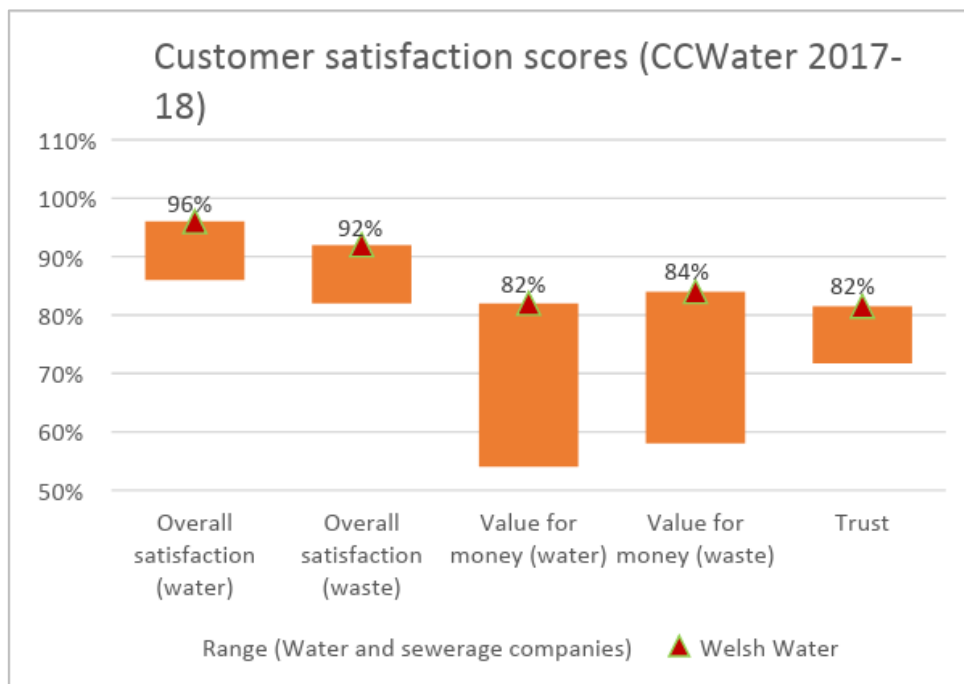


Figure 6: Top-scoring customer satisfaction

This section provides an overview of our ongoing customer engagement activities, and what we did above and beyond that to provide a ‘customer-led’ basis for our PR19 business planning for 2020-25.

Ongoing customer engagement

Following the adoption of our new company vision in 2013 we put in place a new customer engagement strategy, designed to ensure that we understand customers’ views, priorities and

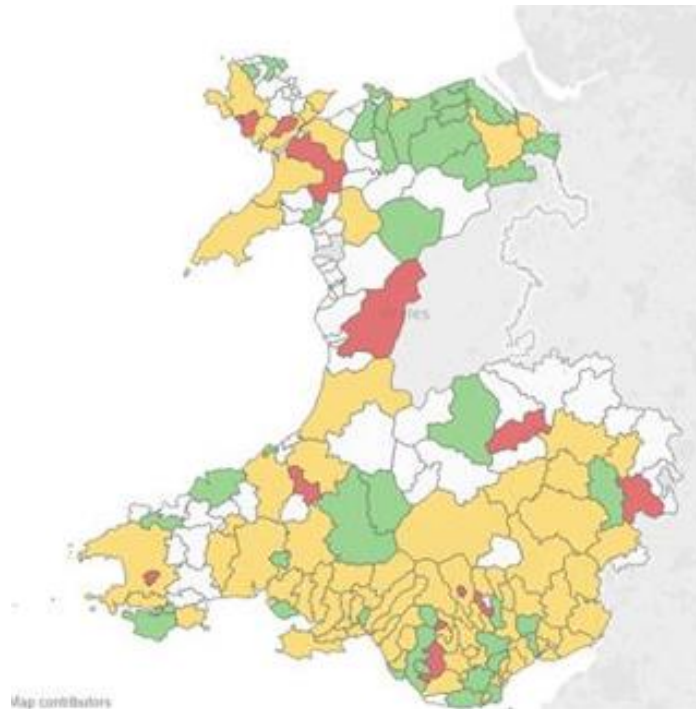
expectations on an ongoing basis. Research showed that customer trust is underpinned by a combination of customers' familiarity with our business, and a favourable view of the services we provide and that it offers good value for money. Our "customer-led success" approach aims to build trusted relationships with customers, raising our visibility in the communities we serve as well as encouraging ongoing customer involvement in the decisions we need to make as a business. CCWater's annual tracker survey, Water Matters, has showed a steady improvement in customer trust since 2013 (when we introduced our new vision) from 7.69 (out of 10) to 8.15 in 2017 (published July 2018). This now places Welsh Water as the most trusted of all water and sewerage companies in England and Wales, as well as the highest rated for customer satisfaction and value for money. Our twice yearly 'tracker' surveys show that awareness of our not-for-profit ownership model has also increased from 36% in 2015 to 64% in 2018.

Every contact we receive from a customer gives us an opportunity to improve our services further. We have recently improved our data collection and analysis capability to maximise the benefit of the data we collect from every customer interaction. In 2016, we introduced a new 'doorstep' app for frontline operational colleagues to allow them to receive instant feedback from customers on the service they have received. Similarly, every telephone and outline customer contact is followed up by an automated survey to request feedback on the service. Our award-winning Data Science team has developed an innovative Customer Sentiment Map, allowing us to use the vast amount of customer data we generate in real time, so as to pre-empt problems before they impact on customers.

We also engage with customers in many other ways. We have a presence at all of the major public events and shows that take place around Wales as well as targeted activity aligned with our major investment projects. Every year, more than 65,000 school children participate in activities at one of our Education Centres, or meet one of our teachers at an outreach event in their school.

Our ongoing customer behaviour campaigns include Let's Stop the Block (sewer abuse), One Last Breath (reservoir safety), and Wrap-Up Wales (winter preparedness). Our plans for AMP7 include a new campaign, Project Cartref ("Home"), to promote water efficiency and tackle leakage on taps and toilets in customer properties to help reduce consumption and customer bills. The success of this initiative will rest on our ability to harness customer trust and work with customers in new ways. Over the past 12 months, we have started to review our behavioural change campaigns in order to incorporate lessons learned from other sectors that have embraced behavioural economics. We will continue to evolve our campaigns in AMP7.

Innovation: Customer sentiment dashboard



The Customer Sentiment Dashboard is an interactive dashboard tool that we can use to better understand how customers feel about our organisation. By using text analytics methods and other statistical techniques, we are able to evaluate sentiment based upon how our customers have interacted with us. By gathering and presenting this information in an easy-to-use and interactive dashboard, our staff are able to closely monitor customer sentiment across our operating area, identifying and focusing on areas that may have decreasing sentiment.

Water is often taken for granted, despite being vital for our health and our environment. The significant increase in single-use plastics – including bottled water – is also causing major damage to our oceans, rivers and wildlife. In recognition of this, over the past three years we have given out over 150,000 reusable water bottles to customers across our operating area and children at our education Discovery Centres.

We will shortly launch our ‘Tap’ campaign – in partnership with Welsh Government and supporting Refill – to encourage customers to change their behaviours, to ditch single-use plastics, to drink more tap water to boost health (and save money) and to value water more.

Finally, during AMP6 we have piloted a new community-based customer engagement and involvement approach in the Rhondda Fach area – our first Water Resilient Community. This brings together all our customer participation strategies focused on an area of economic deprivation with a high number of customers in vulnerable circumstances. See section 18 for more details.

PR19 customer engagement programme

Our Board determined as early as February 2016, as we were starting to prepare for PR19, that our business plan for 2020-25 should take customer views and preferences as the starting point. Our approach has been to reflect the results of customer research throughout the process in every

decision taken in relation to business planning. It is therefore not the case that we have simply prepared a plan and then adjusted it in light of customer 'testing'.

The CCG initially worked with us on the overall approach to customer engagement, the principles to be followed, and the topics to be discussed with customers. For PR19 specifically, we agreed a three-phase approach to customer engagement.

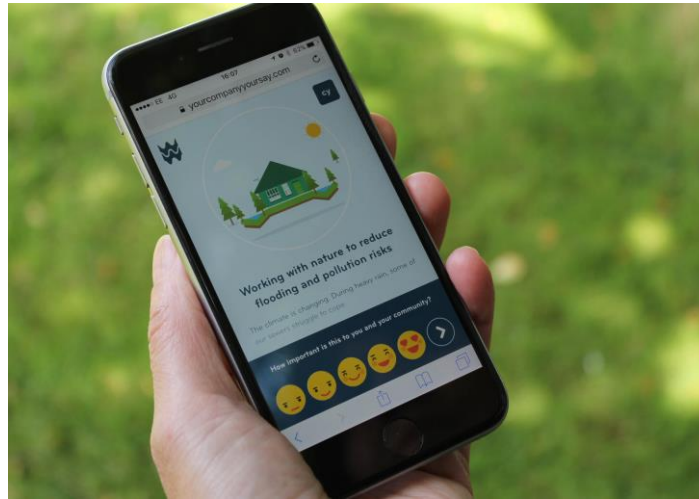
- **Phase 1** explored general customer service priorities over the short and long-term and views on a variety of topics, the results of which were used to select our suite of performance measures for our business plan. It also included customer consultation on our long-term strategy, Welsh Water 2050, and how we should begin investing for long-term resilience in our PR19 Business Plan.
- **Phase 2** explored quantitative issues and valuations in more depth, and the results were used to inform performance targets and our scheme for financial incentives (Outcome Delivery Incentives – ODIs).
- **Phase 3** allowed customers to choose between two plan options, and then tested the acceptability of our final plan.

Each phase included a mix of quantitative and qualitative research, conducted by one of three appointed independent research agencies. Overall more than 40,000 customers have been involved in our customer engagement programme in AMP6, the majority of whom were involved in our major summer 2017 'Have Your Say' consultation which focussed on customers' long-term priorities (resulting in the Welsh Water 2050 document) which was the foundation of our PR19 business plan. We ensured throughout that all customers, including non-household customers and customers in vulnerable circumstances, had their voices heard.

'Willingness to Pay' research also played an important role in the development of our plans. We sought to learn the lessons from our experience at PR14 and we employed a revised methodology which addressed the flaws in the previous approach and, we consider, improved significantly the reliability of the results. However, we also used other methods to derive the value customers place on performance improvements, and took these into account in discussion with the CCG, in determining our performance targets for PR19.

The use of an improved methodology for 'Willingness to Pay' was one of many innovations in our PR19 engagement programme. We harnessed new technologies, such as using a Facebook Messenger 'Chatbot' as part of our Have Your Say 2017 campaign, and developing an Online Community of more than 500 customers who discuss and provide feedback on key topics. The social media content we produced for PR19 has been viewed by hundreds of thousands of customers. We have also introduced new ways of working such as streaming videos of focus groups to Board and CCG members, so they could hear directly what our customers think.

Innovation: Customer engagement ‘chatbot’



In a first for the industry, we are using a bilingual Facebook Messenger ‘chatbot’ as a new way of reaching our customers. Facebook now has around 40 million monthly active users in the UK. The chatbot, developed with Coup Media, means we can engage with a huge potential audience on a platform they are familiar with using every day. It allows us to reach demographic groups that are traditionally less likely to have their say – be that young people or hard-to-reach groups, all without the problem of significant dropout during channel shifting online.

The Board was closely involved in our customer engagement programme throughout. In addition, the CCG provided regular updates to Board meetings (including the CCG chair attending Board on six occasions), and Board members attended CCG meetings on a number of occasions.

Results and implications for our business plan

Full details of the results of our customer research are provided in our PR19 Customer Research Report (Ref 1.1) and associated appendices. Here we summarise the key messages from customers, and the decisions that were taken in relation to our PR19 business plan to reflect those views.

Key message	Business plan decisions
Affordability is a key concern for customers, but there is no overriding drive from customers to reduce the level of bills	Customers as a whole should see a reduction in the average bill in real terms, reflecting the reduction in the allowed level of profitability post-2020 (the “return on capital”)
Customers support our taking a long-term approach to planning for the future of our service. Customers are generally willing to accept higher bills to fund investments necessary to secure the long-term continuity of the essential services they receive, as long as this does not compromise overall affordability	Long-term resilience should be enhanced, through a significant investment programme targeted at the most urgent Strategic Responses identified in Welsh Water 2050, covering drinking water, environmental protection and future service resilience

Key message	Business plan decisions
There are areas of service that customers feel we should prioritise and are seen as important or essential by customers	Develop a suite of performance measures that allows us to track how we are doing against the things that matter to customers
Customers do not wish to see service deterioration in any area, and there is evidence that customers are willing to contribute varying amounts on their bill towards service improvements, depending on the service area	Propose a set of performance targets that take account of customer valuations, as well as the results of a range of customer research projects, and other considerations such as historical and comparative performance
Customers expect us to harness innovation and efficiency to keep down the cost to customers, while communicating effectively how these investments benefit both customers and the environment	Put forward a challenging programme of cost reductions over the next period, and ensure innovation is embedded throughout the organisation and linked with the research priorities required to meet our long-term goals (Welsh Water 2050)
There is majority (but not universal) support for more help for those customers who are genuinely struggling to pay their water bills	Increase the number of customers on our social tariffs, but limit the 'cross-subsidy' from other customers at around the current level (in real terms)
Customers are suspicious (at best) of financial incentives (ODIs)	Develop a package of ODIs that is aligned with customer priorities, and complies with Ofwat guidance, with a new 'WaterShare' policy which ensures any net outperformance payments go to benefit customers
When shown a 'base' plan and a 'plus' plan, with specified extra investment for a £10 increment on the bill, a small majority of customers chose the 'plus' option. However, this was not considered a decisive result	Having discussed the result with the CCG, we have included roughly half of the extra investment in the final plan

In the final acceptability testing, 92% of customers found the proposed business plan, as a package of service levels and bills, to be acceptable or very acceptable. A total of 95% of customers considered the proposed average household bill level was affordable. Support was consistently strong across all customer groups, including non-household customers and those most at risk of being in vulnerable circumstances.

4 The long-term: Welsh Water 2050

Introduction

Ours is a long-term business, providing an essential public service on which our customers rely. We must be agile, innovative and resilient if we are to maintain high quality services to current and future customers, at a price they can afford and in a way that respects the natural environment.

The water industry's regulatory cycle, led by Ofwat, is based on five-year plans. We appreciate the reasons why this timescale is used, but it can encourage a short-term outlook. Long-term resilience means looking beyond this horizon so that we can anticipate and prepare for the challenges and opportunities that lie ahead during the next 10, 15 or 30 years. This is why in 2018 we produced our new long term vision, Welsh Water 2050.

Our not-for-shareholder model makes it easier for us to think long-term. All the UK's water companies have a responsibility to future generations, but most also have to generate reasonable returns to shareholders which is typically a short to medium-term objective. Freed from this constraint, we can plan for the next 30 years in a way that differentiates us from the rest of the sector and aligns closely with the Welsh Government's own strategic direction as set out in the Well-being of Future Generations (Wales) Act 2015.

Background

A long-term focus is not new at Welsh Water. In 2008 we published a strategic direction statement, 'Our Sustainable Future', which looked ahead to 2035. It has guided our thinking during the intervening 10 years. It included a number of ambitions which, at the time, were regarded as innovative and challenging.

For example, we prioritised renewable energy production and cutting our greenhouse gas emissions. A decade later, our estate includes a varied and growing mix of renewable energy generators which, this year, will provide almost a quarter of our energy needs, rising to 30% by 2020. All our external energy suppliers are 100% REGOⁱⁱⁱ backed.

We also prioritised the use of sustainable drainage systems (SuDS). Ten years later, our RainScope projects, such as those in Cardiff and Llanelli, are flagships for the sector, demonstrating the benefits of SuDS, such as reducing flood risk and enhancing biodiversity, while avoiding the need for ever-larger pipes to cope with increased volumes of surface water from growth and climate change. The advantages of SuDS are now widely recognised, so the Welsh Government is in the process of making them mandatory for most new developments in Wales.

Development of Welsh Water 2050

Since 2008 a number of fundamental changes have taken place, affecting the wider environment in which we operate. For example, technology continues to develop rapidly – enabling smarter ways of working and providing ways to communicate with customers that were unimaginable in 2008; the political and legal backdrop is evolving, with the provisions of the Wales Act likely to come into effect from 2020 and the UK's imminent departure from the EU increasing uncertainty; customer expectations are increasing; and we are having to cope with new threats to the quality of our water sources.

In 2016 our Board took the decision to accept a new challenge, “to become a truly world-class, resilient and sustainable water service for the benefit of future generations.” This led to the commission of an extensive review of international best practice in resilience planning, so we could look ahead to 2050. This work was aided by independent consultants Arup and by Cardiff University.

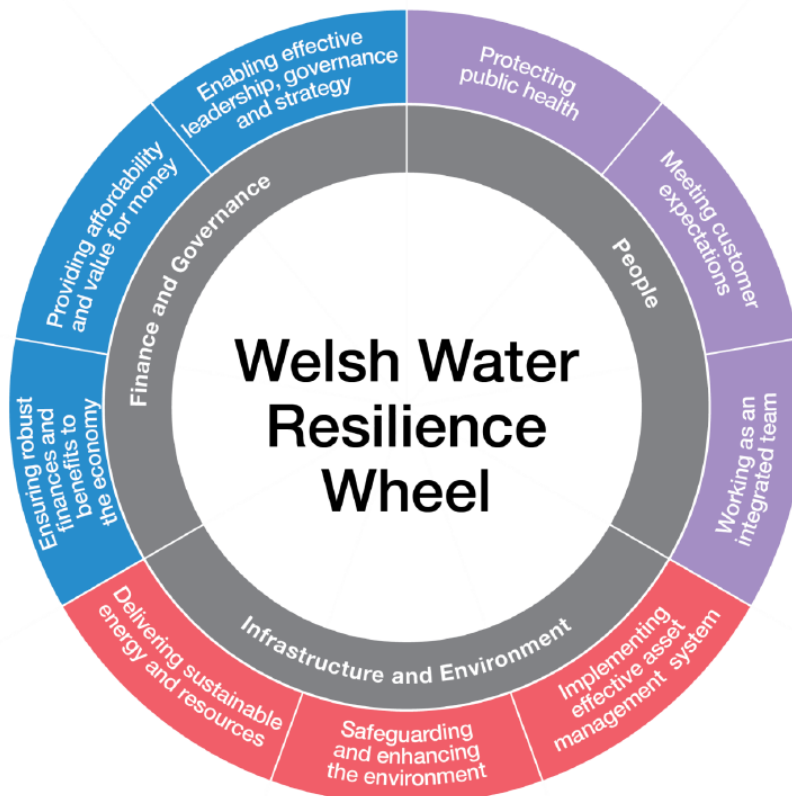


Figure 6: The Welsh Water Resilience Wheel

An important output is the formulation of a bespoke Welsh Water Resilience Wheel – which captures the main aspects of what it is to be a resilient and sustainable water service for the long-term (see section 4). The Resilience Wheel was developed by drawing on best practice from a range of sources around the world. This included the City Resilience Index, developed by Arup with support from the Rockefeller Foundation, as well as Ofwat’s “Towards resilience: how we will embed resilience in our work” developed to challenge the water utility sector and to inform Ofwat’s work. Our Resilience Wheel measures nine requirements for a truly resilient business – comprising People, Infrastructure and Environment, and Finance and Governance – ‘resilience in the round’.

The outcome of this work was our Welsh Water 2050 consultation document which we published in spring 2017. It sought views on how, in the years ahead, we can keep our six promises to all our customers:

- Clean, safe drinking water for all
- Safeguard our environment for future generations
- Personal service that’s right for you
- Fair bills for everyone
- Put things right if they go wrong and

- A better future for all our communities

In response to our consultation we received:

- Over 20,000 customer responses to our survey, through an innovative variety of digital and face-to-face methods;
- Detailed and ongoing input from customers through our online community, a range of customer focus groups and our new Youth Board;
- A very successful stakeholder launch event, and another event involving around 50 of the independent Members of Glas Cymru; and
- A total of 17 detailed responses from stakeholders

We discussed the approach to the consultation and the responses we subsequently received with our CCG – and we are particularly grateful for our Members’ time and input into this complex process.

Customer feedback

The overwhelming response is that customers support us taking a long-term approach to planning the water service we provide. As they become more engaged with the potential issues, most customers expect Welsh Water to take the right long-term decisions today, to protect public health and the natural environment, for the benefit of future generations of customers. In most, but not all, cases this is seen as a higher priority than minimising the cost of the water service to current customers.

However, customers rightly expect us to be as efficient and innovative as possible in planning future investment in the business, to minimise future bills to customers. A clear theme is that they generally have very high levels of trust in Welsh Water, in part due to our not-for-shareholder ownership model, which in turn is reflected in generally high levels of support for our long-term plans.

We have taken on board the feedback from customers and stakeholders, so our final document reflects the key themes raised by respondents. In particular, we added four new Strategic Responses to the 14 included in our consultation paper, bringing the total to 18 in our final document.



Welsh Water Chief Executive, Chris Jones (left), with Minister for Environment Hannah Blythyn (centre) and chair of the CCG, Peter Davies (right), at the Welsh Water 2050 launch

In March 2018, we published the final Welsh Water 2050 document^{iv}. It sets out our long-term vision for a truly resilient water business, explaining how we will respond to the many challenges and opportunities that lie ahead — from climate and demographic change to the pace of technological progress and increasing customer expectations. Our plan and the long-term approach were warmly welcomed by Welsh Government ministers at our Welsh Water 2050 launch event in March 2018 at the Senedd in Cardiff.

Key trends

The eight key trends, which are categories of challenges and opportunities we anticipate between now and 2050, identified within Welsh Water 2050 are:

1. Demographic change – including the impacts of population growth and an ageing population
2. Climate change – anticipating additional extreme rainfall events as well as drier, hotter summers
3. Change in customer expectations – customers, particularly business customers, will want a more personalised service and control over their use of services and be less tolerant of service outages
4. Changes to the structure of the economy – including the opportunities presented by a digital, knowledge-based economy, as well as potential impacts on the nature and expectations of society
5. Environmental change – such as the spread of invasive species, land use change and an increased risk of environmental pollution which could reduce water quality and biodiversity

6. Protecting essential infrastructure - ageing infrastructure, a limited supply chain and cyber security are key concerns. Technological advances could help us overcome these challenges
7. Policy and regulatory change – uncertainties associated with changes in policy and regulation are expected due to the UK leaving the EU, devolution and changing quality standards
8. Protecting public health – potential tightening of regulatory standards to protect drinking water quality and our role in helping to promote healthier and more sustainable lifestyles for our customers

Our 18 Strategic Responses

Having identified these key trends, we must ensure Welsh Water is equipped to respond.

Informed by the feedback of customers and other stakeholders, we developed 18 Strategic Responses. They are grouped into three key areas – drinking water, customers and community, and environment -which align with the water cycle.

Strategic Responses - Drinking water

1. Safeguarding clean drinking water through catchment management – catchments are our first line of defence. To reduce the risks, we will co-create an extensive, innovative programme of catchment management with landowners and partners
2. Enough water for all – we will use our Water Resources Management Plan to ensure a balance in water supply and demand to 2050. We propose to implement water transfers, demand management measures and leakage reduction to address minor deficits, while actively exploring options to support other parts of the UK by water transfer
3. Improving the reliability of drinking water supply systems – we will build more flexibility and integration into our water treatment and supply systems
4. Protecting our critical water supply assets – we will improve the resilience of critical water assets which have high consequences of failure
5. Achieving acceptable water quality for all customers – this will be addressed through a programme of redesign and comprehensive remediation of local distribution systems (zonal studies), replacing and refurbishing iron mains, targeting those networks which data analysis has shown cause the greatest issues for our customers
6. Towards a lead-free Wales – we propose a targeted replacement of lead communication and supply pipes, as part of a wider societal effort to address lead in drinking water

Strategic Responses - Customers and communities

7. Working with customers and communities – we will co-create solutions, share knowledge and support initiatives which reduce water use, prevent sewer abuse, and provide wider benefits for communities and the environment
8. Ensuring affordability of services delivered to customers – we will continue to provide the best service in increasingly innovative and efficient ways and pass these savings on to our customers
9. Supporting customers in vulnerable circumstances – we need to use data effectively, provide personalised customer service and work in partnership with other service providers to give effective support to these customers, including help for even more customers who are genuinely struggling to pay their water bills
10. Addressing our ‘worst-served’ customers – we will address the longstanding service complaints of ‘worst-served customers’ to ensure everyone receives an acceptable level of service
11. Employer of choice – we will need to attract, develop and inspire people from a diverse range of backgrounds, to deliver excellent customer service.
12. Leading-edge customer service – we want to further develop our customer service culture. We will harness technological change to provide a personalised service for customers through their preferred contact channel
13. Smart water system management – with the opportunity to capitalise on technological advances, we will improve the service performance and resilience of our assets through remote sensing, data analysis and automation, solving problems before they impact on our customers, business, or the environment

Strategic Responses - Environment

14. Supporting ecosystems and biodiversity – we will look for ways to help nature, enhance biodiversity and promote ecosystem resilience while we carry out our water and wastewater activities, so we meet our related obligations under the Environment (Wales) Act 2016
15. Using nature to reduce flood risk and pollution – we will utilise sustainable urban drainage systems
16. Cleaner rivers and seas – we will improve our wastewater assets to help achieve ‘good’ environmental status for our rivers, lakes and coastal waters
17. Protecting our critical wastewater assets – we will improve the resilience of our critical wastewater assets, which have high environmental and customer impacts of failure
18. Promoting a circular economy and combatting climate change – we will aim to be an energy-neutral business, while maximising the opportunities to reuse treated water and other potentially valuable natural materials, contributing to the circular economy in our region

Synergies with the Welsh Government’s agenda

Although we are not directly within the scope of the Well-being of Future Generations (Wales) Act 2015, we have mapped the 18 Strategic Responses published in the final Welsh Water 2050 strategy against the Act’s well-being goals. Some clear synergies emerged which gives us considerable confidence our innovative, long-term approach aligns well with the Welsh Government’s well-being agenda. This will greatly help us to find new ways of working and co-operative with other stakeholders, land users and communities to further our common well-being goals.

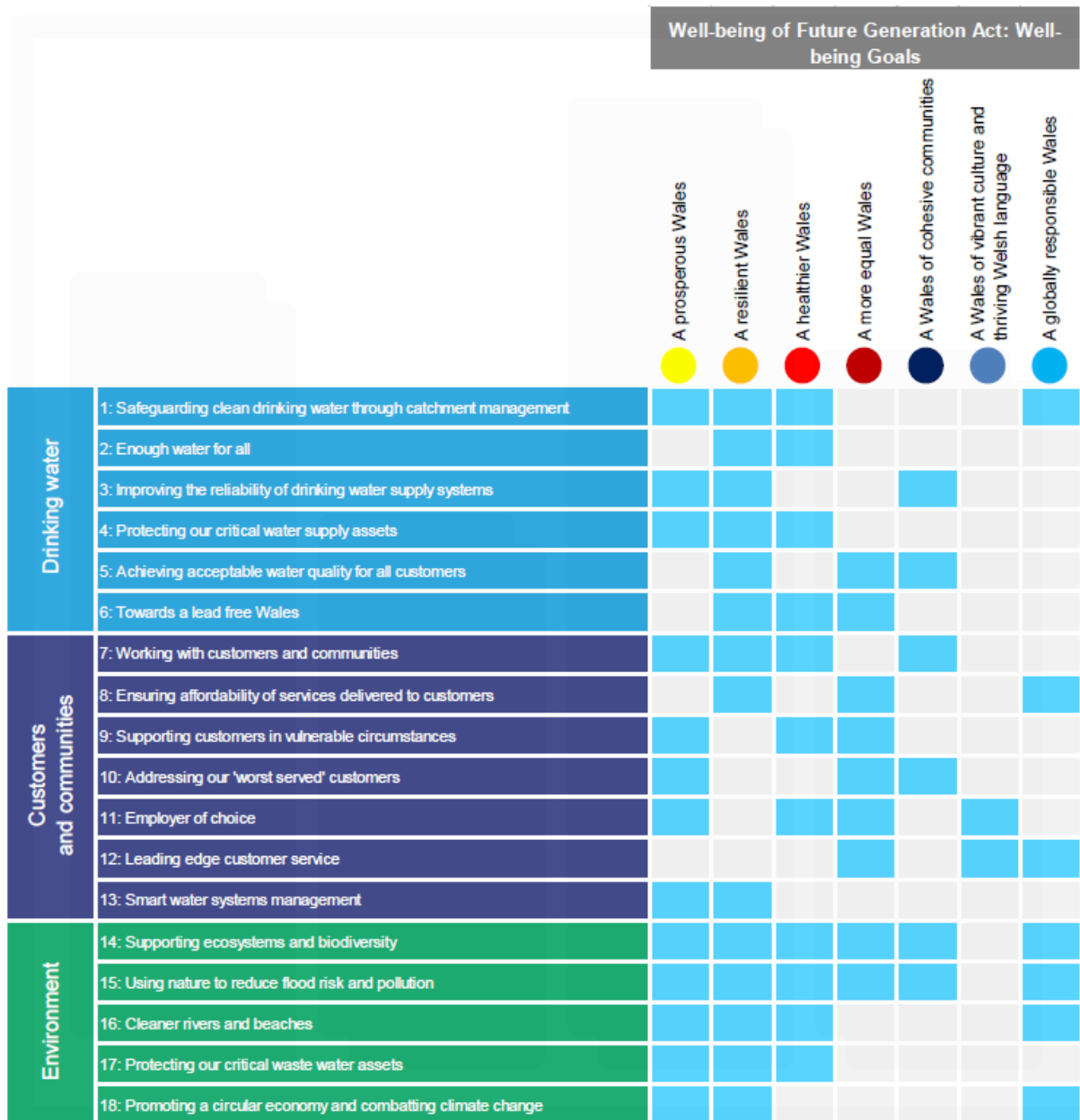


Figure 7: Contributing to the Well-being Goals

We have developed a comprehensive suite of ‘Measures of Success’ which will enable us to measure our progress towards the objectives set out in our Welsh Water 2050 vision and to report on this

each year to our customers. More detail on the interaction between our resilience strategy and our Measures of Success is contained in section 5.

There are two new measures which are already common industry measures required by Ofwat. These both relate to our ability to mitigate the impact on customers of rare, but extreme, events. The modelling behind these measures is not yet fully developed, but our 2024-25 targets – calculated on the basis of current information – are given below.

Measure of Success	Definition	2017/18 outturn	2019/20 Target (AMP6)	2024/25 Target (AMP7)
Risk of severe restrictions in a drought (Ft1)	Percentage of the population the company serves that would experience severe restrictions in a 1-in-200 year drought.	4%	n/a	0%
Risk of sewer flooding in a severe storm (Ft2)	Percentage of population at risk of sewer flooding on customer property in a 1-in-50 year storm.	3.63%	n/a-	5% reduction from 19/20

We also measure the ways in which we are adapting to long-term trends and challenges. Two measures in particular which are directly related to long-term climate adaptation are reducing flows of surface water run-off into our wastewater network (through our RainScape programme), and increase our energy self-generation.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Energy self-sufficiency (Ft3)	Electricity generated and gas injected to grid as a percentage of all electricity and gas consumed (gas expressed as an electricity equivalent).	19%	26%	35%
Surface water removed from sewers (Ft4)	The volume of surface water diverted from sewers (measured as roof equivalents).	15,097	25,000	47,000

Welsh Water 2050 as context for PR19

Welsh Water 2050 provides a clear, long-term framework for our future business planning. Welsh Water, our key stakeholders and our customers, believe implementing our 18 Strategic Responses

will equip us to meet the challenges and opportunities we foresee, making us much more resilient in the face of the challenges that lie ahead.

While many of these Strategic Responses will take a generation to fulfil, it is important we make a start now to respond to foreseeable risks and trends, so it can be done at an affordable pace and avoid problems being stored up for future generations to deal with in a reactive, and ultimately much less efficient, manner.

Our five-yearly business plans can set clear deliverables to demonstrate progress towards the achievement of our 18 Strategic Responses. This can be done in a way prioritised by the issues of greatest risk or importance to customers, and at a rate of improvement which is affordable for customers given the expected financial environment over that period.

Progress toward the delivery of Welsh Water 2050 will be a recurrent theme underpinning all of our plans for 2020-2025 and beyond. Our 2020-2025 business plan, and our outline projections for the subsequent period, represents an ambitious step towards that long-term vision, at a rate of progress which is affordable for our customers and which places particular priority on issues of most concern to our customers.

5 Outcomes and Measures of Success

Introduction

Our PR19 business plan includes performance targets for all aspects of our business across a suite of 47 'Measures of Success'. A total of 14 of these measures were pre-defined by Ofwat as common industry measures, and we were also required to include measures to cover a number of other areas including bioresources, the environment, and resilience. Fundamentally, however, we wanted to ensure our Measures of Success do two things:

- reflect all the service priorities that matter most to customers and
- help us to focus and report on metrics critical to sound, long-term stewardship of the company, its assets and its people, as reflected in the Welsh Water Resilience Wheel

Our suite of measures covers these two objectives. As explained in this section, and further in supporting document [Ref 5.2 PR19 Performance Commitments](#), we then determined a set of stretching performance targets for the next five years and beyond. The key performance improvements include the following:

- a 15% reduction in leakage levels (which have already been roughly halved in the last 20 years)
- a reduction in the numbers of customers experiencing temporary discolouration or taste and odour issues with their water supply, from 2.8 to 2.0 (contacts per 1,000 customers)
- a reduction in supply interruptions, which are particularly important for businesses as well as households, from 12 to eight minutes a year per customer
- a 10% reduction in incidents of sewer flooding of customer premises each year, which would otherwise be on an upward trend due to climate change, from 300 to 273 a year
- a 20% reduction in pollution incidents (which are predominantly minor 'category 3' incidents), from 112 to 90 a year and
- an 18% reduction in the number of customers receiving a service below our defined minimum-threshold levels, from 1,500 to 1,230, meaning fewer "worst-served" customers suffering from repeated water supply outages, sewer flooding or low water pressure

Customer promises: our PR19 outcomes

Following the adoption of our new vision statement in 2013 – "to earn the trust of our customers, every day" – we developed six customer promises to reflect the service that we should provide to all of our customers.

- Safe, clean water for all
- Safeguard our environment for future generations
- Put things right if they go wrong
- Personal service that's right for you
- Fair bills for everyone
- A better future for all our communities

These six customer promises form the backbone of our "customer-led success" approach to delivering great services for our customers, instilling a culture that everything we do and every decision we make should have the end result for customers in mind.

Accordingly, these promises form a sound basis for the outcomes we will commit to delivering in our PR19 business plan. As such, our performance commitments for PR19 are grouped under these headings. We have also included an additional heading – Colleague Promises. We recognise the essential enabling role our colleagues make in delivering our customer promises as part of a truly resilient organisation, so we have defined some commitments to ensure that this continues.

Reflecting customer priorities

As part of “earning the trust of our customers, every day” we need to be transparent about our performance, showing where we are doing well and where we are falling short in the areas customers care about. For example, we know having a reliable supply of water is important to both household and business customers. So we measure the duration in minutes of supply interruptions and the number of customers affected, and report the resulting ‘minutes lost’ per customer in our Annual Performance Report each year.

To ensure we were covering all the service elements that matter most to customers in our Measures of Success, we undertook a major exercise to gather data and information on customer priorities from a wide range of sources, and ‘triangulated’ the results to create an indicative list of high, medium, and lower customer priorities. The information included the results of customer research in which we asked customers about what mattered to them, but also data from customer contacts, our comparative performance against other companies, and what other companies were tracking in their PR14 measures. The full methodology and results are described in our PR19 Customer Engagement Report (Ref 1.1).

Many of the high-priority service areas were already covered by Ofwat’s common measures, but we added a number of others to reflect other priorities such as: external sewer flooding, the number of customers receiving poor service (worst-served customers) and incidents of poor-quality water (taste, odour and appearance). We discussed this exercise with the CCG throughout the process, and have reflected their feedback in the final list of Measures of Success shown below.

Our PR19 Measures of Success

Following this approach, and integrating feedback from Ofwat (which involved adding three new measures to avoid having composite measures), the result was the table of 47 Measures of Success below.

Customer promises/Outcomes						
Clean, safe water for all	Safeguard our environment for future generations	Personal service that's right for you	Put things right if they go wrong	Fair bills for everyone	Create a better future for all our communities	Colleague promises
Tap water quality compliance risk index (WT1)	Water and wastewater treatment works compliance (En1)	Household customer satisfaction (C-MeX) (Sv1)	Sewer flooding on customer property (internal) (Rt1)	Change in average household bill (B1)	Risk of severe restrictions in a drought (F1)	Reportable injuries (Co1)
Water supply interruptions (WT2)	Wastewater treatment works 'look-up table' compliance (En2)	Developer services customer satisfaction (D-MeX) (Sv2)	Sewer flooding on customer property (external) (Rt2)	Vulnerable customers on social tariffs (B2)	Risk of sewer flooding in a severe storm (F2)	Employee training and expertise (Co2)
Acceptability of drinking water (WT3)	Pollution incidents from Wastewater (En3)	Customer trust (Sv3)	Sewer collapses (Rt3)	Company level of bad debt (B3)	Energy self-sufficiency (F3)	Employee engagement (Co3)
Water mains bursts (WT4)	Leakage (En4)	Business customer satisfaction (Sv4)	Total complaints (Rt4)	Unbilled properties (B4)	Surface water removed from sewers (F4)	
Water process unplanned outages (WT5)	Per capita consumption (En5)	Vulnerable customers on priority services register (Sv5)	Worst served customers for water service (Rt5)	Financial resilience (B5)	Asset resilience (Impounding reservoirs) (F5)	
Tap water quality event risk index (WT6)	Km of river improved (En6)	Customers on Welsh language register (Sv6)	Worst served customers for wastewater service (Rt6)		Asset resilience (water network+ above ground assets) (F6)	
Water catchments improved (WT7)	Bioresources energy generation (En7)				Asset resilience (water network+ below ground assets) (F7)	
Lead supply pipes replaced (WT8)	Bioresources disposal compliance (En8)				Asset resilience (wastewater network+ above ground assets) (F8)	
					Asset resilience (wastewater network+ below ground assets) (F9)	
					Community education (F10)	
					Visitors to recreational facilities (F11)	

Figure 8: PR19 Outcomes and Measures of Success (Performance Commitments)

NB: Each performance commitment has a reference code according to the outcome to which it is related. These references are used throughout this document. Ofwat’s common industry measures are marked in purple. (Note that we do not have an Abstraction Incentive Mechanism (AIM) performance commitment as we do not have any AIM sites.)

Welsh Water 2050 measures

As explained in section 4, Welsh Water 2050 sets out 18 Strategic Responses as a plan of action to address to the long-term trends and challenges we face as a business. We are already starting to put this plan in place, and we have committed to making significant further progress over the next five years to 2025.

In developing our suite of Measures of Success for PR19 we, therefore, wanted to ensure that each of the Strategic Responses is covered by at least one measure, to help us to measure that progress. As a consequence, we have added several Measures of Success into our plan in order to cover all aspects of the Welsh Water Resilience Wheel. The table below shows how this has been achieved.

Strategic Response	Measures of Success
1. Safeguarding clean drinking water	Water catchments improved (Wt7)
2. Enough water for all	Leakage (En4), Per capita consumption (En5), Risk of severe restrictions in a drought (Ft1)
3. Improving the reliability of drinking water supply systems	Water supply interruptions (Wt2), Tap Water Quality Event Risk Index (Wt6)
4. Protecting our critical water supply assets	Asset resilience (water resources) (Ft5), Asset resilience (water network+ above ground assets) (Ft6), Asset resilience (water network+ below ground assets) (Ft7)
5. Achieving acceptable water quality for all customers	Tap Water Quality Compliance Risk Index (Wt1), Acceptability of drinking water (Wt3)
6. Towards a lead free Wales	Lead supply pipes replaced (Wt8)
7. Working with customers and communities	Visitors to recreational facilities (Ft11), Community education (F10), Customers on Welsh-language register (Sv6)
8. Ensuring affordability of services delivered to customers	Vulnerable customers on social tariffs (Bl2), Company level of bad debt (Bl3), Unbilled properties (Bl4), Financial resilience (Bl5)
9. Supporting customers in vulnerable circumstances	Vulnerable customers on social tariffs (Bl2), Vulnerable customers on priority services register (Sv5)
10. Addressing our 'worst served' customers	Worst-served customer for water service (Rt5), Worst-served customer for wastewater service (Rt6)
11. Employer of choice	RIDDOR injuries (Co1), Employee training and expertise (Co2), Employee engagement (Co3)
12. Leading edge customer service	Household customer satisfaction (C-Mex) (Sv1), Developer services customer satisfaction (D-Mex) (Sv2), Business customer satisfaction (Sv4), Customer trust (Sv3), Total complaints (Rt4)
13. Smart water system management	Water mains bursts (Wt4), Water process unplanned outages (Wt5), Sewer collapses (Rt3)
14. Supporting ecosystems and biodiversity	Bioresources disposal compliance (En8), Water catchments improved (Wt7), Surface water removed from sewers (Ft4), Kilometres of river improved (En6)

15. Using nature to reduce flood risk and pollution	Sewer flooding on customer property (internal) (Rt1), Sewer flooding on customer property (external) (Rt2), Risk of sewer flooding in a severe storm (Ft2), Surface water removed from sewers (Ft4)
16. Cleaner rivers and beaches	Pollution incidents from wastewater (En3), Treatment works compliance (En1), Wastewater treatment works 'look-up table' compliance (En2), Kilometres of river improved (En6)
17. Protecting our critical wastewater assets	Asset resilience (wastewater network + above ground assets) (Ft8), Asset resilience (wastewater network + below ground assets) (Ft9),
18. Promoting a circular economy and combating climate change.	Energy self-sufficiency (Ft3), Bioresources energy generation (En7)

Setting stretching performance targets

Our ambition is to be a top performing company in the industry in all the areas of service that matter most to our customers. Our measures of success are designed not just to *measure* how we are doing, but to compare our *actual* performance each year against stretching targets that meet customer expectations and show progress towards this ambition. In many areas we are already doing well and will continue to seek improvements, but in certain areas we lag behind the rest of the industry. Whatever the reasons for this, we are determined to do better, and to invest wisely to achieve improvements valued by customers.

In setting our performance targets for AMP7, we have worked closely with the CCG. As with all elements of the plan, we have started with customer views. We undertook a range of customer research projects with both household and non-household customers to learn about their views on our performance. This included comparing our current performance with other companies and our trends of historical performance. Where targeting an improvement in performance required enabling investment an important part of this exercise was our 'willingness to pay' survey, which calculated theoretical values customers would be willing to accept as an increment on their bills to pay for performance improvements.

Following Ofwat's guidance on target setting, we used these results in combination with other sources of customer valuations and compared them with the costs of the investment required to improve performance using cost-benefit analysis. We also took into account wider, more qualitative information on customer views.

This was one of a number of considerations taken into account when setting PR19 performance targets, which also included:

- Cost-benefit analysis (including customer valuations)
- Comparative performance, in particular current and projected future upper quartile performance

- Historical performance
- Maximum realistically achievable
- 'Default' minimum improvement targets
- Regulatory requirements – such as a requirement for 100% compliance.

Some of these criteria were more relevant and applicable than others, depending on the service area. A number of the measures were new and some are still in development. We will refine our targets for these measures in due course as further data becomes available. A full description of our approach and the resulting targets is provided in PR19 Performance Commitments (Ref 5.2). A summary of our performance targets are included in this document as Appendix 1.

We discussed our approach in detail with the CCG, and were challenged to justify our assumptions and our conclusions. This included ensuring our forecasts of performance for 2019-20 took account of recent performance, ensuring an appropriate 'baseline' for improvements in AMP7. Our Board was also closely involved at each stage in the process, ensuring all measures of success had stretching performance targets in each year to 2025 and beyond.

Beyond AMP7

Our PR19 business plan also sets targets beyond 2025. This is entirely appropriate given our focus on the long-term and our Welsh Water 2050 objectives. Many of our operational strategies for improving performance involve multi-AMP investment programmes, which will continue to deliver improvements in service out to 2030 and beyond.

We have therefore included performance targets, approved by the Board, for 2030 and each subsequent five-year period, showing how we intend to progress towards and ultimately achieve our Welsh Water 2050 objectives. We believe this is a measured approach to achieving our ambitions of providing sustainable, affordable and high-quality services to our customers over the long-term.

6 Affordability

Background

As a company that exists solely to serve its customers, we are acutely conscious of the need to ensure we provide our services at a price our customers can afford. This is the case not least because of the economic characteristics of our operating area, with high unemployment and poverty rates relative to the rest of the UK, and lower average incomes.

There is clearly a balance to be struck between the overall cost of our services to customers and the level of performance and service we provide, and this is the critical decision that underpins our plans. A second key trade-off is between the cost to customers today and the costs to customers in the future. As a long-term business, and particularly in light of the Well-being of Future Generations Act, we do not believe we should delay necessary investment today that would mean higher costs and poorer or less-resilient services in the future. This view was strongly endorsed by customers in research we carried out in the context of developing Welsh Water 2050.

The third key decision on affordability is the distribution of social tariffs, being discounted bills for customers on low incomes who struggle to pay their bills. Because of our non-shareholder model, we have uniquely been able to respond to the higher levels of economic deprivation in our area by spending some of our financial surpluses to support social tariffs, developing by far the most 'generous' and widespread social tariffs scheme in the UK water industry.

The generality of customers also contributes to a 'cross subsidy' to support our social tariffs, as they do for other water companies and we have consulted specifically with them as to the level of the subsidy that they consider is appropriate. We want to continue to help those who cannot afford to pay their bills – making that assistance as targeted and effective as it can be – while not imposing an undue burden on the rest of our customers. At the same time we recognise, and our customers demand, that we should pursue vigorously those who can, but won't, pay their bills.

Our record

When Glas Cymru was established as the owner of Welsh Water in 2001, our customers faced one of the highest bills of all the water and sewerage companies in England and Wales. This was in large part because of the higher wastewater side of the bill, owing to the huge post-privatisation investment required in wastewater treatment to meet new regulations on bathing water quality.

Since then we have worked hard to bring bills down for customers, by reducing our financing costs and driving operational efficiencies. As a result, we have delivered the biggest percentage bill reduction of the 10 water and sewerage companies since 2001, and by 2020 we will have reduced bills in real terms (increases less than RPI inflation) for 10 years in a row – the only company to achieve this.

Change in average household bill

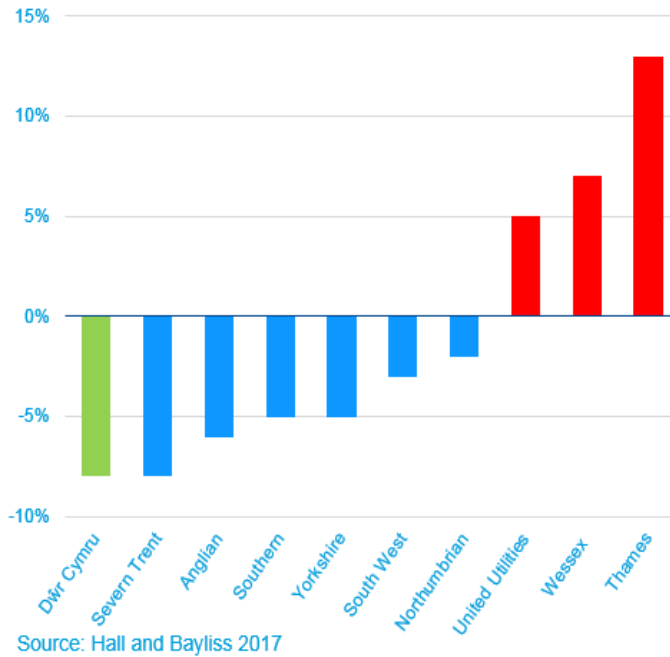


Figure 9: Industry bill changes 2000-2016

These bill reductions have not been made at the expense of the future resilience of the service or by storing up costs for future customers. Our gearing (net debt as a proportion of our ‘regulatory capital value’) has been brought down to around 60%, among the lowest in the industry, and we have continued to maintain and replace our assets to ensure they are delivering high performance levels for customers, now and over the long-term.

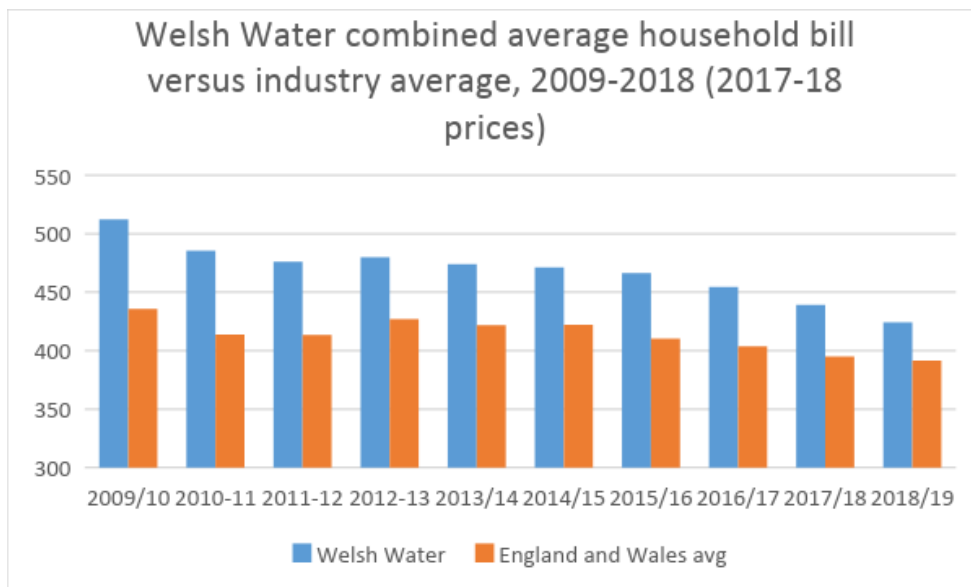


Figure 10: Welsh Water ‘closing the gap’ on average household bills

Meanwhile we have been developing and refining our social tariff offerings for customers who struggle to pay their bill because of low incomes or because they are in vulnerable circumstances. In 2015, we introduced a new social tariff called HelpU, which currently offers a flat bill of £197 for eligible customers. Over the last three years we have seen a rapid acceleration in the uptake of HelpU, meaning that, when combined with WaterSure Wales (which caps bills for qualifying customers), we now have some 89,000 customers on these social tariffs (as of 31 March, 2018). This is the highest number of any water company in England and Wales. This increase was achieved by working with over 180 voluntary and other organisations, including housing associations and food banks, to help us reach eligible customers, and more recently through our Water Resilient Community project in the Rhondda Fach area (see Ref 6.5).



Engaging with customers on bill assistance options.

Customer views

Our wide-ranging PR19 customer engagement programme has allowed us to test customer views on affordability in a variety of ways. Our consultation on our long-term strategy, Welsh Water 2050, suggested a majority of customers would be willing to pay a higher bill if it meant we would be doing more to meet long-term challenges such as climate change. On the other hand, in a specific piece of research on bills and affordability, 37% said they find paying their current bill “a stretch” (in addition to 5% who said they cannot afford it). When we asked customers about their priorities for their water and wastewater service, value for money comes consistently high on the list.

Taken in the round, as set out in our PR19 Customer Engagement Report (Ref 1.1) in the context of an average bill profile falling in relation to general inflation, a majority of customers would prefer to see money being spent on enhancing service, protecting the environment or supporting social tariffs, rather than further reductions in average bills. Business customers are clear they expect the best possible value for money, but their priorities are service reliability and excellent customer services. Our developer customers consistently tell us delivering new connections to them on time is their top requirement, so their wider delivery schedule is not interrupted.

With regard to social tariffs, we undertook specific research to update the work we did in 2013 to test the acceptability of different levels of ‘cross-subsidy’ to fund social tariffs. We also asked about social tariffs in research around different ways of using our ‘customer dividends’. There are indications this is a somewhat divisive topic for customers, with a substantial majority supporting the principle wholeheartedly while others seem to strongly reject it. Overall our research concluded that there is majority support for only a limited increase to the current ‘cap’ on the cross-subsidy of £15 (plus inflation) per customer per year.

Our plans: affordability for customers in general

As noted above, our conclusion from the research we have done on bills and affordability is that our customers do not wish to see cuts in needed investment in order to push bills down. At the same time, customers expect us to make value for money a priority, and to push ourselves on efficiency as hard as possible.

Our proposal is to cut bills by around 5%, or £22 on the average household bill, in 2020 as we enter the next five-year investment period, and to keep bills flat in real terms (before CPIH inflation) thereafter. This is made possible initially by the reduction in the allowed ‘return on capital’ (essentially reflecting cheaper financing costs), and subsequently by very challenging internal cost-saving targets. The level of bills is also affected by how we share out the costs of investment over time (our ‘pay as you go’ ratio and ‘run rate’, which are set at their ‘natural’ levels), and other regulatory ‘true ups’ from the previous period.

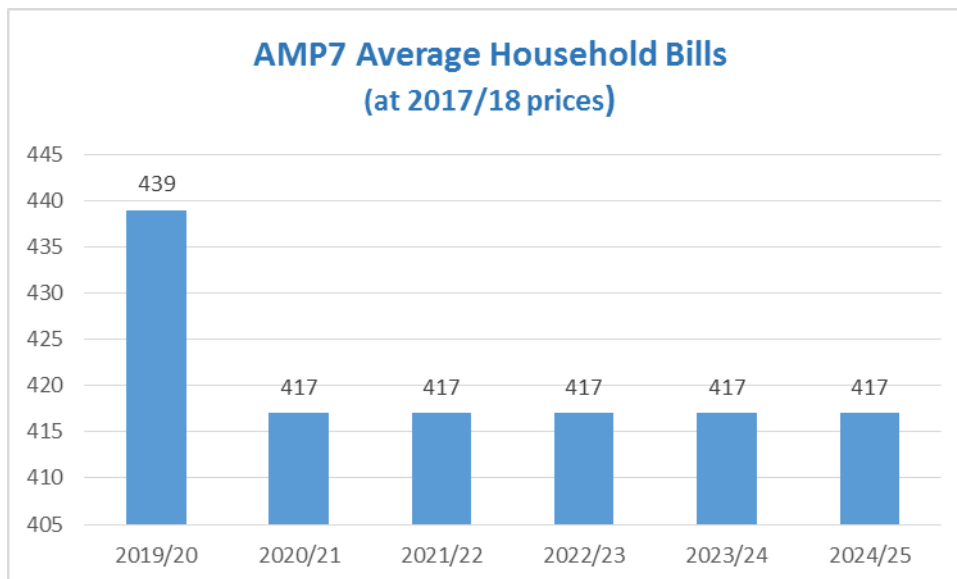


Figure 11: Proposed bill change for AMP7

Measure of success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Change in average household bill (BI1)	The average percentage annual increase in the average household bill over the 5-year period.	<RPI	<RPI	< CPIH

We think that customer feedback supports this bill reduction representing good value for customers. A total of 92% of customers say the overall business plan is acceptable and 95% say that the proposed bill reduction means bills will be 'affordable' (see Ref 1.1I), with strong support across all customer groups, including business and other non-household customers and those at high risk of being in vulnerable circumstances.

Our plans: affordability for customers who struggle to pay their bill

The increase in the uptake of our social tariffs in AMP6 means we are close to the limit of what our customers are willing to pay as an increment on their bill in terms of a 'cross-subsidy' to support social tariffs. Looking ahead to AMP7, the funding for social tariffs that will be available from the company to support social tariffs will also be reduced. This is because Ofwat is cutting the allowed return on capital, essentially reducing company 'profits' which are, in our case, redistributed to customers or reinvested.

As a result, we will be unable to continue expanding our social tariffs at the current rate. Our plan is to start shifting our priorities from getting more eligible customers on social tariffs, to ensuring we are targeting those most in need of the support. By 2025 we are targeting a total of 148,000 customers on two main social tariffs (HelpU and WaterSure Wales), a significant increase from 89,000 today and an estimated 133,000 in 2020. But this will involve a slowdown in the current rate of take-up as we take a more targeted approach to signing up the most financially vulnerable customers.

Measure of success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Customers on social tariffs (BI2)	The unique number of customers who are benefiting from our social tariffs.	89,100	133,000	148,000

We are currently working up the details of our delivery plan for social tariffs in AMP7, and we have committed to working closely with the CCG, the Welsh Government and other stakeholders as we do so. The plan is likely to include the following elements:

- Refining the eligibility criteria, potentially to take account of household occupancy
- Creating a specialist affordability team, trained specifically to identify and deal with financially vulnerable customers and those at risk of becoming financially vulnerable
- Using the Water Resilient Community approach piloted in AMP6 in the Rhondda Fach to engage with customers on social tariffs in our most economically deprived communities
- Offering other forms of support, such as promoting metering for low income single-person households, or wider advice on budgeting and benefit entitlement through our partner organisations
- Ensuring that customers on social tariffs meet their 'obligation' to other customers and pay their (deeply discounted) bill.

Our plans: affordability for future customers

Ensuring affordability of services is one of the Strategic Responses set out in our Welsh Water 2050 strategy, needed to address trends of rising inequality, debt and poverty. Our plans for AMP7 will deliver a significant improvement in value for money, and beyond AMP7 we are committed to continuing progress towards long-term affordability. We have prepared a preliminary business plan for AMP8 (2025-2030) in terms of investments, efficiency, bills and 'financeability' (credit ratings). This suggests we should be able to hold bills largely constant in real terms over that period, depending on the cost of the required environmental investment programme (NEP and WINEP) in that period.

Beyond 2030, progression of customer bills will be governed by factors which are difficult to forecast, including the pace of innovation and continued access to debt markets at current low rates. Affordability for customers will also depend on the rate of income growth and trends in income distribution. In conclusion, we are confident we will be able to deliver affordable services on a sustainable basis, but we will continue to monitor customer views, and ensure we are striking the right balance between service, resilience and affordability for current and future customers.

7 Expenditures and efficiency

Introduction

Our customers tell us value for money is a top priority, and they expect us to continually innovate and drive efficiencies, keeping abreast of best practice in other industries. This was expressed as a condition of customers' support for the extra investment that may be required to address long-term resilience as set out in Welsh Water 2050. Demonstrating operational efficiency is a key requirement for customer trust and therefore contributes to our vision of 'earning the trust of our customers, every day'.

This section sets out our efficiency challenge, how we have designed an ambitious set of efficiency targets for AMP7, and how we have benchmarked ourselves against other companies in the sector and beyond.

Background

One of our greatest challenges is the management of costs in a region characterised by geographical and topographical features that make it difficult to match the average levels of costs across the rest of the industry. The asset configuration and networks required to serve our geographically-dispersed customer base mean we operate significantly more assets per customer than the other water and sewerage companies, and these assets tend to be smaller. This leads to higher relative costs – as we are unable to achieve the economies of scale available to other companies with the largest conurbations. Comparative productivity is also reduced due to the extra travelling and “call out” costs required to operate and maintain our rural assets.

Welsh Water 2050

Under Strategic Response 8 'Ensuring affordability for customers', our Welsh Water 2050 strategy commits us over the long-term to seeking innovative and much more efficient ways to deliver our services. If we are to generate the kind of savings needed to pay for long-term resilience we must continually drive down costs by:

- Seeking innovative new technologies and practices, including data analytics, to deliver lower investment and operating costs
- Working in partnership with our customers and others to take advantage of opportunities for working together that will deliver improved outcomes for society more efficiently
- Minimising our running costs by looking at new ways of working and exploiting opportunities for savings resulting from our investment in assets and business systems

Our record

Since the acquisition of Welsh Water by Glas Cymru in 2001 we have delivered efficiency improvements at an unrivalled rate. Welsh Water is the only water and wastewater company in England and Wales that has reduced its operating expenditure in real terms over that period, as shown below.

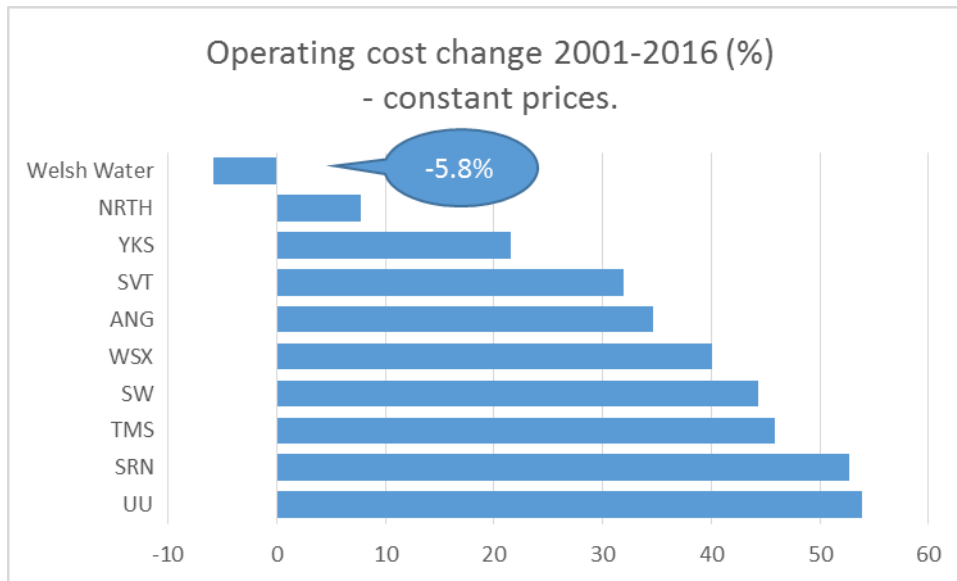


Figure 12: Real operating cost changes, 2001 to 2016.
(Source: annual regulatory returns to Ofwat, 2001 -2016).

At PR14, Ofwat's wholesale cost models showed our planned levels of ongoing costs would be at around upper quartile level in the industry, for both services. Since then, we have achieved cost reductions substantially in line with our PR14 cost efficiency targets, demonstrating we have a good record for identifying potential cost reductions, building these into our regulatory review plans and then delivering on those plans.

Our AMP7 efficiency plans

At the outset of our PR19 planning process, the Board took the decision that significant cost savings would need to be targeted and fully included in our plans, so future levels of required investment could be financed from efficiency improvements, rather than requiring increases in customer bills.

By starting early on this process, we have been able to identify substantial potential cost savings across all aspects of our activities. As planned, these savings would total around 10% of total expenditure (Totex) over the AMP7 period, with an ongoing saving of some 12% a year being achieved in 2024/25.

	2020/21	2021/22	2022/23	2023/24	2024/25	Total
	£m	£m	£m	£m	£m	£m
Totex pre efficiency	830	771	766	733	727	3,827
Less: cost saving programmes:						
Wholesale operations	(23)	(25)	(27)	(30)	(36)	(141)
Capital delivery	(17)	(25)	(29)	(27)	(26)	(124)
Support services	(9)	(11)	(12)	(13)	(14)	(59)
Retail operations	(5)	(6)	(7)	(9)	(11)	(38)
Total efficiency savings	(54)	(67)	(75)	(79)	(87)	(362)
Totex post efficiency	776	704	691	654	640	3,465

The key elements of this programme are as follows. A more complete description is provided in [Ref 3.6 PR19 Costs: Efficiency, benchmarking and recovery](#).

Wholesale operations cost efficiencies: This is a well-established programme (the internal benchmarking review) operating at all levels in the wholesale business, to identify new ways of working and innovative practices that will deliver improvements in efficiency. In 2016, a third phase of this programme was launched, in response to the efficiency challenge set by the Board, so we could make an early start on preparing for AMP7 and ensure we had detailed efficiency delivery plans in place before the start of 2020.

Innovation: Lime acoustic cleaner



A number of water treatment works across our operating area suffer with “rat-holing” within lime silos. “Rat-holing” occurs when lime is compacted on the side of the silo. This not only reduces the operating volume in the silo but it also compromises quality control by providing inconsistent lime batching strengths.

The sonic boom device is an air-driven, high-energy sonic horn. The acoustic sound works by generating powerful sound waves which shakes the lime powder loose from the silo sides and eliminates the rat holing and/or bridging inside the silo.

Installation of this novel technology has improved health and safety by reducing the need to work at height and delivered significant operational savings through reduced call-outs and overtime.

The biggest cost reduction initiative involves bringing together all of the water network activities (including planned maintenance, reactive burst repairs, leakage control, reinstatement, the provision of new connections and mains requisitions) into a single Network Delivery Alliance contract, which is currently undergoing market tendering. This approach builds on the success of our Capital Alliance during AMP6 and applies similar contractual and relationship design to a significant operational part of our business, enabling large cost savings and improved reliability of service to customers. Equivalent tendering of new contractual arrangements is also underway for our wastewater network activities.

Capital delivery cost efficiencies: Major capital investment schemes are delivered by our ‘Capital Alliance’ and our in-house engineering team. The Capital Alliance will be delivering investment schemes valued at some £900 million during AMP7, and the in-house engineering team around £300

million. The Capital Alliance contract gives us the option to extend the arrangement for a further five years to 2025, and this has given us the opportunity to negotiate a new agreement with the Capital Alliance for AMP7 which will deliver significant further improvements in efficiency. Our in-house engineering team is targeting at least the same level of cost efficiency as the Capital Alliance.

Support services: In 2017 we established a workstream, supported by external benchmarking consultants, to undertake an activity-based review of all our support services (finance, human resources, communications, IT, facilities, regulation and other central functions). Following a risk-based assessment of cost and benefits, we concluded that by simplifying processes and investing in new work-management systems, we should be able to automate and scale back on certain lower-value administrative tasks, allowing us to set an ambitious target to reduce support services headcount and deliver annual costs savings of around £14 million a year by 2024/25.

Retail – customer contacts: We have undertaken a detailed review of the drivers of cost at a department and activity level in the retail business to identify opportunities to reduce costs. The primary cost drivers in retail operations are bad debts (currently 38% of costs – see below) and volumes of customer contacts which drive headcount costs (some 48% of costs). We have conducted a number of benchmarking visits to other organisations to ensure our direct customer service costs are in line with other sectors. This benchmarking work suggests there are only limited, incremental opportunities to further improve our productivity in handling customer contacts. We have concluded therefore that, in order to materially-reduce the cost of dealing with customer contacts, we will need to target significant reductions in the levels of contacts themselves. During AMP7 we are planning a number of initiatives, enabled by customer segmentation data and new customer contact capabilities, that will help reduce contacts while offering a more personalised service to customers.

Retail – bad debt costs: Our plans for bad debt cost reduction are covered in section 15, and these should deliver around £5m of cost savings by 2025 (versus 2017/18). Note that for PR14, Ofwat made a specific allowance for the very significant impact of deprivation and relative bill levels on the levels of bad debt costs and also the costs incurred in the management of debtors. It will be essential these factors are again adequately allowed-for at PR19, whether directly through cost modelling or through specific adjustments. Detailed benchmarking exchanges with leading water companies and other service organisations have demonstrated we are applying all of the best-practice techniques in debt management and recovery, tailored to our particular circumstances.

Benchmarking: In addition to the retail benchmarking work referred to above, we have undertaken a number of other benchmarking exercises to compare our costs with other companies and sectors and learn from best practice.

Econometric modelling: We have developed our own suite of econometric models, derived from Ofwat’s published PR14 models and modified to reflect modelling developments shared by Ofwat (as part of the industry working group), advice from our modelling adviser, Oxera, and our own investigations. We operate in a range of environments, from the urban south east Wales, to rural west and north Wales. We have collated and analysed our own costing data in these different areas to identify drivers and explanatory variables for the different environments in which we serve. This information has been shared with Ofwat in our responses to modelling consultations and through the industry working group

Capital delivery benchmarking: We have explored, and continue to explore, how we deliver services compared with others both within the water industry and in other sectors. The preparation of our

efficiency plans has included benchmarking of 'best practice' both within the water sector and more widely with input from global consultancy expertise, a number of international 'knowledge sharing' visits and involvement of the parent companies of our existing Alliance Partners.

European Benchmarking Group: We have participated for many years in a European Benchmarking Cooperation exercise involving the exchange and evaluation of key data. This involves some 40 utility companies from over 18 countries.

Unit Cost Database: Mott MacDonald were commissioned by Welsh Water to provide assurance on the construction costs used in our PR19 investment programme. They compared costs from our Unit Cost Database to other water companies' cost information and concluded Welsh Water's unit costs were aligned to their dataset of industry costs.

Exchange programme: We have established exchange programmes with a number of water companies, notably HOFOR (the Greater Copenhagen Utility in Denmark) and Oasen Drinkwater (in Holland). Technical colleagues have visited these organisations regularly and gained valuable insights into a diverse range of activities, such as water supply storage, leakage control and metering practices. One specific learning from these visits alone has led to an innovative approach to storm water treatment being incorporated into our RainScape programme, which is already saving tens of millions of pounds for our customers.

8 Demand management, water efficiency and leakage control

Introduction

The sustained dry weather in summer 2018 has underlined the scale of the challenge we face to balance supply and demand, both on an ongoing basis and in drought conditions. While we enjoy higher than average rainfall for the UK in our operating area, we extract just 3% of effective rainfall in Wales for public consumption.

The interactions between supply, leakage, water efficiency, and customer demand are complex, but customer behaviour and customer perceptions play a critical role. We know if we can retain customer trust, even when low reservoir levels are in the news, our messages around water efficiency and reducing waste can really make a difference. We also know leakage represents a real threat to customer trust, so we have worked hard to control and reduce leakage in our water networks, achieving the biggest reduction in the sector in recent years. By focusing on low-level domestic leakage we now plan an innovative new approach (Project Cartref – “Home”), working in partnership with customers and landlords to achieve a further step change reduction in leakage over the next five years.



ITV Wales filming a feature on our leakage teams during the recent spell of dry weather

Our record

We have a huge network of water pipes, some 27,000 kilometres, which is one of the longest in the industry in proportion to the number of properties it serves. Although we are steadily replacing and repairing the pipes, much of the network is old and prone to bursts, particularly given the very high pressures at which our network operates.

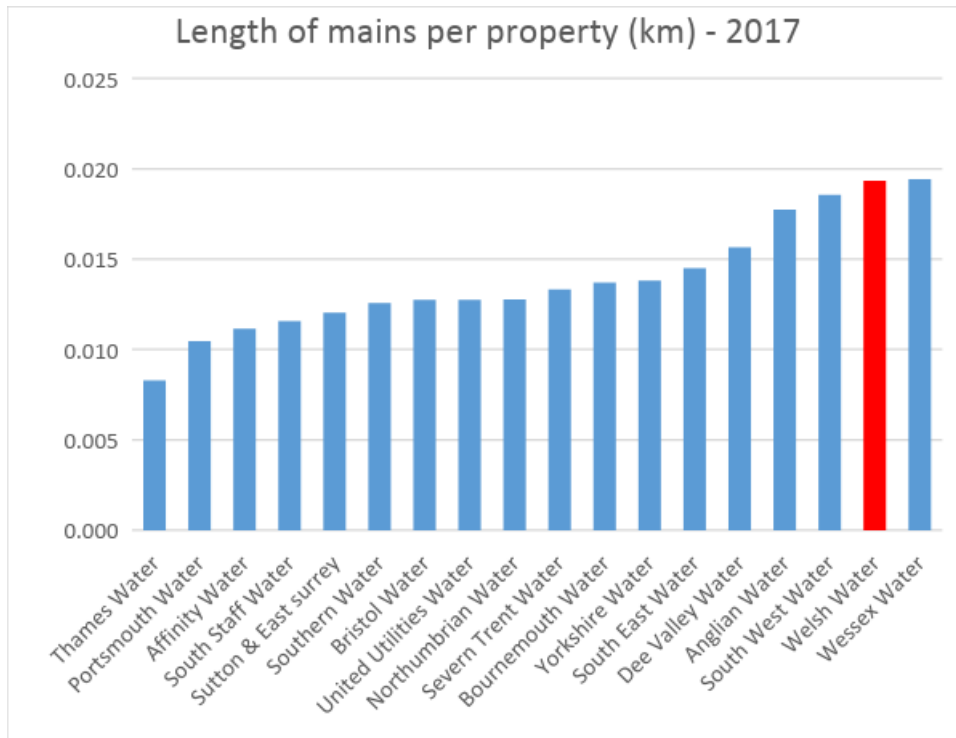


Figure 13: Welsh Water has one of the biggest mains networks on a per customer basis

Over the last 10 years we have markedly improved our leakage performance, and our leakage over the last 20 years or so has been halved. We have delivered the biggest percentage reduction in leakage in the industry in the last five years (see graphic below). Replacing old pipes has played a part in this, but our focus has been on innovation, better use of analytics and metering, increased network resource (with 140 people working full-time on leakage control) and real-time network management (such as through our SmartHub). This has reduced the cost of leakage reduction, and made our approach affordable for customers (consistently achieving the economic level of leakage).

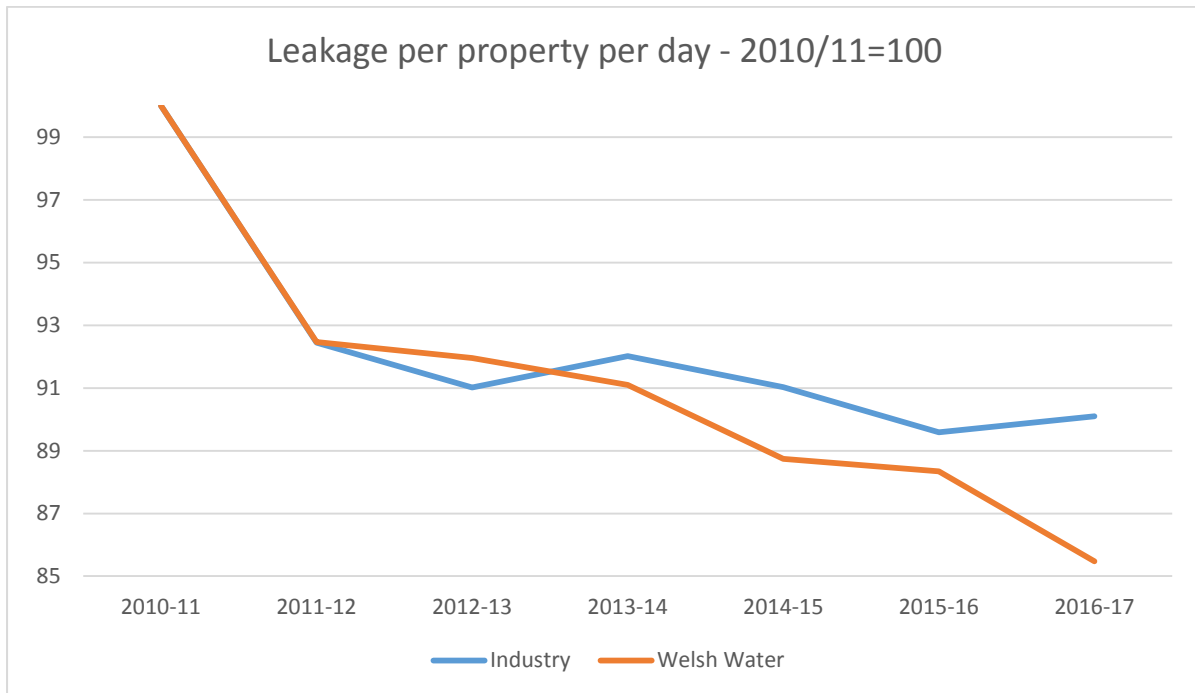


Figure 14: Leakage reduction against industry average

Following the great strides made in tackling leakage in recent years, our recent analysis indicates that up to 40% of total leakage may be on customer owned pipes, with the remaining 60% on our distribution and trunk mains. This requires a change of approach in order to meet our challenging targets and is no longer something we can deliver independently on our network.

We believe we can achieve the best outcome for all our customers when they also understand the role they can play in balancing supply and demand and by ensuring customers' properties are as water efficient as possible. If customers reduce consumption and wastage in the home, it saves money for everyone. This can be a difficult message to 'land', especially given the quantity of water that falls from the sky in Wales. But our non-shareholder model, high trust levels and strong community presence give us an opportunity to involve customers effectively in reducing demand.

We have a strong record of working with our customers to educate them about the importance of water efficiency, and to provide tools to help them reduce water use in the home. We believe children are the best ambassadors for behaviour change in the home on water use. Our extensive education programme for primary schools includes school assemblies, workshops or visits to our Discovery Centres where they learn about the value of water and how much water we each use in a day – for example, the 'toothbrush challenge', encouraging them not to leave the tap running while brushing their teeth, saving up to 18 litres of water for each two-minute brush.

To complement the education programme we work closely with Aqualogic, one of our partners, to audit participating schools to see how efficient their toilets and cisterns are, and fit free water efficiency devices. For secondary school children, we also offer Welsh Baccalaureate challenges to discover more about being a responsible citizen on water efficiency.



Children at one of our water efficiency education sessions

Our reported performance on per capita consumption is close to the industry average, so there is certainly room for improvement by doing more to involve customers in this aspect of the service. (There are, however, significant issues with the way that the figure is calculated, so the comparison with the rest of the industry is only partially valid). Our future focus will be on behavioural change, both reducing demand and tackling leakage, to balance supply and demand.

Customer views

Customers have made clear that having a reliable source of water is a top priority for them, and that we should be able to sustain water supply to customers in all but the most extreme of drought. Some business customers have a particular reliance on water for their operations, and so rate the importance of reliability even more highly.

When confronted with the statistics on leakage, customers are very clear they consider the current levels to be unacceptable as a waste of resources. Delving deeper into customers' views, leakage seems to suggest mismanagement and neglect. However, when the costs of leakage reduction are explained, customers understand there is also a balance to be struck between the value of the water 'saved' and the costs of finding and fixing leaks. All the same, the sense from customers is that 'something must be done' to reduce leakage. We have seen this effect this summer in England, with stories in the UK media about the 'scandal' of leakage multiplying as talk of impending hosepipe bans grew. Tackling leakage is, therefore, an important element of building and maintaining customer trust.

In terms of their own role, customers support an approach of reducing demand in the home by providing advice and education, while also providing practical support to help reduce water use. Customers understand that metering can play a role in managing customer demand, but there is no support for compulsory metering.

Welsh Water 2050

Over the long-term we expect water demand to change, all things being equal, due to population growth, and changes in the structure of the economy and land use. Climate change could also

reduce future supplies, with more-frequent long and dry summers expected. At the same time, more stringent environmental standards could impact our ability to abstract water.

As part of our response to these trends identified in Welsh Water 2050, we have committed to enabling security of supply to our customers in all but the most extreme droughts. Strategic Response 2, Enough Water for All, says we will reduce leakage through increased investment in monitoring and repair, including in the part of the network that is the responsibility of customers.

Our plans

The actions we are taking in response to the long-term demand and supply forecasts across our area are set out in detail in our Water Resources Management Plan^y, which covers a 30-year time period. Over the next five years, our priority is to use innovation to bring down leakage, as a next step in adapting for the challenges ahead, as well as continuing to encourage customers to reduce demand.

Innovation: Leakage detection



We are using new 'stopwatch devices' on individual supply taps to detect very low flows that might be indicative of domestic leakage within individual properties. A dedicated trained plumber follows up with customers likely to be experiencing leakage and we then offer leakage repairs and water efficiency devices at our cost. We have also trialled smart meters in Cardiff. The meters continually measure water usage and send readings wirelessly. The data obtained from the meters has allowed us to better understand demand in the area and identify leaks, as well as reducing risky exercises of working on flooded meter chambers.

As explained in greater detail in our Leakage Strategy (Ref 3.5) the enhanced network monitoring capability developed during the current AMP has produced data indicating a much higher proportion of leakage on customers' pipes and in their homes than previously thought. We have recently conducted a successful trial of innovative 'stopwatch' monitoring on customers' supply pipes, which can detect very low flows not registered by conventional meters, including flows arising from leaking taps and toilet bowls. Our calculations suggest that if we can tackle these low flows taking place in a significant proportion of customer properties, we can bring down leakage in a much more cost-effective manner than by committing further resource to enhanced 'find and fix' activity on our distribution networks, where we face seriously diminishing returns.

We are therefore making plans for ‘Project Cartref’ (Home) to be launched over the next two years, which will involve a shift into new modes of operation and functions, including training our frontline colleagues to work jointly with customers to identify and stop leaks inside their properties, while continuing with our ‘find and fix’ approach on the distribution network. Working in partnership with government and community groups, we will offer a free ‘tap and toilet’ fix service, as well as building on our current policy of replacing leaking or damaged customer-owned supply pipes for free, no longer restricting this to one free pipe repair in three years.

We have started a pilot of Project Cartref (Home) as part of our Water Resilient Community project in the Rhondda Fach, a community encompassing some 21,000 people (see Ref 6.5 for details). The aim of the project is to create a ‘Water Resilient Community’ coupled with our £23 million Zonal Studies investment in the area to upgrade the water network. In addition to piloting Project Cartref, more than 2,000 schoolchildren are receiving lessons highlighting the value of water and water efficiency; over 20 local groups are involved in helping us improve the way we communicate water efficiency messages with the local community; every school has been offered a water audit to ensure their premises are as water efficient as possible; and hundreds of properties have been offered water efficiency audits. Our intention is to create at least one additional Water Resilient Community each year in the future.

Our overall leakage strategy is designed to enable us to reduce overall leakage by 15% from forecast 2020 levels by 2025. It will also help cut bills for metered customers, and reduce consumption.

Measure of success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Leakage (En4)	Leakage in mega-litres per day (Ml/d). Three-year average.	173	169	143
Per capita consumption (En5)	Average water use by each person in a residential property (litres per head per day). Three-year average.	145	145	138

Alongside our leakage strategy we will continue with our long-standing behavioural change programme, reducing demand by offering water efficiency devices free meter installation. Customers can opt to have a free meter installed at any time, which will often save them money as well as making them more conscious of their usage. In particular, we will be actively promoting meters to single-person, low-income households, who are struggling to afford their water bill. The option to revert to an unmeasured charge at any time within two years, helps to overcome customer concerns a meter may cost them more, and has helped to slowly increase our proportion of metered customers. It has increased from 9% in 2001 to 40% in 2018, which is broadly in line with most water companies outside the south east of England, and will continue to rise over AMP7.

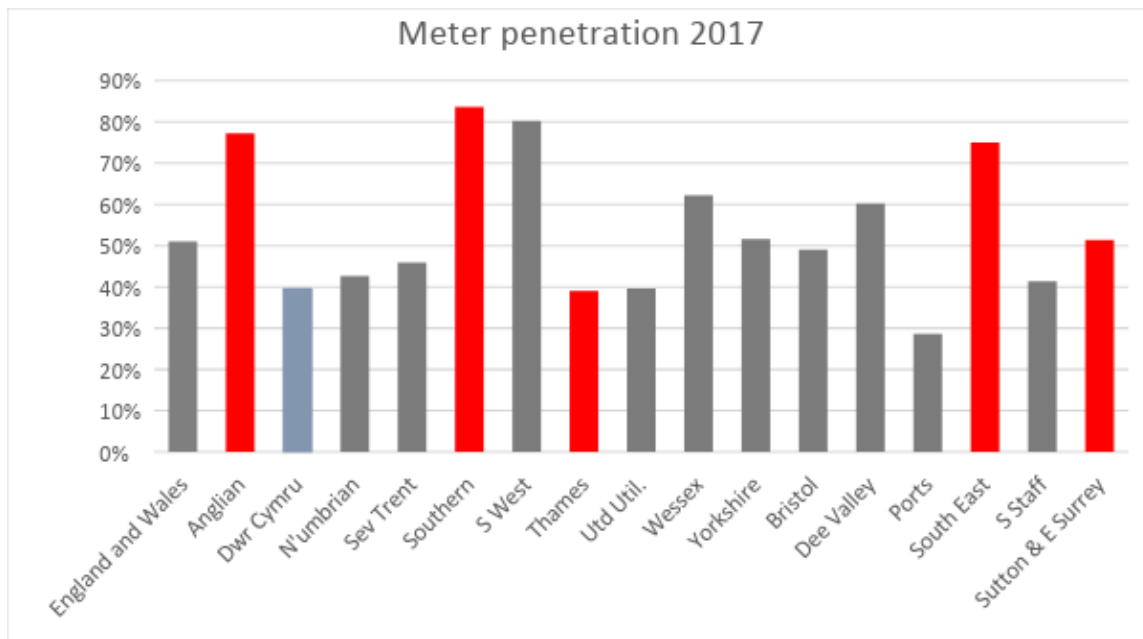


Figure 15: Meter penetration. Water stressed areas in red. Welsh Water (blue) aligned with other non-water stressed areas (grey).

Water efficiency in our area will continue to be supported by our education programme. Over the five years to 2025 we are targeting an increase in the number of children participating from 67,000 to 75,000 per year.

Beyond AMP7

If we are to continue to reduce leakage beyond 2025 at the rate we are targeting for AMP7, we may have to increase expenditure on our large trunk mains replacement programme. However, a great deal will depend on the success of Project Cartref (Home), and on the performance of our ageing water network assets (particularly asbestos cement mains in rural areas) in the coming period. We will also continue to seek new behaviour change techniques to help promote water efficiency and new technology to help us find and fix leakage more cheaply and effectively, and to reduce customer consumption – for example by trialling smart meter technology and online telemetry, particularly for businesses.

9 Drinking water

Introduction

‘Clean, safe drinking water for all’ is our number one customer promise. The delivery of clean, safe and reliable drinking water is taken as a given by customers, and to maintain their trust we need to ensure we do so reliably both now and into the future.

This section summarises our plans for our water supply service, including water treatment works, pumping stations and networks. Our plans for the provision of water resources, which includes reservoirs and dams and the Water Resources Management Plan, is described in our PR19 Water Resources Business Plan (Ref 2.1), summarised in section 10 below. Our plans for reducing demand and leakage are explained in section 8. The details of our investment and delivery plan for this ‘Water Network Plus’ part of our service, comprising water treatment and treated water distribution, is described in our PR19 Water Network Plus Business Plan (Ref 2.2). However, our business is highly-integrated, and therefore many of the programmes covered here will provide benefits across other areas of the business.

Background

Welsh Water is the sixth-largest of the 10 regulated water and sewerage companies in England and Wales in terms of customers, but the third-largest in area. By the end of AMP6 we will operate 62 water treatment works and treat on average around 830 million litres of water every day, which are distributed through a 27,400-kilometre network of water mains. Our network includes around 700 water pumping stations, 570 service reservoirs and seven water towers. Our biggest responsibility is to provide a safe and reliable drinking water supply to 3.1 million people across most of Wales and neighbouring parts of England and, crucially, look after the assets that supply our customers for future generations.

The operating environment in our area poses specific challenges in terms of delivering this most-basic service expectation to customers on a consistent and affordable basis. Because of our dispersed population and predominantly-rural area, we have an extensive network of water mains. A large proportion of this network is composed of unlined iron mains, which can create problems in terms of discoloured water, particularly when combined with soft water and high levels of manganese in our water sources.

We operate our network under high pressure, partly due to the fact our most-populous areas are served from reservoirs which are high in the Brecon Beacons. This means bursts are frequent and difficult to fix safely.

Every company faces its particular challenges, and we are continuing to learn how best to overcome ours, in order to deliver the best service for the lowest cost to our customers.

We have worked closely with our stakeholders in developing our PR19 plans for drinking water, including the DWI, the Welsh Government, and the CCG.

Welsh Water 2050 – long-term challenges

Welsh Water 2050 sets out the challenges that we expect to face over the next 30 years, and the 18 Strategic Responses required to address them. These challenges and responses are described in section 4.

Our AMP7 plan for water supply services is designed to make a further significant step towards addressing these challenges, building on resilience investment in previous AMP periods. The key Strategic Responses that apply to this area of our Business Plan are summarised as follows:

Strategic Response 3: *'Improving the reliability of drinking water supply systems'*.

Deteriorating raw water quality, population growth, ageing infrastructure, and climate change are all increasing stresses on our water supply assets. The failure of any part of this system can lead to supply interruptions for our customers, as our system is not always resilient to shocks and stresses. To address this risk, we will build more flexibility and connectivity into our water treatment and supply systems. Also, we will continue to improve our emergency response systems and use of data to predict problems before they happen.

Strategic Response 4: *'Protecting our critical water supply assets'*. To reduce the likelihood of critical assets failing, we have made an assessment of the resilience of our critical assets to the following threats: security, flooding, coastal erosion, catastrophic failure, contamination, loss of power, and the threat of cyber-crime. We want to mitigate these threats at our assets to reduce the risk of outages for our customers.

Strategic Response 5: *'Achieving acceptable water quality for all customers'*. This is primarily about dealing with risks in the network that cause discolouration of our drinking water, mostly related to unlined iron mains but made worse by our upland water sources. We will address these issues through targeted replacement of iron mains and new initiatives in catchment management in our source to tap approach.

Strategic Response 6: *'Towards a lead-free Wales'*. This describes the strategy we have developed with the Water Health Partnership for Wales and will deliver a targeted replacement of lead communication and supply pipes, as part of a wider societal effort to address lead in drinking water, itself a priority for our water quality regulator DWI.

Strategic Response 10: *'Addressing our worst-served customers'*. All our customers deserve the same high level of service, even those for whom fixing the causes of poor service may be costly.

Strategic Response 13: *'Smart water system management for water services'*. This will focus on 'calm' networks, asset resilience and asset compliance risk. By capitalising on technological advances, we will improve the service performance and resilience of our assets through remote sensing, data analysis and automation; solving problems before they impact on our business, our customers, or the environment.

There are also important linkages with the following Strategic Responses:

Strategic Response 7: *'Working with customers and communities'*.

Strategic Response 8: *'Ensuring affordability of services delivered to customers'*.

Our record

Compliance: The safety of drinking water is paramount, and we now regularly surpass 99.9% sample compliance with the standards set by the DWI. This is a significant improvement on the position a decade ago, and we have worked hard to implement the lessons from water quality failures that have happened in the past.

Our relative performance in bacteriological compliance in the water industry remained at around the industry upper quartile level on this measure for the most recent reporting year, although we have had to deal with a number of disinfection turbidity failures. This contributed towards the prioritisation of our emergency 'run to waste' programme, our ultimate defence against water quality failures. In our PR14 business plan, we committed to improve the 'run to waste' capability at our sites, and all our water treatment works are planned to have 'run to waste' facilities installed by 2020.

Leakage: We have met challenging AMP6 targets and delivered the biggest leakage reduction in the industry over the last five years. Leakage has been halved over the last 20 years or so. Details on leakage reduction are provided in section 8.

Lead strategy: We currently replace lead supply and communication pipes for customers who record a lead concentration greater than 5 µg/litre of lead in the water. In addition, we will undertake a risk-based lead monitoring programme focussing on properties which are likely to have lead pipes, and replace both lead communication and supply pipes for free. During AMP6, we released £5 million of investment (as part of our 'customer dividend') to pilot this approach.

Zonal studies: We have been working hard to improve our network performance during AMP6, and expect further improvement to 2020. We are investing some £130 million through our innovative 'Zonal Studies' approach in this AMP, working closely with the DWI. These are 'source to tap' reviews of water quality, hydraulic and customer performance data to determine investment options within an individual water quality zone, of which we have 82 across our supply network. In AMP6 we have assessed the acceptability of water across all of our water distribution zones and identified 38 priority zones. To date, we have fully-completed working in five of these zones, where we have cleansed 182 kilometres and replaced a further 143 kilometres of pipework. By the end of AMP6, we plan to complete works in our 15 worst-performing zones.

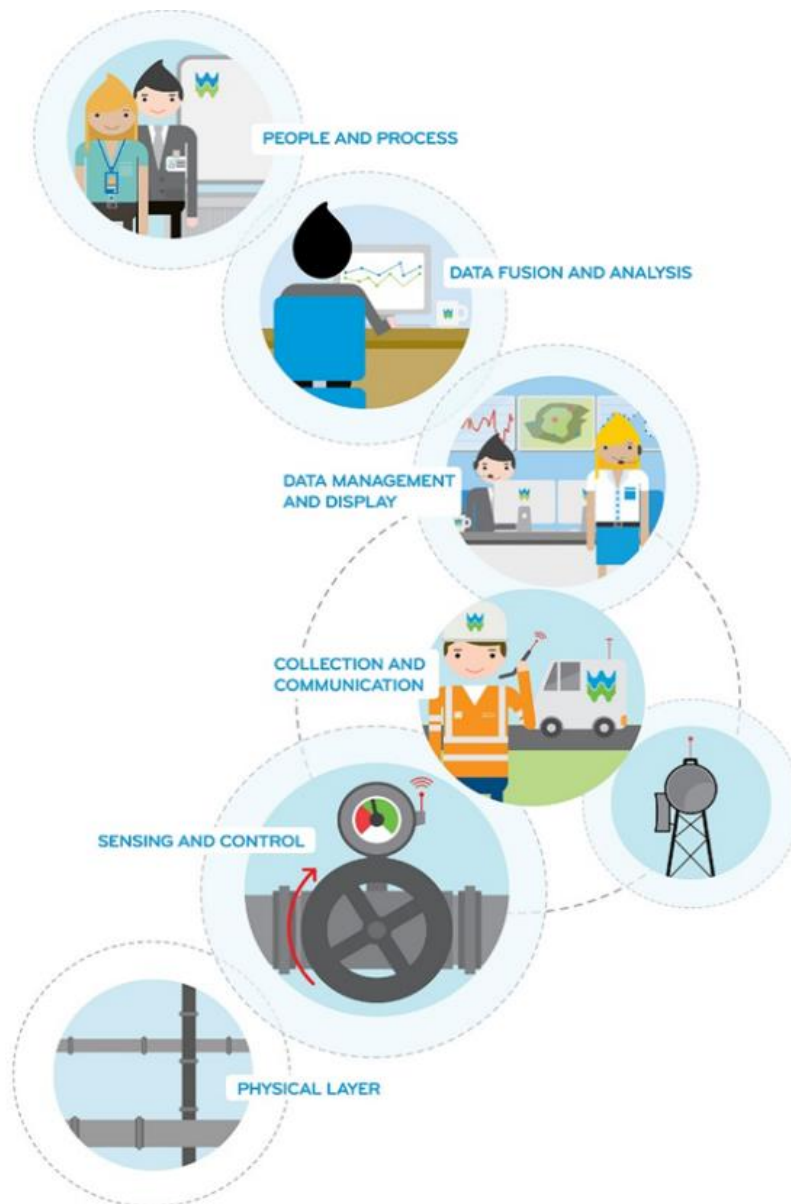
Reliability: Customers, particularly businesses, expect a reliable supply. This is another area where historically we have not compared favourably with the rest of the industry, due in large part to the operating environment in which we work. However, we have reduced the average duration of supply interruptions (of over three hours) from 42.5 minutes per customer in 2011-12 and aim to reach 12 by 2020. We have achieved this by installing pressure loggers across 80% of our network, to enable us to mobilise more quickly to address burst mains. By the end of AMP6 these will be linked up with our SmartHub. We have also pioneered "live system" repairs of trunk mains leaks and burst, keeping customers on supply and working safely at the very-high operating pressures prevalent on

our network. We have increased our emergency tanker fleet to help with this, and also used it extensively during Storm Emma and the dry summer of 2018.

Customer views

Our performance targets and consequent investment decisions for AMP7 have taken customer priorities as the starting point, and have been informed by customer valuations of performance improvement, as well as the need to improve in areas where we lag behind other water companies.

Our customer engagement exercises confirmed that clean, reliable and safe water is taken as a given by customers. This is why we are targeting 100% compliance with water quality regulations.



Using data, people and processes to understand and operate our assets, thereby improving customer service.

Avoiding extended supply interruptions (more than three hours) is a priority service area, particularly for our larger business customers. However, only a small minority of customers have experienced an interruption, so most household customers are content with the current level of performance – meaning there is limited support for additional investment. However, customers do expect us to learn from other companies in the industry, and this also applies to water quality contacts (taste, odour and colour), where there is some support for performance improvements.

Our plans for AMP7

Below, we explain the key elements of our plans for AMP7, including (in the tables) the performance against our ‘Measures of Success’ that we are targeting for 2025. Given our overall balance between affordability and investment, we have determined those targets at levels which are suitably ambitious, reflecting the relative priorities of customers, performance elsewhere in the sector, and our own unique operating conditions. Further detail on this target-setting process is set out in section 5 and supporting document [Ref 5.2 PR19 Performance Commitments](#).

One of our major capital investments will be the replacement of three existing water treatment works (Pontsticill, Llwyn-Onn and Cantref) with a new facility at Merthyr Tydfil, with the possibility of decommissioning a further two assets (Carno and Nantybwich) at a later stage. This is a project which will span several AMP periods, which will begin with implementation in AMP7 with an investment of £91 million, and will build the necessary network connections and provide additional treated water storage. We have a legal notice to improve taste and odour from the three supply systems we are proposing to replace, and the DWI has offered their support for the scheme. Various options to achieve this outcome for customers have been assessed, with the new treatment works ultimately being selected because it offers the lowest whole-life cost to customers, as well as a range of additional resilience benefits.

As we now understand how even very low levels of manganese can contribute to discolouration, we will build on our manganese removal trials at our Alwen Treatment Works to implement manganese reduction schemes at five water treatment works through a £16.5 million investment. Sites have been chosen based on criteria that identify sites with the highest manganese concentration, together with elevated customer contacts. This investment will be combined with our wider manganese-reduction strategy aiming to achieve 2µg/litre, which will ensure the benefits of our pipe cleansing and replacement programmes will be maintained, helping to maximise the value of these investments for our customers.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Tap Water Quality Compliance Risk Index (Wt1)	The DWI's Compliance Risk Index	2.85	n/a	0
Tap Water Quality Event Risk Index (Wt6)	DWI's Event Risk Index*	-	Upper quartile	Upper quartile
Water supply interruptions (Wt2)	Supply interruptions greater than three hours (expressed in minutes per property).	43.3**	12	8
Acceptability of drinking water (Wt3)	The number of contacts received from customers per 1,000 population served.	2.79	2.4	2

* This is a new measure. We will aim for upper quartile performance.

**This result was drastically affected by the extreme weather (Storm Emma) experienced in March 2018.

Zonal Studies will continue in AMP7 and we will complete interventions in an additional 17 zones which have legal notices for improvement. This will include the replacement of 420 kilometres of water mains along with mains cleansing and rehabilitation, and the redesign of the supply network to maximise future supply resilience for customers. We are not targeting a reduction in mains bursts levels as such, because this is not an outcome of direct value to customers. However, we do forecast a progressive decline in burst frequencies as a by-product of our Zonal Studies investment programme, which is data driven to maximise the direct benefit to key customer service outcomes – such as water acceptability.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Water mains bursts (Wt4)	The number of bursts of water mains.	4,181	3,700	3,600
Water process unplanned outages (Wt5)	Total unplanned outage as a proportion of the company's total production capacity (%).	1.57%	-	0% change from 2019/20*

* As this (new) measure does not affect customer outcomes directly, and is a means of monitoring asset health to prevent deterioration, there is no customer benefit in targeting an improvement here.

In AMP7 we plan to perform resilience assessments for all communities where more than 5,000 properties are fed from a single source of supply and identify possible solutions in the event of a supply failure. We will also dedicate £20 million for repairing mains that burst repeatedly in clusters.

To improve resilience we are proposing upgrades to Court Farm and Felindre treatment works and improvements at six of our service reservoirs that will improve our resilience score for above-ground assets to 86.6%. Resilience improvements for our below-ground assets will focus on twinning of strategic mains at vulnerable points, such as where they pass under rivers, trunk roads and railways, and improving our Alwen trunk main by replacing the Bwlch Tunnel (a 'single point of failure'). We estimate at the end of AMP7 the resilience 'score' (not a reflection of 'percentage resilience') for these assets will be 56.2% and we will have plans for further improvements in AMP8. To continue our progress towards a lead-free Wales in AMP7, we will broaden our lead pipework replacement programme, investing £20 million to replace a further 7,000 properties with lead pipes. This will be focussed on target areas with additional opportunistic replacements when lead is found, and when we record a high level of lead (exceeding 50% PCV) in sample results.

Support to address the needs of our 'worst-served' customers will involve dealing with complaints of low pressure affecting 131 customers, resolving repeated disruption to supply affecting 250 customers and the development of minimum service standards for all, irrespective of cost-benefit constraints. We will also aim to resolve long-standing issues by funding improvements associated with remote pumping stations with intermittent power and small numbers of customers on long distribution mains.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Worst-served customer for water service (Rt5)	The number of customers that have had repeat incidents of low pressure or interruptions to water supply.	-	1,131	871
Lead pipe replacement (Wt8)	Number of lead supply pipes replaced (cumulative over an AMP).	-	1,800	7,000

Beyond AMP7

By 2050, we aim to rationalise the number of water treatment works we operate down to around 39. This will allow us to focus on the refurbishment and modernisation of these works, including specific measures for resilience against future shocks, such as physical and cyber security upgrades, flood and power resilience, and increased treatment flexibility. We also plan to connect more of our water resource zones, reducing the number of zones from 24 to 11. We will make further progress towards these objectives in AMP8.

Using the outputs of our Zonal Studies programme, we aim to replace 500 kilometres of iron mains per AMP from AMP8 (2025-2030) to AMP12 (2045-2050), totalling 2,500 kilometres. Should it prove necessary and cost effective, we will investigate the possibility of upgrading a further 8,000 kilometres of iron mains serving smaller populations to improve water quality and reduce customer minutes lost. We will also need to keep the performance of rural asbestos cement (AC) mains, of which we have 3,500 kilometres, under close review, as these assets will become life-expired and may become increasingly susceptible to changing weather patterns, causing more frequent ground movement in cold or wet conditions.

Our 'SMART' strategy for AMP8 and beyond includes adopting drones for aerial surveys to inspect inaccessible assets, the widespread adoption of 5G in order to facilitate better communication between field devices to convey real-time operational data, and the exploitation of artificial intelligence and robotic process automation. Our future investment plans will continue to be designed through progressively improved hydraulic modelling and the use of "big data" analytics, so as to optimise the solutions chosen and maximise value for money.

Over the long-term, we are committed to reinforcing the central place of customers in our decision-making processes, working alongside them to achieve our objectives. Our work with communities can respond to pressures on the environment and biodiversity through community-led projects. These initiatives will provide the additional benefits of improving health and well-being, by improving green infrastructure and access to natural spaces in our communities.

We have a long-term target of zero 'worst-served' customers by 2050. We understand that the most complex and costly solutions are likely to be delivered towards the end, given cost-benefit prioritisation, so the rate of numerical improvement will likely reduce over the years.

10 Water resources, trading and catchment management

Introduction

Our customers expect we will deliver clean, safe and reliable drinking water. This is essential for maintaining their trust. To deliver this service we capture and store surface water from our rivers and catchments in reservoirs before treating it to potable standards in our water treatment works and distributing it to our customers. This process must be resilient and sustainable if we are to continue meeting our customers' expectations.

This section focusses on the elements of the 'water resources' price control, principally our Water Resources Management Plan (WRMP), catchment management activities, and our dam safety programme. The details of our investment and delivery plan for this part of our service are described in our PR19 Water Resources Business Plan (Ref 2.1). However, our business is highly-integrated, and therefore many of the programmes covered here will provide benefits across other areas of the business.

Background

Around 40% of our customers are concentrated in south east Wales around Cardiff and Newport, with much of the remainder located in the other main population centres around the coast. This is in contrast to other parts of our operating area, where population densities are among the lowest in the UK.

Wales has a relatively-wet climate when compared to other parts of the UK. We estimate we only use some 3% of rainfall, on average, for public water supply, which compares to 50% in parts of south-east England. However, the overall regional picture masks important geographical differences within our supply area. For example, Snowdonia can have up to 3,000mm of rainfall per year, more than four times the levels in the border areas and Herefordshire, where 700mm per year is typical.

Our water supply systems reflect these regional variations, which can range from discrete small-scale local supplies, through to large-scale multi-source integrated networks that are more typical of many other water company areas. Most of our water is supplied from our impounding reservoirs, although we abstract significant volumes from our lowland river sources such as those on the Wye and Usk in south east Wales, the Towy and Teifi in south west Wales and the Dee in north Wales. Groundwater accounts for less than 5% of our supplies at a company level, although at a local level it may constitute the whole supply.

Welsh Water 2050

Our water resources plans for the next AMP period (2020-2025) represent an important step toward delivering our longer-term vision set out in Welsh Water 2050, so we can ensure the services we provide will be resilient and affordable for current and future generations alike.

The key Strategic Responses that apply to this area of our business plan are summarised as follows:

Strategic Response 1: *'Safeguarding clean drinking water through catchment management'*. Effective catchment management helps to reduce problems with taste, odour and discolouration of water supplies and facilitates more efficient treatment at our water treatment works. This allows us to reduce operational costs and may allow us to delay capital investment to upgrade treatment processes and in some cases remove the need for treatment. To reduce risks within our water catchments we will co-create an extensive, innovative programme of catchment management with landowners and other partners, including regulatory stakeholders.

Strategic Response 2: *'Enough Water for All'*. Our Water Resources Management Plan describes how we plan to maintain a secure and resilient water resource position until 2050. We will meet any shortfalls in supply during the driest years through a combination of demand management such as leakage reduction or water efficiency initiatives, restructuring existing sources through water transfers or, if shown to be the best value for customers, developing new sustainable water resources. Achieving 'enough water for all' is dependent on the continued integrity of our water storage assets.

Strategic Response 4: *'Protecting our critical water supply assets'*. This describes how we will improve the resilience of critical water assets which have high consequences of failure. Many of our dams fall under this criteria so we have developed our Portfolio Risk Assessment tool to plan our investments effectively.

There are also important linkages with the following Strategic Responses:

Strategic Response 7: *'Working with customers and communities'*.

Strategic Response 8: *'Ensuring affordability of services delivered to customers'*.

Customer views

Our plans for water resources, catchment management, and dam safety are informed by the views of our customers.

The Water Resources Management Plan process contains a customer consultation element in its own right. The first stage of engagement was pre-consultation which ran for six weeks between January and March 2017. During this period we contacted our regulators, local authorities, neighbouring companies and other key stakeholders such as CCWater to seek their views. We sought the views of environmental organisations across Wales through the IEAP, and also conducted targeted household and non-household customer engagement through qualitative and quantitative preference surveys.

Customers support our taking a long-term approach to planning for the future of the water service we provide. Most customers expect Welsh Water to take the right long-term decisions today to protect public health and the natural environment for future generations of customers. In most, but not all cases, this is seen as a higher priority than minimising the cost of the water service to current customers.

Water Resources Management Plan



Figure 16: Water resource zones

Our draft Water Resources Management Plan looks at the period 2020 to 2050. There are two zones where we forecast a water resource deficit: Tywyn-Aberdyfi and Pembrokeshire.

The Tywyn-Aberdyfi zone is small area containing around 3,000 properties with an average water demand during a dry year of around 1.3MI/d. We are planning to reduce this demand over the AMP7 period to 2025 to around 1.1MI/d through leakage reduction and enhanced water efficiency effort. However during severe drought periods there would still be a deficit in supply due to the unreliability of the small river source – and to address this risk we are proposing a new river intake on the nearby Afon Dysynni which can provide the volumes of water required at a cost of around £7.5 million.

There is a forecast shortfall in supply against demand in the Pembrokeshire zone as result of lower water resource availability in order to meet tighter environmental standards. We have looked at numerous options to resolve the forecast deficit. After considering very expensive solutions such as complete mains renewal and transfers from other zones, we are proposing an innovative solution using variable speed pumps to make more efficient use of river regulation from Llys y Frân reservoir. This would cost around £13 million and is clearly the lowest whole-life cost solution to achieve the required outcome for customers and the local environment.

Our Water Resources Management Plan has also assessed the resilience of all of our water resource zones to a 1-in-200-year drought. The improvements planned for Tywyn-Aberdyfi and Pembrokeshire will resolve supply risk in those zones, but we also need to make the supply for customers in our Vowchurch zone equally-resilient. Our plan is, therefore, to lay a main between our Hereford and Vowchurch zones to improve the situation. This would be at a cost of around £6 million. This will meet our target of 0% for 2025 for the new Ofwat resilience measures relating to drought resilience.

Measure of success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Risk of severe restrictions in a drought (Ft1)	Percentage of the population the company serves, that would experience severe restrictions in a 1-in-200-year drought.	4%	n/a	0%

Water trading

We believe water trading can play an important part in securing a resilient service for our customers and the environment, at best value for money. In developing our strategy for water trading, we take our lead from the policy position of the Welsh Government – which is that water trading must benefit the customers of Welsh Water, and should not take place at the expense of our customers or the environment. At the same time, we recognise we can play an important role in addressing the issue of long-term resilience of water supplies in the UK more widely.

Welsh Water’s Trading and Procurement Code was the first in the industry to be approved by Ofwat following the new guidance published at PR14. The code confirms the conditions under which we will consider new water trades, including that we would only propose a water trade if we were sure we could avoid any adverse impact on the natural environment. It also sets out the high-level principles that will govern our approach to negotiations, including that we will purchase from the most economical sources available, all things being equal.

The majority of our supply region has water surpluses – making water exports more likely than imports. Any potential export would need to comply with the following conditions:

- No water resource zones placed into deficit as a result of the export
- No impact on our ability to supply water during periods of drought
- No impact on our company’s level of service
- The environmental sustainability of the supply (no deterioration of raw water source)

With the potential to benefit customers and the wider Welsh economy and to make a contribution to national water availability, we have scrutinised the plans of neighbouring water companies and the potential for water exports – and have had discussions with a number of them. We are engaged in active discussions with one other company on potential new water trading arrangements to

support UK-wide water supply initiatives. If any of the options have the potential to be taken forward we will discuss with the Welsh Government and other stakeholders, and present these in our revised Water Resources Management Plan.

We are also working with the Canal and River Trust on a raw water export solution to support the Brecon & Monmouthshire canal during periods when their abstraction from the River Usk is restricted.

Catchment management

Welsh Water abstracts water for supply from more than 100 catchments covering an area of some 10,000 square kilometres. Land within these catchments is subject to a variety of land-use types and management practices. We have limited land holdings across the catchments – and consequently we have little control of land use activities.

We believe a ‘catchment as a first line of defence’ approach is crucial to safeguarding drinking water quality. The use of chemicals and pesticides in modern land use, and the loss of topsoil, presents a growing risk to raw water quality, which in turn poses future challenges for our water treatment works. It is vital we engage with landowners so as to understand the risks we face and be in a position to address these risks through education and fostering improved land management.

Our strategy, described in Welsh Water 2050, is to maintain or improve the water quality in the catchments on which we rely, so that our ability to supply water is maintained and improved. This approach is clearly-aligned with DWI guidance, and our PR19 plans are supported by them.

We are using our ‘WaterSource’ approach to promote a number of schemes which take a co-creation and partnership approach in line with the Welsh Government’s Well-being of Future Generations agenda. In AMP7 we will continue and expand this work with projects such as:

- Implement action plans for our ‘safeguard zones’ to drive partnership working where we need to recover deteriorations in raw water quality
- PestSmart – our pesticide initiative working across the pesticide supply chain (and including disposal schemes and the ‘Weed Wiper’ scheme)
- Building resilience into catchment (BRICS – Eastern and Western Cleddau rivers); and
- Developing partnership working in the Brecon Beacons ‘Mega Catchment’ which will include numerous projects such as tree planting to reduce landslip impact (see below)

Our investment in these areas, described in greater detail in our PR19 Water Resources Business Plan (Ref 2.1), will increase in AMP7 to around £18 million.

Brecon Beacons Mega Catchment

Around half of the water we abstract for supply on a daily basis comes from the Brecon Beacons. As such, we need to ensure the raw water entering our treatment works is of a consistent and manageable quality. Without control of the raw water quality entering water treatment works, the treatment process will require upgrades and more expensive processes to deal with the deteriorating, and more variable, raw water quality.

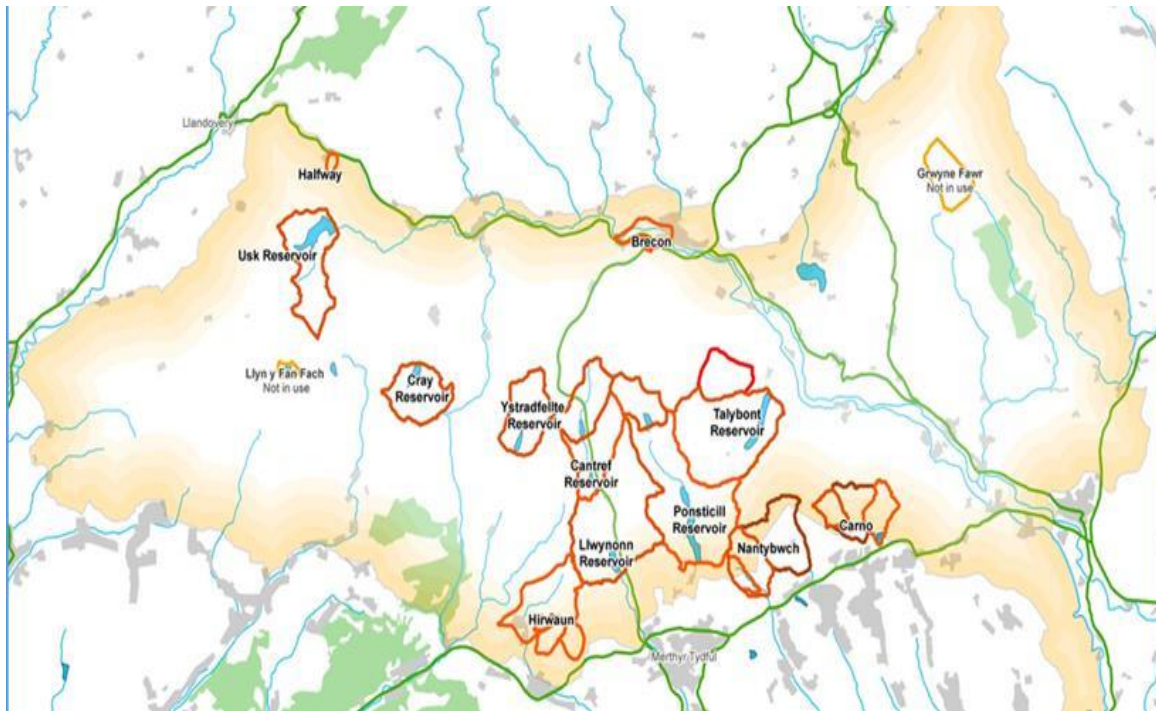


Figure 17: Brecon Beacons Mega Catchment

We are working in partnership with the Brecon Beacons National Park and other key stakeholders to identify common areas of interest for future collaboration – under the banner of the ‘Brecon Beacons Mega Catchment’. We are developing new ways of working with land managers to promote adoption of supporting activities and behaviours – such as taking a ‘farming for water’ approach. This helps meet our Welsh Water 2050 vision and aligns with the principles of ‘sustainable management of natural resources’ as described in the Environment (Wales) Act 2016.

In 2019/20, as part of the Water NEP, we expect 23 catchments will be designated as ‘safeguard zones’. As a result of the programmes and approaches described above, our Measure of Success for catchment management captures our plans to reduce this number by five over the next AMP period.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Water catchments improved (Wt7)	The number of our water treatment works with catchments designated as requiring safeguard zones under the Water Framework Directive	1	23	18

Dam safety

Dams are an essential component of the water resource system in the majority of our zones. They store water when readily available during the wetter parts of the year, and use it to meet water demand during drier periods of the year. The full capacity of our reservoirs is critical during the driest years when we aim to maximise use of available storage.

Many of our dams, and the pipework and valves within them, are over 100 years old. They require ongoing and significant investment to ensure they continue to satisfy changing safety standards and maintain water resource resilience.

All of the dams falling under the Reservoirs Act require ongoing maintenance investment. In April 2016 the Welsh Government introduced amendments to the Reservoirs Act. These changes included reducing the threshold volume from 25 million litres to 10 million litres. This brought additional dams and reservoirs within the scope of the regulations and consequentially placed additional legal obligations on us. Furthermore, there have recently been modifications to industry regulation, such as changes to the mandatory capacity of dam spillways, and new guidance on the rate at which the reservoir water level needs to be lowered in the event of an emergency.

In response to these legislative and regulatory changes we need to make significant investments across our area. We have a programme of work through the rest of AMP6 and AMP7 to:

- Repair or replace dam spillways to ensure they can safely pass the design flows in accordance with the 2015 regulation
- Refurbish and replace pipework and valves in dams to ensure we can continue to operate them safely and
- Increase the size of pipework and valves to ensure we satisfy the 2017 regulation on emergency drawdown capacity

Using our Portfolio Risk Assessment tool, based on regulatory best practice guidance, we estimate the cost of this investment in AMP7 will be around £116 million above and beyond our usual dam maintenance programme, and this has been submitted as a 'special cost factor'. This investment is necessary to ensure public safety and meet our legal obligations. We will have already invested around £80 million on the highest priority safety schemes in AMP6, reflecting new requirements which have arisen since our AMP6 plan was developed.

Delivering this programme of work has and will present many operational, engineering and logistical challenges, not least because we need to maintain supplies to our treatment works and hence customers without the need to reduce the storage within the reservoirs. During AMP6, we have already developed several new and innovative techniques, involving the use of siphons, deep diving and remotely-operated vehicles, to enable us to repair and refurbish dams while still in full operational use – we believe this work is internationally leading.

AMP8 and beyond

During AMP8 we will continue the work highlighted under our Priority Risk Assessment approach, whilst responding to the 10-yearly dam inspection process of the Reservoirs Act.

11 Wastewater and environmental improvements

Introduction

This section summarises our plans for our wastewater business, which includes wastewater treatment works, pumping stations and networks. The transport, treatment and disposal of wastewater sludge ('bioresources') is under a separate price control from 2020 and is covered separately in Section 12. However, there are many synergies between wastewater and bioresources, so the two areas should be considered together.

Our wastewater business has the primary function of protecting public health and safeguarding and improving the aquatic environment. It also supports the sustainable management of natural resources (SMNR) approach; enhances biodiversity; reduces our greenhouse gas emissions; and will oversee the preparation of Drainage and Wastewater Management Plans (DWMPs) in time for PR24. Most importantly, the plan for our wastewater business helps us to keep our customer promise to 'safeguard our environment for future generations', and will keep us on track to achieve many of the Strategic Responses identified in Welsh Water 2050.

We are proud of the progress we have made during 2015-2020 (AMP6) on a number of fronts. For example, we have seen our best flooding performance in 2017/2018 and are now one of the industry leaders on pollution performance (per asset employed). We also have the best quality rivers and the best quality bathing beaches in England and Wales. During 2020-2025 (AMP7) we want to build on this success. Our proposals for wastewater and environmental improvements in AMP7 represent a well-balanced programme that reflects customers' priorities and targets investment to reduce numbers of worst served customers by focussing on sewer flooding.

Background

Welsh Water is highly-reliant on the aquatic environment to deliver its services to customers. It provides the source of our raw drinking water supplies and the route through which we manage customers' wastewater. For this reason, and to fulfil our wider obligations to society, it is vital we protect and enhance the aquatic environment.

Welsh Water's operating area is the third-largest of the wastewater undertakers in England and Wales. It is largely rural, so our wastewater business has a disproportionate number of small treatment works, many of which are remote. We operate more than 830 wastewater treatment works and manage over 30,000 kilometres of sewers. Our operating area is also very uneven, topographically, and has high levels of rainfall. This poses a particular challenge to us in managing rainfall runoff to our combined sewer network.

Our area includes about 15% of the UK's coastline and includes some of the best beaches and most environmentally-important waters in the country. Thanks to massive investment over recent decades, and sound ongoing management of our assets, a third of the UK's Blue Flag-classified beaches are in our area. This is vital to the Welsh tourism industry. Visit Wales designated 2018 the 'Year of the Sea', showcasing Wales' high-quality coastline as its major visitor attraction.

The wastewater business has a key role to play in supporting the Welsh Government's wider agenda, such as the implications of the Well-being of Future Generations Act and the Environment Act (including fulfilling our strengthened biodiversity duty), as well as Schedule 3 of the Flood and Water Management Act. We must also continue to play our part in helping achieve the requirements of

relevant EU Directives. Our wastewater business also contributes to delivering on our biodiversity duty under the Environment (Wales) Act.

Welsh Water 2050

Welsh Water 2050 sets out the challenges we expect to face over the next 30 years, and the 18 Strategic Responses required to address them. These challenges and responses are described in detail in section 4.

Our AMP7 plan for the wastewater business is designed to address these challenges, and we intend to make significant progress during the AMP. The key Strategic Responses that apply to this area of our business plan are summarised as follows:

Strategic Response 7: *'Working with customers and communities'* relates to our work to reduce sewer blockages and deliver sustainable drainage through RainScape. We are co-creating solutions with our customers and communities and discouraging sewer abuse.

Strategic Response 10: *'Addressing our worst served customers'*. All our customers deserve the same high level of service, even when fixing the causes of poor service for them may be costly. We can help address these by removing flows from the wastewater network, improving how we manage our network and installing property-level protection where appropriate to reduce sewer flooding.

Strategic Response 14: *'Supporting ecosystems and biodiversity'*. By helping to bring more waterbodies up to 'good' ecological status and making environmental enhancements, including our National Environment Programme (NEP) as agreed with NRW, we will help nature, enhance biodiversity, and promote ecosystem resilience.

Strategic Response 15: *'Using nature to reduce flood risk and pollution'*. Through our continued commitment to RainScape, our industry-leading sustainable drainage programme, we will reduce flood risk and pollution and deliver best value for our customers.

Strategic Response 16: *'Cleaner rivers and beaches'*. We will improve our wastewater assets and implement our National Environment Programme to help achieve 'good' environmental status for our rivers, lakes and coastal waters.

Strategic Response 17: *'Protecting our critical wastewater assets'*. We will prioritise our investments for improving the resilience of our critical wastewater treatment and conveyance assets, including physical and technological security measures. This will improve the resilience of critical assets that have high environmental and customer impacts of failure.

There are also important linkages with:

Strategic Response 8: *'Ensuring affordability of services delivered to customers'*.

Our record

During AMP6 we have undertaken a wide variety of measures to improve the performance of our wastewater networks and improve environmental outcomes and customer service.

Our customers tell us sewer flooding, caused by blockages or too much rainwater entering the sewer, has the greatest impact on them of any service failure. So during AMP6 we are targeting this issue with extra spending to reduce blockages. By investing more in data analytics to predict and prevent blockages, targeting customers through our 'Let's Stop the Block' campaign, and developing new blockage-removal tools, we have succeeded in reducing incidents of internal sewer flooding from 370 (in 2012/2013) to 297 (in 2017/18).

Hydraulic overload is another key cause of flooding incidents, and it can also cause wastewater spills which impact on the environment. By the end of AMP6, we will have invested some £100 million to mitigate the impact of wastewater spills, focusing on the Loughor Estuary in response to EU infraction proceedings on the UK government under the Urban Wastewater Treatment Directive. By 2020 a volume of rainwater equivalent to the runoff from 5,840 roofs will have been diverted from our sewers, though a combination of measures including our pioneering RainScape approach.

RainScape



Sustainable urban drainage solution as part of RainScape in Llanelli

Population growth and climate change mean that our existing sewerage capacity is increasingly being exceeded, increasing flood risks for customers. We have developed schemes to reduce the volume of surface water entering our sewers and where possible catch, redirect and slow down the water, using a range of techniques that we call 'RainScape'. RainScape solutions, including using basins and planters, swales and porous paving, can also enhance biodiversity while saving customers money. RainScape has been rolled out at scale in Llanelli and in parts of Cardiff.

Having been one of the worst performing companies a decade ago, we are now one of the leading companies in terms of the number of pollution incidents. However, every incident is regrettable and we want to continue to do better. AMP6 has also seen improvements to the discharges at 22 wastewater treatment works, including reducing the level of phosphorus released back into our surface waters.

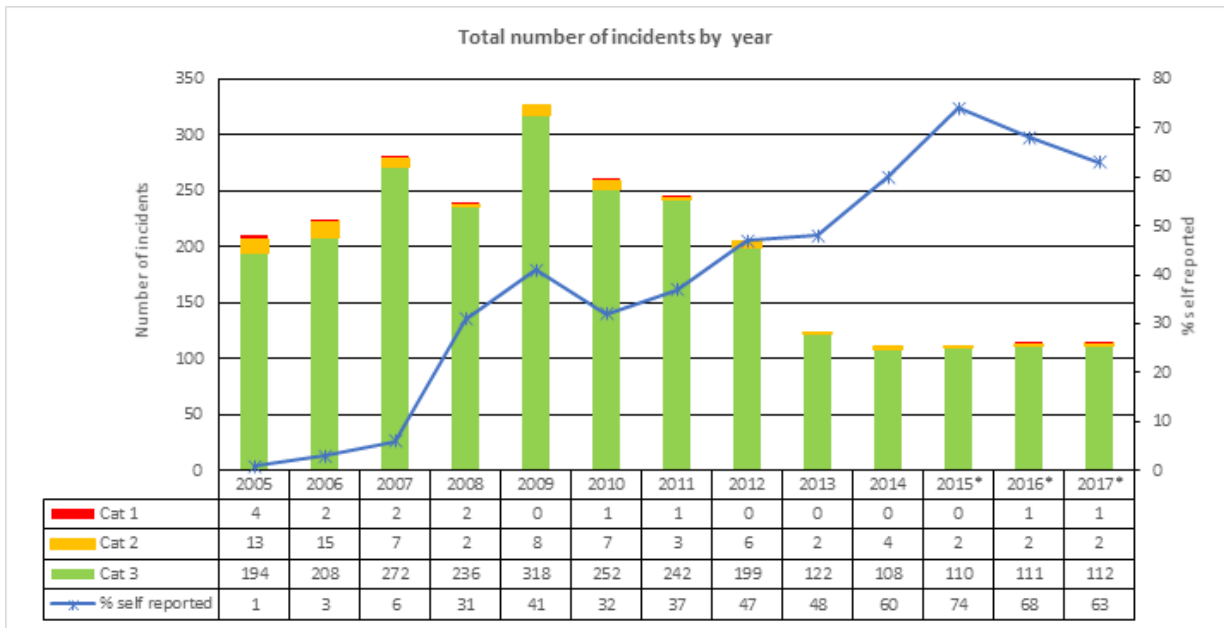


Figure 18: Improvements in pollution incidents performance

A major focus for Welsh Water during AMP6 has been on evidence gathering to inform future investment decisions. Our largest-ever research programme has led to the development of new models to assess the impacts on our coastal waters of our operations, as well as the impacts from other pollution sources. Investigations on inland waters that are failing European Union Water Framework Directive requirements have helped define much of our AMP7 quality programme. By the end of AMP6, we will also have installed monitoring on all our combined sewer overflows, some 2,300 monitors, enabling us to obtain a much better understanding of how these assets operate in real time.

Customer views

Although sewer flooding incidents affect only a small minority of our customers, those that do have it happen to them know it is a terrible experience – and clearly the worst service failure that occurs. Other customers provide a measure of support for reducing the number of such incidents across our network, but prefer us to focus on behavioural change campaigns, rather than on expensive capital solutions.

Safeguarding the natural environment is regularly highlighted as a customer and stakeholder priority. Customers tell us where the responsibility for pollution is shared, the burden of rectifying these issues should also be shared. We agree – it is right we should play our part in reducing pollution and improving river water quality, but others also need to contribute if the desired ecological outcome in a catchment is going to be achieved.

We maintain close working relationships with the Welsh Government and the Department for Environment, Food and Rural Affairs (Defra), as well as their environmental regulators, NRW and the Environment Agency, so we can understand and respond to their priorities and work with them to coordinate appropriate action plans among those parties that contribute to pollution based on sound scientific evidence of cause and effect.

Our Independent Environmental Advisory Panel (IEAP) brings together senior representatives from a number of environmental non-governmental organisations (eNGOs), farming representatives, regulators and academics. It engages and challenges us on how we can help secure a safe and sustainable future for our environment. We have signed up to a number of shared environmental principles with the Blueprint / Wales Environment Link groups, principles which should enable us to forge closer working relationships with eNGOs and hopefully enable us to co-design the most efficient and effective solutions to our challenges.

Our AMP7 plans

We explain below the key elements of our plans for AMP7, including (in the inserted tables) the performance against our measures of success we are targeting for 2025. Given our overall balance between affordability and investment, we have determined those targets at levels which are suitably ambitious, reflecting the relative priorities of customers, performance elsewhere in the sector, and our own unique operating conditions. Further detail on this target-setting process is set out in section 5 and supporting document [Ref 5.2 PR19 Performance Commitments](#).

Our proposals for AMP7 promise a variety of improvements to our wastewater networks (and treatment works) and the environment. As well as reflecting customer priorities, they embrace innovation and reflect the Welsh and UK Governments' environmental agendas, as put into effect by NRW and the Environment Agency.

Gwili and Gwendraeth Fawr catchments

In order to meet new discharge permits and reduce future maintenance costs, we will invest in a new wastewater treatment works in Carmarthenshire that will eventually replace seven of the eight ageing works that discharge into the Gwili and Gwendraeth Fawr rivers. Following a careful appraisal of all the options, this comprehensive approach was chosen as the lowest whole-life cost solution to achieve the required outcome for customers and the environment.

We will lead trials of the practical application of the sustainable management of natural resources (SMNR) approach in catchments selected jointly with NRW. If that approach is to work, it will need the buy-in of other key sectors and communities so the best overall outcome for the environment can be achieved; stakeholder engagement will therefore be key to the success of these pilots.

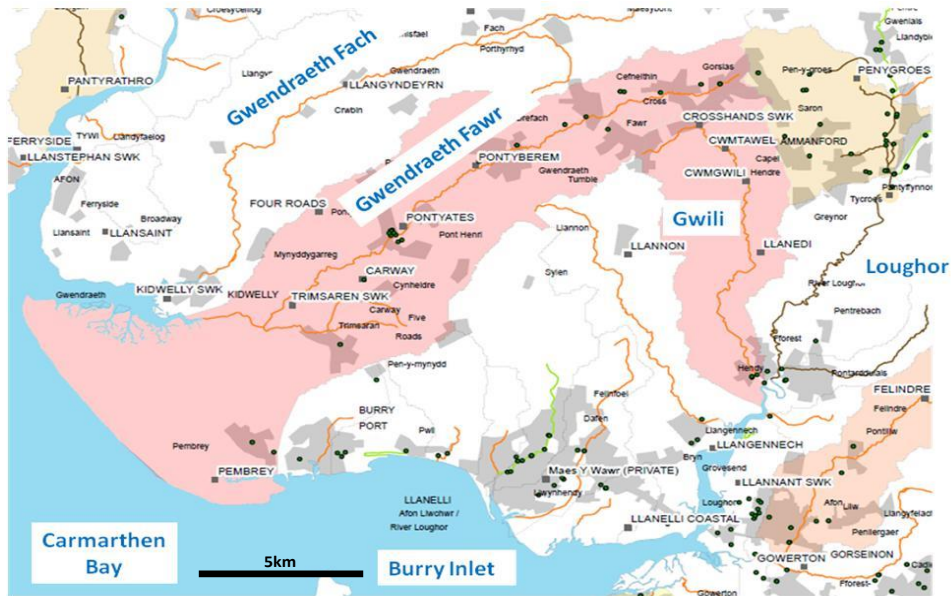


Figure 19: Gwili and Gwendraeth Fawr area

Much of our AMP7 wastewater investment programme is driven by the National Environment Programme set out by NRW, and the equivalent WINEP defined by the EA. The key components of the £288 million programme including increasing the ‘flow receiving full treatment’ at five sites, and upgrading storm tanks at 13 of our wastewater treatment works.

The shellfisheries on the Menai Strait will benefit from reductions in spill frequencies. We will improve our monitoring of shellfish waters using real-time notification trials as we already do for bathing waters.

To reflect the ambitious nature of this investment programme we’ve set the following stretching performance targets in relation to compliance and the environment that will deliver significant benefits.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Treatment works compliance (En1)	Percentage of treatment works compliant with environmental permits	99%	100%	100%
Pollution incidents from wastewater (En3)	Category 1 - 3 pollution incidents, as reported to EA and NRW	112	107	90
Km of river improved (En6)	The length (in km) of river improved as a result of Welsh Water action (cumulative within an AMP)	36	562	418

The biodiversity of a number of rivers will be enhanced by our removal of up to 16 barriers we own that are preventing fish passage upstream. Using evidence gathered in AMP6, we intend to

undertake a well-targeted programme of improvements to sites of special scientific interest (SSSIs) on our land holdings. We will also continue to try to reduce the threat posed by invasive non-native species.

We intend to invest £14 million on a range of actions related to incidents of sewer flooding, to reduce the number of incidents overall, and also reduce the number of ‘worst-served’ customers – those who have been affected repeatedly and are continually at risk. Under our “WaterFair” scheme, we have committed not to charge wastewater customers suffering from repeated sewer flooding (internal or serious external) while they remain on our ‘at risk’ register.

The number of flooding incidents will also be mitigated by expanding our RainScape programme to other areas, with the objective of removing an additional 22,000 rooftop equivalents of surface water from our sewers. Specifically, we will work collaboratively with local stakeholders to develop a co-ordinated RainScape strategy for central Cardiff.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Sewer flooding on customer property (internal) (Rt1)	The number of internal flooding incidents per year, including severe weather events	297	300	273
Sewer flooding on customer property (external) (Rt2)	The number of external flooding incidents per year within property curtilage.	3,929	4,121	3,800
‘Worst-served’ customers for wastewater service (Rt6)	The number of properties at risk of repeat internal or serious external flooding.	-	368	359*

* This number includes the additional properties coming onto the ‘at risk’ register each year due to climate change or other factors.

In terms of asset health, we are tracking the following two measures to ensure our assets are not deteriorating and are being maintained so as to provide a basis for sustainable performance improvements for customers and the environment.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Asset health: sewer collapses (Rt3)	The number of collapses on sewers.	255	255	0% change from 2019/20
Asset health: wastewater treatment works compliance (En2)	Percentage of wastewater treatment works with numeric limits, which were compliant	98.2%	99%	100%

We are not targeting a reduction in sewer collapse levels as such, because this is not an outcome of direct value to customers. We are making targeted sewer network investments which maximise the direct benefit to key customer service outcomes – those being sewer flooding and pollution incidents. In addition, our innovative Smart Networks programme will expand in AMP7. For example, blockage risk modelling will continue to be developed, providing us with better data to help prioritise and target proactive maintenance.

Note that long-term resilience measures are covered in section 4. Asset resilience measures covered under operational resilience (section 13).

Improving our evidence base to inform longer-term investment

Part of our programme during AMP7 will consist of research and investigations to inform future investment decisions. We intend to press ahead with the preparation of drainage wastewater management plans (DWMPs – part of the ‘21st Century Drainage’ programme) – during AMP6. This will build on the industry-leading work we have already done on our sustainable drainage plans, covering all the river basin management districts in our area. This will greatly-improve our understanding of how growth and climate change will affect our customers and the environment over the coming 25 years.

The outcome of our AMP7 sustainable management of natural resources trials will influence the extent to which we see a role for this approach in the future. We are keen to understand the pros and cons of this approach in practice and at scale, as well as payment for ecosystem services and other catchment solutions.

We also recognise the need to understand more about emerging pollutants. We therefore plan to undertake research on the issues surrounding micro plastics and other emerging pollutants, and explore how regulation is going to impact wastewater treatment regarding pharmaceuticals and water quality.

Innovation: Reducing costs at small wastewater treatment works



We have a disproportionately high number of small wastewater treatment works, so the maintenance costs for these works have a real impact on customer bills. We are trialling a new unit technology to reduce costs and accommodate growth. By using novel cloth media, as opposed to the traditional woven microscreen mesh or sand filters, we can achieve a smaller footprint and lower running costs. This new unit also delivers improved compliance and reduces pollution risk. The trial has been successful with units now being purchased for a number of sites.

Beyond AMP7

We believe our AMP7 proposals will enable us to make significant headway on improving the performance of our wastewater assets, helping to shape it into a truly world-class, resilient and sustainable service for the benefit of future generations in line with our Welsh Water 2050 vision.

The NEP for Wales has been scheduled over two AMP periods, to enable us to work with NRW and other stakeholders to design the societally-optimal manner of delivering the required ecological outcomes. The level and nature of investment required in AMP8 will depend on the results of the environmental studies and modelling carried out in AMP7, together with the outcome of the SMNR pilots.

Based on 'traditional', end-of-pipe solutions, the cost of the NEP in AMP8 is currently estimated as £350m. Our objective will be to find innovative approaches, based on secure science, which achieve the required outcomes for river water quality, while also maximising wider catchment benefits, but in the long-term most cost effective manner.

12 Bioresources and energy generation

Introduction

Welsh Water's bioresources service is an integral part of our end-to-end water and wastewater service provision. It takes the by-product of wastewater treatment processes - sewage sludge or 'bioresources' – and treats it so it can be used as a valuable resource in itself, while extracting the maximum value from the waste material to produce electricity and / or natural gas. The treated material is passed on to farmers who can spread it on their land to condition the soil.

At the same time, our bioresources business is increasingly seen as separate business unit that provides a service both to the rest of the business and, increasingly, to other water and sewerage companies or third parties. Ofwat is introducing regulatory measures from 2020 to open up and extend markets in the provision of sludge transport, treatment and disposal services. This may provide opportunities to increase the profitability of the bioresources business and, given we have no shareholders, generate additional value that can be returned to our customers.

One of the ways in which our bioresources business generates value is by producing energy through anaerobic digestion (AD) or advanced anaerobic digestion (AAD), the process by which sludge is broken down into the treated product. As one of the largest energy users in Wales, we are constantly seeking ways to reduce energy usage and increase self-generation. Our bioresources and energy strategies are therefore closely related, and are presented together in this section for this reason. Further details are provided in our PR19 Bioresources Plan (Ref 2.4) and our Energy investment case (Ref 5.8T).

Context

The Welsh Government has made clear its ambition to move towards a circular economy in Wales.^{vi} A circular economy approach seeks to keep resources in use, reusing, recycling or generating value in other ways rather than being burned or simply disposed of. This both saves money and helps to protect natural resources and the environment for future generations. We are fully supportive of this approach, and by the nature of our business have the opportunity to make a significant contribution to this agenda.

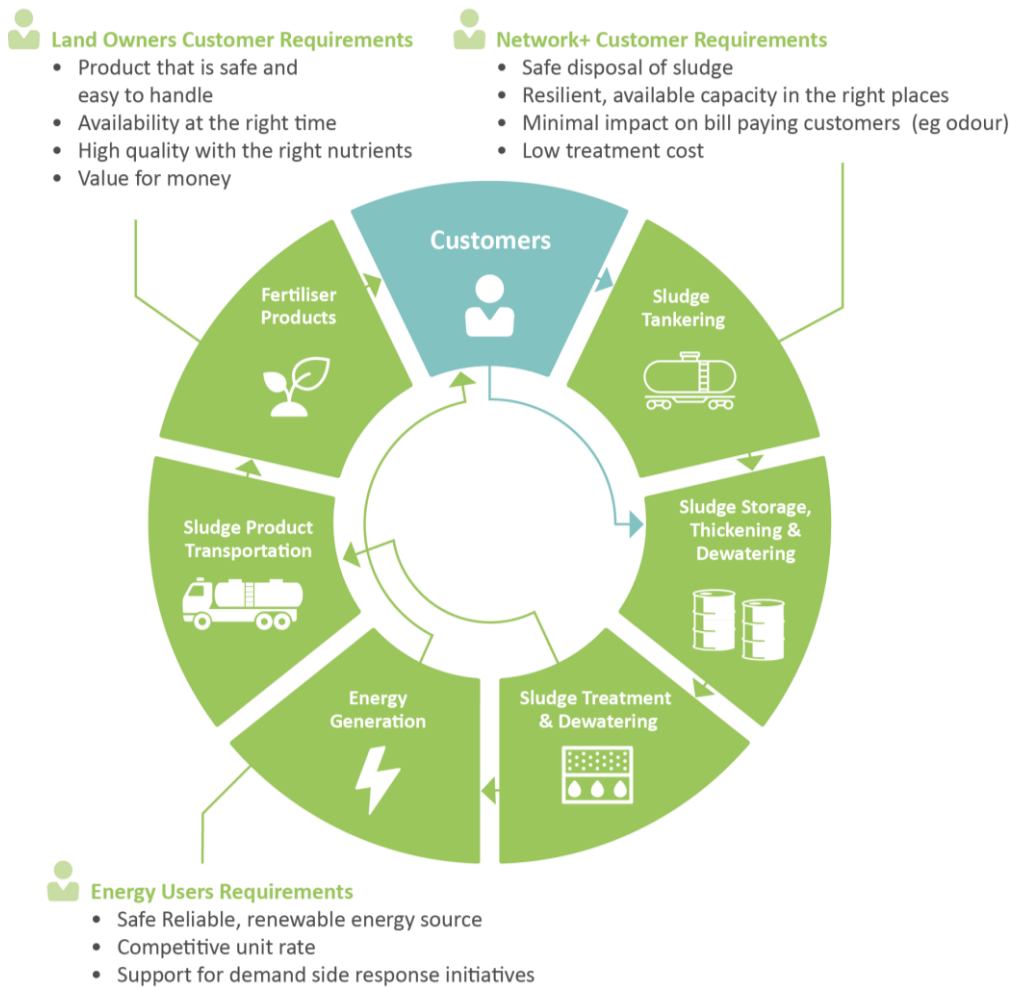


Figure 20: Providing bioresources ‘customers’ with their requirements

Our bioresources business receives around 73,000 tonnes a year of dry solids from the wastewater treatment process. This is collected and transported to one of our sludge treatment centres (STCs), where it is either treated with lime or, more usually, passed through an AD or AAD process which breaks it down using biological processes to create energy and an ‘enhanced’ product suitable for spreading on farmland.

For historical reasons our STCs are often co-located with wastewater treatment works, but in fact the two processes can be considered two separate business units. The ‘natural monopoly’ feature of wastewater networks and treatment activities is not shared by the bioresources business. We are therefore able to export untreated sludge to neighbouring water and sewerage companies, or third parties to treat our sludge, and similarly we are able to accept sludge for treatment from other companies. Ofwat has announced changes to the way bioresources services will be regulated from 2020 to enable and better incentivise trading of bioresources services between companies. This is currently, for the most part, limited to short-term trades in response to temporary capacity reductions.

Welsh Water 2050

Our long-term strategy, Welsh Water 2050 (Ref 1.4) identified a number of long-term challenges that are relevant to our bioresources and energy activities. These are, notably:

Strategic Response 8: *‘Ensuring affordability of services delivered to customers’*. We will ensure that we continue to provide the best service in increasingly innovative and efficient ways and pass these savings onto customers.

Strategic Response 17: *‘Protecting our critical wastewater assets’*. Faced with an increased risk of disruption, we will improve the resilience of our critical wastewater assets which have high environmental impacts of failure.

Strategic Response 18: *‘Promoting a circular economy and combatting climate change.’* – Faced with a changing climate and increased energy costs, we will aim to become an energy neutral business whilst maximising the opportunities to reuse potentially valuable natural materials, contributing to the circular economy in our local region.

In order to support all three of these responses, particularly the last one, our aim is to become energy-neutral by 2050. This will require significant innovation, the scope of which is currently uncertain, but our chosen approach for the next AMP is to take a significant step towards our long-term commitments, including regarding energy self-generation. Our suite of measures of success for AMP7 will demonstrate progress in terms of energy generation and the resilience and ongoing compliance of our bioresources activities.

Customer views

Value for money is a top priority for customers, and it is clear they expect us to take every opportunity to do ‘more for less’ by being innovative and driving efficiencies in the business.

Customers expect us to contribute to generating energy from renewable sources, and in our research on their views of the environment, placed renewable energy generation second priority (after river water quality) in a list of eight environmental responsibilities.

Energy performance in AMP6 and plans for AMP7

In the current AMP6 period our measure of performance on energy generation is the total gigawatt hours (GWh) of renewable energy generated within the year. In 2017-18, the total across water and wastewater was 98 GWh, against a combined target of 70GWh and an increase on 70GWh the previous year.

The principal sources of this renewable energy generation are hydro, wind (we commissioned two new turbines on wastewater treatment sites in 2016-17), and, increasingly, sludge treatment through AAD. We currently generate 19% of our energy needs internally, up from 2% in 2009/10, helped by a major internal energy efficiency drive. Building on this, we expect this proportion to rise to 26% by 2020.) This increase was facilitated by an additional £19 million of investment – with a view to long-term cost efficiencies and lower bills for our customers.

We have more than doubled our energy generation from sludge (electricity and biomethane to grid) from 20 GWh in 2011-12 to 46 GWh in 2017-18. Our approach is to take opportunities to increase production of renewable energy where it is cost beneficial. Our bioresources investments in AMP6 have included a major restructure of our operations in North Wales, and the consequent upgrading

and expansion of our Five Fords treatment works near Wrexham. This is now known as the Five Fords Energy Park, and includes solar, hydro, gas to grid facilities and our biggest AAD asset.

Innovation: Five Fords Energy Park.



This wastewater treatment (Five Fords) site originally had an anaerobic digestion asset, but during AMP5 combined heat and power, biomethane injection and solar generation facilities were installed. During AMP6 further solar capacity has been installed and the AD plant is being upgraded to AAD. While these technologies are not new (although the biomethane injection was the first in Wales), this site was one of the first to demonstrate how they could be used together to optimise the energy performance and value from the site.

For AMP7 we have two measures of success related to energy generation: the percentage of our energy needs provided by energy generation by our own assets, and the percentage of wastewater sludge from which we extract the maximum energy through advanced anaerobic digestion (hence producing an enhanced biosolids product).

For bioresources energy generation, our 2024/25 target of 97.3% - which reflects the fact there is one small site where it makes sense to invest in the necessary plant during AMP8 instead of AMP7, but by 2030 we will have been achieved our long-term target which is 100%.

Our target for energy self-sufficiency is to reach 35% by 2025, to be achieved both by minimising the energy we use and maximising the energy generated. The current PR19 proposed energy-related investment is £27 million over the five-year period. Further details are provided in the Energy investment case (Ref 5.8T).

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Energy self-sufficiency (Ft3)	Electricity generated and gas injected to grid as a percentage of all electricity and gas consumed (gas expressed as an electricity equivalent).	19%	26%	35%
Bioresources product quality / energy generation (En7)	The percentage of wastewater sludge producing a Biosolids Assurance Scheme (BAS) accredited and enhanced biosolids product.	60.2%	95%	97.3%

Bioresources aims and objectives

We believe that our wastewater sludge is a valuable resource, not a waste stream. When applied to land, it improves soil quality and structure and provides nutrients such as nitrogen, phosphorus, sulphur, magnesium, potassium and other trace elements. This is a sustainable product which helps farmers avoid the need for manufactured fertilisers, reducing the carbon footprint of food production.

Our bioresources business aims for AMP7 are to:

- **Maximise business profitability:** Our bioresources operation is a value-driven production business. We aim to maximise its profitability by increasing revenue from our products and minimising our operating costs either internally or by using markets
- **Increase resilience for our customers:** Our customers include our bill payers, the wastewater business, and third-party businesses. We aim to ensure we always have sufficient capacity to achieve required service levels using our assets and the markets. This will enable our customer operations to be more reliable
- **Promote the circular economy:** Our bioresources operations are the single biggest enabler of energy neutrality within Welsh Water. We are also processing and selling valuable materials. We aim to provide more energy and to ensure that the materials we produce have an increasingly positive effect on the natural environment

During AMP6 we have made great progress towards improving our products, with an expectation that by the start of AMP7 we will have eliminated routine raw sludge liming, and will be treating 95% of our product through AAD, as shown above. The AAD process allows us to recover a third more of the energy contained within the wastewater sludge we receive than we can with conventional digestion. During AMP7, we will build on our strategy of centralising treatment at AAD plants. Based on our forward sludge production projections, and the innovative projects we are deploying, we are forecasting our energy generation revenues rise to more than double – from £2.6 million a year at the moment, to more than £6 million a year by the end of AMP7.

We will have achieved BAS certification at all of our bioresource treatment sites by 2020, which is a key resilience requirement - helping to secure the agricultural land disposal route in the long-term.

We plan to invest in our sludge thickening and de-watering plants, reducing sludge volumes transported and increase the value of our operations. We will also enhance our resilience to weather events or other restrictions on land-use through increased strategic storage.

All of these measures will support our ongoing compliance with regulations on the disposal of treated biosolids, for which we will target 100% on an ongoing basis.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Bioresources disposal compliance (En8)	The percentage of sludge disposed of satisfactorily.	100%	100%	100%

Bioresources markets

We already work closely with neighbouring water and sewerage companies regarding the opportunity to respond to short-term maintenance shutdowns and other capacity constraints, by sending sludge to be treated across the 'border', or vice versa.

We anticipate the changes being introduced to the regulatory framework in AMP7 will help to create transparency and identify further opportunities, leading eventually to more longer-term trading arrangements. All water and sewerage companies are now publishing detailed market information on the location of wastewater treatment centres and associated volumes, among other details, and this should help to identify value for short and longer term trades.

In addition to our investment programmes we will be seeking to innovate through emerging markets to help provide short-term treatment buffers, longer-term capacity, and new value and technology innovations to enhance our performance and reduce our reliance on traditional capital delivery.

We have assessed the scope for mutually beneficial trades in bioresources along the border between our area and those of neighbouring wastewater undertakes, which shows that there is potential scope to increase market activity during AMP7. As our bioresources assets come up for renewal during AMP8 and where our sludge growth exceeds capacity, we will further utilise the bioresources market to provide additional capacity or to replace asset life expired capacity where the whole-life cost is lower than our internal delivery models.

We will also explore opportunities as they emerge in the new markets to co-ordinate our activities with other related biological treatment services, to the extent that this is allowed by the relevant environmental and waste disposal regulations. For example, we have acquired the contract to provide biological treatment and disposal of the food waste collected by Cardiff and the Vale of Glamorgan Councils at a new AAD plant located near our Cardiff Wastewater Treatment Works, using the energy produced on-site so as to maximise the value for our wastewater business customers.

13 Corporate and operational resilience

Introduction

To achieve our vision “to earn the trust of customers, every day” we must be able to provide a great service not only on an ordinary day, but also in difficult operating conditions. When in extreme conditions some customers suffer service failures, we must do all we can to help them, particularly customers in vulnerable circumstances, and get things back up and running as quickly as possible. Storm Emma and the freeze/thaw that followed in March 2018 presented the most challenging operating conditions we have faced since at least 2010, and served as a severe test of our preparedness and the ability of our systems and teams to cope during the event, and recover quickly afterwards. We discuss Storm Emma in more detail below.

The very dry summer of 2018 has also been a considerable operational challenge for us, when we have needed to spend an extra million pounds a week to keep customers on supply, avoid water restrictions and to protect the environment at a time of maximum sensitivity.

Extreme weather events are becoming more frequent, and this trend is likely to continue. We therefore need to be able to deal better with them, whether in the form of extended periods of dry weather as in 2018, or a higher frequency of heavy rainstorms which cause sewer overflows. This is not a new realisation – we have been investing for many years in climate change adaptation, not least through our innovative RainScape programme to divert rainwater away from the combined wastewater system and into green spaces in urban areas.

Our ability to ‘weather the storm’ and keep delivering our essential services to customers when things change, both over the short and long-term, is a measure of our resilience. This means providing not only operational resilience, but also ensuring our internal systems and governance processes are robust and resilient (corporate resilience), and we could continue to raise finance to fund the company’s investments and operations even under stressed financial scenarios (financial resilience).

In this section we explain briefly how we have assessed our resilience in these three areas – ‘Resilience in the Round’ – and our plans to further strengthen our resilience for future generations. Further details are provided in our resilience supporting documents (Refs 4.1-4.5).

Our approach to resilience

We understand resilience to be ‘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’.

Our approach to resilience was developed with a particular focus on the Well-being of Future Generations Act (2015), the Water Strategy for Wales and the Environment Act (2016).

Following the adoption of our Welsh Water 2050 vision statement in 2016, we embarked on a major exercise to review global resilience best practice, working with Arup and Cardiff University. The review drew on best practice from a range of institutions and cities around the world, including existing resilience guidance, methodologies, frameworks and strategies. The result of this exercise was Welsh Water’s Resilience Wheel (see below), which encompasses all aspects of our business, including assets, systems, people and governance.

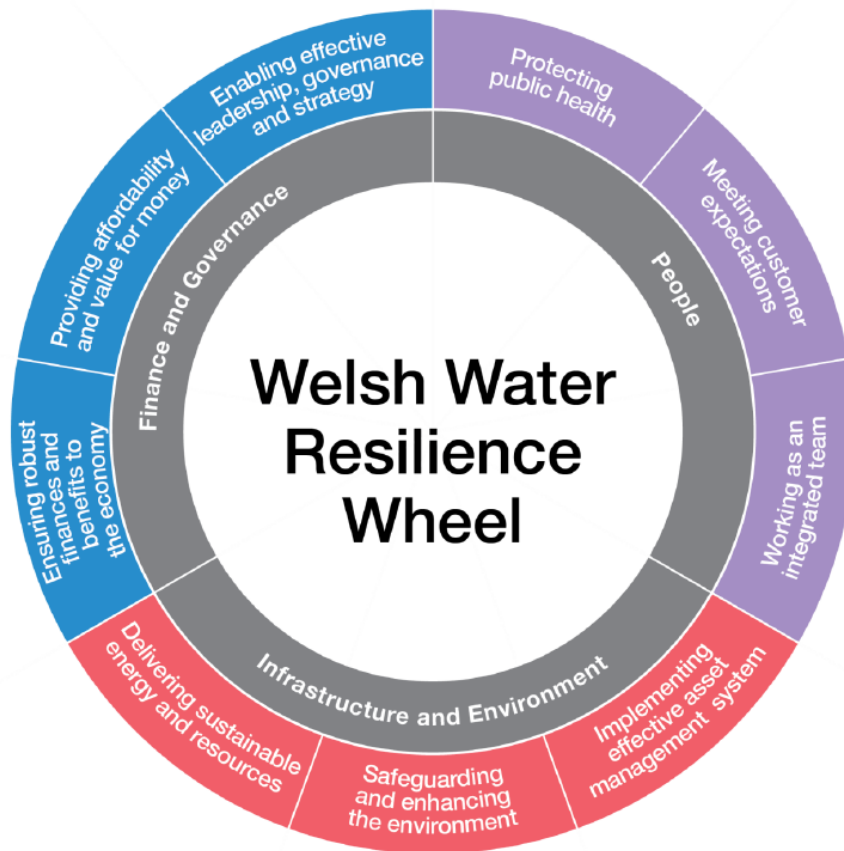


Figure 21: The Welsh Water Resilience Wheel

People are at the heart of the Resilience Wheel, ensuring the health and well-being of Welsh Water’s customers and colleagues, including during shocks and stresses. Infrastructure and environment explores Welsh Water’s role managing man-made infrastructure and working with, and protecting the natural environment, on which we depend to provide critical services. Finance and governance explores Welsh Water’s governance, accountability and assurance processes to anticipate trends and help avoid, cope with and recover from disruption, as well as their ability to withstand disruption to our finances.

The Welsh Water Resilience Wheel includes nine outcomes that Welsh Water needs to achieve and 40 indicators which detail what areas need to be considered to meet these outcomes. The maturity of Welsh Water’s approach to each of these indicators was independently assessed using a maturity matrix. This identified focus areas to be addressed in AMP7, as part of our journey towards Welsh Water 2050, with a reassessment then being carried out on the basis of our final AMP7 plan.

The Wheel provided a framework for the analysis of our resilience needs against the challenges and trends identified in Welsh Water 2050. While the Wheel was a pre-cursor to Ofwat’s publications on ‘Resilience in the Round’, in incorporating national and international best practice we believe it is fully-aligned with Ofwat’s ‘Resilience in the Round’ approach.

We will regularly assess our progress against the Wheel, and set ourselves objectives to improve our resilience in line with the Welsh Water 2050 mission statement. We will also report on progress

annually to our customers – demonstrating resilience in the provision of our essential public services is a prerequisite to earn and maintain the trust of our customers.

Operational resilience

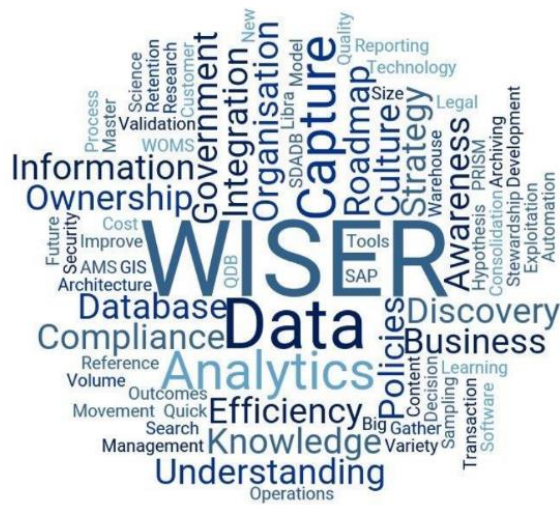
Operational resilience is both about the company's ability to cope with and recover from extreme conditions, minimising the impact on customers, and managing our assets optimally to ensure customers are not impacted by asset failures. We do not think of operational resilience as distinct from other dimensions of resilience, but seek to maximise resilience 'in the round' using our Wheel. For a more detailed analysis of our operational resilience, see PR19 Operational Resilience (Ref 4.4). We provide a summary here.

During AMP5 and AMP6, we significantly strengthened our emergency readiness and response capability. Our emergency planning team quadrupled in size from five people in 2010, to 20 in 2018. Our investments in network monitoring, telemetry and smart technology have enhanced our ability to understand what is happening during extreme conditions and manage the network more effectively in response. For example, we now have some 3,000 pressure monitoring points across our water network. Our 4x4 vehicle fleet now numbers more than 200, which was a major factor in enabling us to respond effectively during Storm Emma (see below), and we have more than 30 water tankers, which is one of the biggest fleets in the UK (plus additional contract support we can call upon if needed).

We recognise the key role customers play in operational resilience. We issue free lagging kits (around 4,000 a year), and run annual 'Wrap up Wales' campaigns to try to reduce customer-side pipe bursts in cold weather. Customer communications also play a critical role, both during cold weather and warmer, drier weather. Ofwat's review of Storm Emma commended our proactive communications activity to keep customers informed and give them advice.

During AMP6 we allocated over £200 million of new investment to 'resilience'. This included extra funding made available to fund high-priority investments such as a major sewerage pumping in Cardiff, and additional treated water storage in the Hereford area. Following the post-incident review of the response to Storm Emma an additional £4 million of funding has been allocated to projects aimed at further reinforcing the resilience of our assets in key areas, particularly rural supply networks which do not have the system interoperability of larger, urban networks.

Innovation: Project WISER



In 2016 we developed a comprehensive Data Strategy – WISER (Welsh Water Information Strategy Enterprise Roadmap), which will enable the business to better harness its data capability, so we are able to make accurate and informed decisions, for the benefit of our operations, and ultimately our customers.

The resilience of our assets is being continually strengthened through ongoing maintenance and targeted resilience programmes, many of which run over multiple AMP periods. To help us to track progress towards a fully-resilient set of critical assets, we have developed new asset resilience measures. Each category of assets (water resources, water treatment, water networks, wastewater treatment and wastewater networks) has a bespoke scorecard to assess the extent to which the full list of resilience requirements has been met for each identified asset. These requirements include weather-related risks but also risks from cyber security or physical asset breaches and also the interaction with other utility networks, such as communications and the energy supply grid.

We plan to make significant progress on asset resilience by implementing an investment programme over the next two AMP periods. In setting the targets for AMP7, shown below, we have taken into account the need for an overall balance between affordability and investment. Further detail on this target-setting process is set out in section 5 and supporting document [Ref 5.2 PR19 Performance Commitments](#).

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Asset resilience: (reservoirs) (Ft5)	Percentage resilience of critical assets against a set of criteria.	-	92.2%	95.5%
Asset Resilience (water network+ above ground) (Ft6)	Percentage resilience of critical assets against a set of criteria.	-	84.4%	86.5%
Asset Resilience (water network+ below ground) (Ft7)	Percentage resilience of critical assets against a set of criteria.	-	47.0%	56.2%
Asset Resilience (waste network + above ground) (Ft8)	Percentage resilience of critical assets against a set of criteria.	-	77.7%	80.0%
Asset Resilience (waste network + below ground) (Ft9)	Percentage resilience of critical assets against a set of criteria.	-	57.9%	60%

Storm Emma and the 'freeze-thaw' of 2018

The two severe weather events which affected our supply area in early 2018 – Storm Emma, closely followed by a widespread freeze-thaw – tested all aspects of our operational resilience. Our winter weather contingency plan is reviewed and updated annually, which enabled us to take necessary precautions well in advance of the arrival of the extreme weather.

Our supply area experienced four days of very low temperatures (-12C was recorded in Wales), plus high winds and deep, drifting snow which blocked numerous roads, including the M4, with some smaller roads remaining closed for over a week. When the thaw set in it revealed these conditions had caused a large number of burst pipes on customer properties and on our distribution network, and we experienced a 20% increase in total demand. During the height of the thaw, we saw up to 240 bursts a day (compared to 100 in normal conditions).

During our response, we put all of our winter preparedness plans into action, and made full and flexible use of all the company's resources aiming at all times to minimise the impact on customers. Calls to our call centre increased by more than 450%, but we were able to deploy 150 additional colleagues, many of whom were volunteers from across the business, to help respond. Operationally, all our treatment works ran at their maximum output, with many staffed overnight for several days. Our full tanker fleet was mobilised to provide backup where distribution storage was emptied. Bottled water was delivered to customers on our priority services registers, and to other vulnerable customers, wherever this was possible given the ongoing weather conditions.

While we were able to maintain uninterrupted supply for the substantial majority of our customers these events did result in highly regrettable, sustained supply interruptions for a small proportion (less than 1%) of connected properties. Some 70% of affected customers told us that they were satisfied with the way we handled things, but 10% were dissatisfied. We have analysed what caused the problems in particular rural communities that were most affected, and are already well-advanced in implementing the specific actions to improve our response next time this happens, particularly around local communications, remote monitoring and management of vulnerable customers.

Further detail on our response to Storm Emma is publicly-available in evidence submitted to Ofwat as part of their review – and we will be publishing our lessons learned and plans for the future in September 2018.

Corporate resilience

Corporate resilience depends on the architecture of policies, strategies and processes of good governance we have built up over many years and ensuring a culture which carries these into practice. Key policies include a long-term strategy for the development of our people, a robust risk management framework, and adherence to a best-practice set of principles for Board leadership, good governance and transparency that go above and beyond Ofwat's requirements.

Ofwat's Board leadership, transparency and governance principles help secure corporate resilience by making sure Boards can provide independent challenge, have the right mix of skills and experience, and are focussed on the regulated business. We meet or exceed all of Ofwat's current principles in relation to leadership, effectiveness, accountability, remuneration and relations with Members.

Our Board is a joint Board of Directors of Glas Cymru Holdings and Dŵr Cymru Welsh Water – a unified Board reflecting the commonality of interest between the holding company and the operating company, so the interests of the appointed business are central to the Board's strategy without the need for a separate operating company board of directors.

We have a strong and challenging Board comprised of a chairman, six independent non-executive directors and three executive directors. The Board meets regularly and is held to account by Glas Members to ensure it stays true to its core mission of providing high-quality, essential services to our customers at the best value. There are currently 50 Glas Members (excluding Board Members), who are sourced from across our supply area and nominated by an independent selection panel. They perform the governance roles carried out by shareholders in other companies.

We reviewed Ofwat's consultation on revised Board leadership, transparency and governance principles (July 2018) and have no difficulty with the content of any of the principles proposed in the consultation – in any event we are committed to transparency and good governance. Welsh Water has committed since 2001 to act as if it were an independent, listed company and we voluntarily comply with all the requirements of the UK Corporate Governance Code. Our Annual Report and Accounts publishes full details of our corporate structure, dividend policy, gearing, tax affairs and executive remuneration policies and payments, so customers can trust the transparency and good governance of our business.

Our measures of success include the following measures which help us to track and monitor our corporate resilience.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Health and safety: Reportable injuries (Co1)	The number of RIDDOR injuries recorded per year.	14	10	5
Employee training and expertise (Co2)	The percentage of our employees who are evaluated as having the necessary skills, experience and knowledge to carry out their specific role.	82%	95%	95%
Employee engagement (Co3)	Index based on colleague survey responses to a standard set of questions.	80%	75%	80%

Financial resilience

Financial resilience is tracked in our measures of success in terms of our credit ratings. However, we recognise that financial resilience is more complex than is suggested by any single measure. Our financial resilience is described in section 20 below, and in greater detail in PR19 Financial Resilience (Ref 4.3), including how we have tested our financial plan against a range of challenging stress scenarios.

Measure of Success	Definition	2017/18 outturn	2019/20 Target (AMP6)	2024/25 Target (AMP7)
Financial resilience: credit rating (B15)	“High” means a strong credit rating from two of the three rating agencies.	High	High	High

Beyond AMP7

Many of our Strategic Responses involve multi-AMP actions, and we have included some of these in our outline investment plan for AMP8. However, we recognise the landscape of the water industry is constantly shifting, and we will need to update our view of resilience on a regular basis. We therefore envisage a substantial review every five years to review our long-term vision and resilience model, with specialist input and customer and stakeholder involvement, to look at how best practice and the long-term trends are evolving, and whether our approach to resilience needs to be updated.

We will also report annually to our customers on our performance against our resilience measures of success, as well as our wider progress towards our resilience goals, as set out in Welsh Water 2050. In this manner, we believe we will be leading the way in complying with the approach set out in the Welsh Government’s Well-being of Future Generations Act.

14 Innovation

Introduction

Our vision as a company is to “earn the trust of our customers, every day” and one of our core values in support of this vision is *being open to new ideas*. Our customers expect us to use innovation to drive our costs down, provide ever more resilient and high-performing services and improve the environment.

Innovation is defined at Welsh Water as ‘*customer value created by the application of knowledge*’. See [Ref 3.3 PR19 Innovation Strategy](#) for further detail.

Welsh Water 2050

Our long-term strategy, Welsh Water 2050, sets out how we will meet long-term challenges and ensure we can continue to provide a “truly world class, resilient and sustainable water service for the benefit of future generations”. Welsh Water 2050 provides a framework for us to shape and prioritise our long-term innovation needs, and specifically our science and research agendas.

The size and scope of the challenge means that we need to increase our investment in the most effective research and technology in the next period to make the necessary progress on this journey.

A journey plan has been developed to match each of the 18 Strategic Responses in our Welsh Water 2050 document. Each one identifies and addresses research and knowledge gaps, encourages the trial of near-market technologies, and promotes the development of new technologies and ways of working.

Customer and stakeholder views

Our customers expect us to innovate to keep costs and bills down and they recognise the need to invest in research and development to achieve this and meet future challenges. Customer support for our long-term investment plans is contingent on us keeping pace with best practice in terms of innovation and efficiency (source: Welsh Water Environment Research 2017):

The work of our Independent Environmental Advisory Panel (IEAP), made up of over 25 stakeholders, is also helping to shape our science, catchment and research priorities. The work of the IEAP is explained further in our PR19 Stakeholder Engagement supporting document (Ref 1.2).

Our approach to innovation

Our innovation strategy is designed to drive and deliver efficiencies and improved performance through an accelerated innovation cycle which rapidly appraises new ideas, focuses on operational needs, and has access to a wide range of external expertise and resources to leverage our own growing capability. In essence our innovation mantra is to ‘*Think big, start small, and scale fast to drive value....*’

Unlike most water companies, we do not have a central ‘innovation team’ to direct and undertake innovation work. Instead, we have embedded innovation in every part of the business. Our approach is to embed ‘innovation champions’, expert scientists and technologists, in each area of our business and task them with inspiring and enabling innovation everywhere.

iLab measures tracked and reported

- **Costs**
- **Patents filed**
- **Earnings from royalties**
- **Ratio of short- to long-term innovation projects**
- **Leveraged funding from third parties**
- **Distribution of projects as compared to needs identified in Welsh Water 2050**
- **Employee engagement with innovation**
- **Awards submitted and won**

We have a company forum, the 'iLab', which drives our innovation agenda and measures progress. It is led by a Director, and includes four other Directors including the leads for Water, Wastewater and Retail Services.

The activities and outcomes of the iLab process are reviewed annually by the Board, with over 300 ideas or proposals assessed by the iLab since 2015.

The iLab's responsibilities include encouraging and embedding a culture of innovation throughout the business. We also hold an annual Innovation Conference, which brings the latest technologies, innovations and products into the business from across the globe. The last event in April 2018 involved more than 400 delegates including senior government officials, experts, partner companies and stakeholders.

Developing a culture of innovation

Our innovation approach centres on the three pillars of People, Finance and Governance, and Research and Technology. This aligns with the themes in Welsh Water Resilience Wheel, Ofwat's PR19 consultation methodology, and Ofwat's 'Driving innovation in water' report.

A fundamental requirement of an innovative company is to enable new ideas and provide an environment in which colleagues are encouraged to innovate and take reasonable risks to test their ideas. Improving the capacity of our people is key to this. To that end we run an annual Innovation Leadership course through Cardiff Business School, which equips colleagues with new tools and ways of thinking to assist them to innovate in their areas of the business. We also support and sponsor qualifications such as MSc's through local universities and have regular Innovation Days for all colleagues to celebrate and thereby encourage innovation.

Our colleagues can share ideas through our innovation web portal, iLab, and through our internal water and wastewater Innovation Forums. The Innovation Forums encourage colleagues from across Welsh Water to come together to discuss new ideas, technologies and products. Managed by our Heads of Service, they act as a catalyst to bring innovation into the business. Each project considered by the forums must contribute towards meeting the challenges set out in Welsh Water 2050.

Managers are required to undertake at least three best-practice visits a year and to share their learnings with colleagues. In some cases, this involves sharing best practice with UK businesses in other customer-facing services, such as insurance and health care. In addition, we have developed over recent years successful exchange and partnership programmes with Oasen Drinkwater in The

Netherlands and HOFOR (the water and wastewater supplier for Copenhagen) – for example coming together with Danish colleagues to carry out a joint review of resilience challenges to the industry later in 2018.

We have an ongoing innovation communications plan, which aims to sustain the culture of purposeful innovation within the organisation, and to communicate our ideas and progress to our customers and other stakeholders.

Other measures which promote a culture of innovation include:

- Overseas study awards for colleagues
- A policy of reinvesting the UK Treasury rebate on National Insurance contributions for research (so far over £2 million in AMP6) to enhance innovation budgets and drive further value.
- Supporting public speaking opportunities at innovation conferences.

In our latest employee engagement survey, 90% of colleagues agreed they are empowered to make improvements and drive change within their roles, and 77% said that their manager encourages them to come up with new ideas.

Innovation: Wastewater '#Hackathon'



In March 2018 we kicked off the Welsh Water Wastewater '#Hackathon'. A two-day event designed to bring together exceptional minds to solve complex challenges. A mix of people from the business and partners with diverse skills and experience worked together to 'hack' possible solutions for Wastewater compliance, odour and blockage issues. Splitting into challenge teams, each picked up inspiration for possible solutions by exploring emerging technology, the art of the possible and delivering prototypes of solutions. The event delivered a number of ideas and prototypes that are currently being developed further.

Partnerships

We are represented on the Board of the Cardiff University Water Research Institute as well as a number of other institutions relevant to aquatic research, evidence gathering and knowledge development. We also are the only Company to have a strategic Memorandum of Understanding with the Natural Environment Research Council (NERC). This has enabled a number of secondments into the business for catchment studies, and ensures that NERC research calls are focussed on our needs, and the wider needs of the water sector. We are also a leading member of the international SWAN group, promoting the smart management of water and urban infrastructure networks.

Our record

We have not always been at the forefront of innovation in the water sector. The Cave Review, *Competition and Innovation in Water Markets (2009)*^{vii}, ranked Welsh Water near to bottom in terms of innovation investment as a proportion of turnover. This situation has largely been reversed over the last decade and we are now confident that we are doing at least as much as any company in the sector to drive value for customers through innovation.

By the end of AMP6 we will have invested some £39 million (around 1% of turnover) in innovation across the business as a whole. The largest single element of this is accounted for by our coastal investigations programme (£9 million). Around £23 million of this will be spent on AMP6 environmental investigations, which links directly to the definition and size of our AMP7 environmental quality programme, helping to ensure this will represent value for money for customers and will use the optimal delivery methods, which may involve new ways of collaborative working with other land users in a catchment.

Examples of innovations currently being implemented are included throughout this and other PR19 submission documents. To date in AMP6 we have worked with over 130 companies to trial and adapt their products to help us to improve our services and more than 300 innovation proposals have passed through our iLab with some 85 being completed to date and delivering value.

Our plans for AMP7 and beyond

Our innovation approach centres on the three pillars of People; Finance and Governance; and Research and Technology. This aligns with the themes in Welsh Water Resilience Wheel and Ofwat's PR19 consultation methodology and 'Driving innovation in water' report.

Innovation funding of £86 million has been included in our AMP7 business plan. This includes £44m of investigations, both within and beyond our NEP, which will help optimise and prioritise investment in AMP8 and beyond, so as to deliver the best value for money for customers and the environment.

AMP7 investigations

- £10m - water catchment investigations
- £21m - Sustainable Management of Natural Resources (SMNR) catchment pilots
- £13m - other NEP investigations

Our research investment in AMP7 is targeted at developing new processes, technologies or regulatory approaches designed to reduce future costs and improve services. The proposals are based on identification of the research priorities for each of the Strategic Responses in Welsh Water 2050.

Additional funding will be leveraged through UKWIR and partnerships with NERC and universities, plus our National Insurance rebates for research.

We commissioned Arup to review our innovation portfolio and prioritise the proposals in light of global best practice. This review provides external assurance that the proposals are aligned with Welsh Water 2050 and meet the company’s resilience needs.

These research proposals have also been reviewed by the IEAP, which includes NRW, Welsh Government, and a number of other academic colleagues. The three IEAP members who sit on the CCG have been very supportive of our approach.

Our AMP7 innovation portfolio is summarised below, illustrating the broad nature of our portfolio.

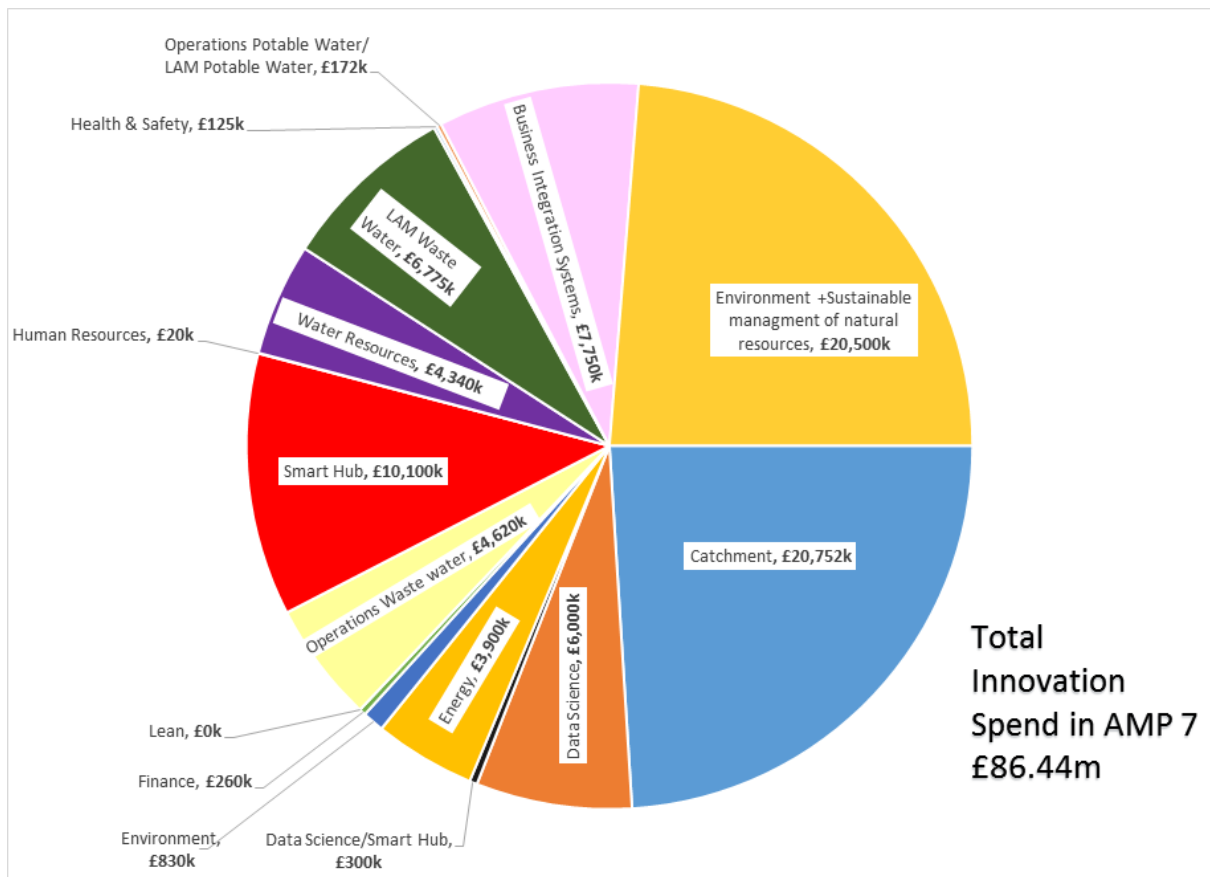


Figure 22: Innovation portfolio for AMP7

Beyond AMP7

Our AMP7 innovation proposals will make a material contribution to meeting the ambitious outcomes set out in Welsh Water 2050. But there remains much to do if we are to be seen as ‘a truly world class, resilient and sustainable water service for the benefit of future generations’. In AMP7 we will continue to work with partners, collaborators and stakeholders to develop our research priorities for AMP8, and to develop and trial new technology. Our challenge is to turn the research during AMP7 into innovative approaches to problems that will allow us to implement optimal cost-effective solutions in subsequent AMPs. Our 2050 Journey Plans will be updated every year, discussed at our annual Innovation Conference and formally reviewed with stakeholders as part of future periodic reviews

15 Household retail and customer services

Introduction

Our retail business is, for most customers, their main method of contacting us about paying their bill or any other issue they have. It therefore plays a critical role for us in achieving our vision of 'earning the trust of our customers, every day'.

Retail Services has a particularly important role with regard to meeting our customer promise of 'fair bills for all', by collecting revenue from customers, and minimising the burden of uncollected revenue (bad debt) which adds a significant increment to average bills. Our retail business also leads on the implementation of our social tariffs strategy (discussed above in section 6). The retail business is also a crucial element of delivering our promise to 'put things right if they go wrong', where it needs to work seamlessly with wholesale business functions.

Our household and non-household retail businesses are managed separately within the company, though they share many of the same systems and resources.

The non-household retail business is covered in section 16 below.

Background

Our retail business serves 1.2 million households across most of Wales and neighbouring parts of England. Our research has shown that our customers are overrepresented in the least affluent social demographic groups, compared to other water companies in the UK. Studies show that people living in poverty are also likely to experience other forms of vulnerability and ultimately social exclusion. This means we face higher-than-average costs in running our retail operations, and delivering the personalised services our customers need.

As part of our customer engagement programme for PR19 we have segmented research results for different customer groups, and the results of this programme have helped us to know our customers better and understand their differing circumstances. Further details of our customer segmentation exercise can be found in our PR19 Customer Engagement Report (Ref 1.1).

Welsh Water 2050

Retail Services has, by its nature, a shorter-term outlook compared to the wholesale parts of the business, because of the nature of the assets involved. Nevertheless, our Welsh Water 2050 exercise extended to retail to ensure we are prepared and resourced to provide resilient and high-quality services over the long-term. The key trends for retail over the next 30 years included rapidly-changing customer expectations, the ever-increasing contribution of technology to analysing, and responding to, our customers' characteristics and needs, and the risk of growing poverty and inequality.

The way that customers interact with retailers, and the kind of service provision they expect, has already changed significantly over the past 5-10 years, and will continue to over AMP7 and beyond. This means we need to be constantly innovating to ensure we do not fall behind our customers' expectations – which will be shaped by their broader experience as consumers rather than as customers within the water industry.

At the same time, we have to ensure we continue to provide high levels of service to all customers, particularly those in vulnerable circumstances and may not be digitally-engaged, for example through the 'keep me posted' campaign – to which we were one of the first water companies to sign up. We will need to do 'more for less', to support long-term affordability, and review our social tariff policies to ensure they are appropriately targeting those who struggle to pay their bills.

The Strategic Responses in Welsh Water 2050 most applicable to the household retail business are as follows:

Strategic Response 8: *'Ensuring affordability of services delivered to customers'* – ensuring our services remain affordable for all customers and providing support for low-income households through our social tariffs and water efficiency advice.

Strategic Response 9: *'Supporting customers in vulnerable circumstances'* – using data to provide a personalised service, as well as working in partnership with other providers to give appropriate and effective support to customers in vulnerable circumstances.

Strategic Response 12: *'Leading edge customer service'* – developing our culture and technology to provide a personalised, responsive and consistent service to customers through their preferred contact channel.

Customer views

We undertook specific research for PR19 to understand customers' preferences regarding customer service, both in normal circumstances and during an operational incident. We asked customers in detail about what they expect in terms of response times, contact channels, and how much information they expect. Customers still, most often, prefer to be able to contact us by telephone, but also want to have a range of channels available, depending on their circumstances.

As a result, we are committed to keeping all these channels open, while accommodating shifting contact patterns (see below), and maintaining our own in-house contact centre based in Wales. Our customers also support the provision of services in Welsh, and we will be doing more to promote customers' choice to contact us in English or Welsh, in line with our legal obligations and the well-being goals outlined by the Welsh Government.

Customer service indicator	2015/16	2016/17	2017/18
Complaints	6,052	5,430	3,288
Net Promoter Score	n/a	+55	+64
Customer satisfaction (out of 5)	4.51	4.41	4.47

Customer services: Our record – AMP6

During AMP6 we have seen a significant shift in customer contact channels towards digital channels and social media. This has required investment to bring down our response times for those channels. In 2017, we invested £500,000 in additional resources to bring down our response times to emails from five days to 12 hours.

During 2015-16 we experienced a significant increase in customer complaints, due to unforeseen issues in the implementation of our new billing system, together with changes to our debt management practices. We responded to these issues quickly, and our performance has now returned to 2015 levels. We are targeting further improvements by 2020.

We are currently in the process of implementing a major technology programme to upgrade our telephony and web systems – with the goal of enabling the expansion of our digital services and greater integration between our contact channels and core systems. This programme will further enhance self-service options for customers and also introduce new functionality to improve customer experience and the effectiveness of our contact management activities.

Customer services: our plan – AMP7

Over AMP7 we will develop our digital services, introduce integrated mobile and web services, and make system changes to develop new capabilities such as segmentation within our customer systems. This will cost some £25 million.

We will develop our web and mobile capabilities to allow as many customers as possible to fully ‘self-serve’. However, we recognise it is a relatively-low priority for customers to sign up for a service that most will use once or twice a year. Therefore we will develop functionality that minimises the need for customer effort (registration and access) while meeting their needs.

We will introduce new flexible billing and payment arrangements to allow us to better-tailor our services to the individual needs of our customers. For example, we are currently working with BACS to develop a flexible direct debit facility for low-income customers, which would be the first in the UK, and we hope to introduce this option for all customers in AMP7.

We will build on the capability we have introduced in AMP6 to accommodate the growth in contacts through digital channels, which includes the first bilingual English/Welsh ‘chatbot’, and ensure we accommodate the growing number of customers using these channels.

As we expand our range of digital services and more customers switch channels, we believe there is potential to increase the take up of our Welsh-language service and we are committing to increasing the number of customers receiving this service by four times to 25,000 by 2025.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Customer complaints (Rt4)	The number of written and telephone household complaints per 10,000 customers	84	76	60
Welsh language service (Sv6)	The number of customers registered for our Welsh language service (000s)	6	10	25

Bad debt

Since 2015 we have seen significant improvements in revenue collection rates and the cost of bad debt. Whilst this has necessitated some increase in our debt management costs, the overall burden on other customers has been materially reduced.

	2014/15	2015/16	2016/17	2017/18
Collection Rates	90.2%	95.5%	95.7%	96.1%
Debt Management Costs (£m)	6.9	8.2	8.8	7.5
Household bad debt charge (£m)	27.1	25.2	22.7	22.6

This significant change in our collections performance was the result of a two-year programme to redesign our recovery processes, working with PwC's working capital team (this same team was commissioned by Ofwat to review Retail Services efficiency in 2017). These changes include doing more to proactively identify customers who need support to pay their water charges, improving the data available to the debt recovery team to allow them to target their activity more effectively, and introducing tailored processes for segmented customer groups.

Our Measure of Success for the management of bad debt is shown below. Differences in accounting policies may make it difficult to make fair comparisons between the reported bad debt levels of various water companies, but our programme of benchmarking visits has given us confidence our targeted performance would involve the use of all best practice techniques in the sector and beyond.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Company level of bad debt (BI3)	The annual bad debt charge as a proportion of revenue (%)	2.9	2.5	2.0

Voids and gap sites

Voids are vacant properties which are not billed for water and/or wastewater services. Our metered voids have consistently accounted for 35-40% of voids since 2010, and it is relatively straightforward to manage and identify them. Managing unmeasured voids is considerably more difficult and costly. Our activities include a combination of desktop investigations, letters and site visits to identify and bill occupied voids.

We have included a Measure of Success on voids to commit ourselves to a reduction in the number of the next period, as shown below. We will aim to achieve the associated 28% improvement in unmeasured voids by expanding our investigations and field activities.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Unbilled properties (voids) (B14)	The percentage of connected properties not billed for water and/or wastewater services.	4.1	3.9	3.5

Costs and efficiency – our record

While the cost of our customer service and meter reading activities compares favourably with the rest of sector, our costs of debt management and bad debt are considerably higher, which reflects the customer base we serve. The costs allowed at PR14 included a special factor adjustment for the impact of income deprivation on the costs of debt management and bad debt of £44 million over AMP6. However, no allowance was given for the general increase in costs over time (that is, no price control ‘indexation’) and there was no recognition of the discrepancy in size of bill between water-only and water and sewerage companies. There was also no detailed investigation of the impact of differing accounting practices on companies’ reported levels of retail costs.

By the end of AMP6 we will have reduced the annual operating costs of the residential retail business by £3.1 million (5%) over five years. This will have been achieved while investing in new capabilities to support recovery activities. This will still leave us £40 million above the costs ‘allowed’ in the PR14 final determination for the five-year period. This is due to the fact that we serve a high cost customer base, which has required additional investment in our debt recovery activities and administering social tariffs. Additionally, we have incurred input price pressures (notably wage inflation) which was not included in our cost allowance at PR14.

AMP6 expenditure plan (outturn prices)	2015/16	2016/17	2017/18	2018/19	2019/20	AMP6
PR14 final determination allowed costs (£m)	51.4	49.8	48.3	46.7	46.6	242.9
Actual/planned costs (£m)	58.1	54.7	56.2	59.0*	55.1	283.1
Variance (£m)	(6.7)	(4.9)	(7.9)	(12.3)*	(8.5)	(40.2)

* Increase due to change in internal allocation of indirect costs.

Costs and efficiency – our plans

In AMP7 we will transform the way in which our household retail business operates through the introduction of new technology, new ways of working and providing our people with new skills. Our plan includes:

- creating a digital platform that supports all our of customer ‘journeys’, not only routine transactions
- greater use of data to understand customer behaviour and using that insight to support the decisions taken by our frontline teams in order to provide a more personalised service to customers
- the introduction of automation technology, including robotics and artificial intelligence, into our customer contact activities
- establishing a permanent horizon scanning capability to ensure that our service, process, technology and ways of working compare favourably with innovators in retail services

(Outturn prices)	2020/21	2021/22	2022/23	2023/24	2024/25	AMP7
Retail opex (£m)	51.4	51.1	50.9	49.8	49.4	252.6
Depreciation (£m)	4.8	5.7	6.2	6.5	7.0	30.2
Total (£m)	56.2	56.8	57.1	56.3	56.4	282.8

Our cost reduction plan delivers ‘opex’ cost reductions of £10 million between 2017/18 and 2024/25 – which is a 19% efficiency improvement. Headcount reductions over this period equate to 9% which will be achieved through higher productivity and reduced error rates. The biggest drivers of efficiency, however, will be the move to a fully-integrated digital service offering to customers, with greater levels of self-service, and further reductions in bad debt costs.

Enhanced customer service offerings

As a customer-focused company, we will continue to target industry-leading performance on customer satisfaction and trust in the next period. But as highlighted elsewhere in our business plan, we will go further than the basic service by delivering new service offerings to customers. These ‘enhanced’ services include:

- free repair of leaking or damaged customer supply pipes (no longer limited to one free repair in three years)
- a new WaterFair scheme by which we will not charge customers suffering repeated service failures, such as low pressure or sewer flooding. We will also commit to reducing significantly by 2025 the number of customers on these ‘worst-served customers’ registers
- a new ‘tap and toilet’ free repair scheme (via Project Cartref – ‘Home’) to reduce leakage and save customers’ money

- replacing, free-of-charge, around 7,000 lead supply pipes where we find them, or as part of a targeted strategy of engagement with vulnerable households and communities
- a 'WaterShare' scheme to return any financial net outperformance payments to customers and the environment

Many of these offerings will also be applicable to non-household customers (see section 16).

Customer service (C-Mex) and trust measures

As a result of the plans set out above, and elsewhere in this document, we are targeting ongoing strong performance on the customer service (C-Mex) and customer trust measures.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Household customer satisfaction (C-Mex) (Sv1)	Customer Measure of Experience (common industry definition)	-	-	Upper quartile
Customer trust (Sv3)	% trust (from CCWater 'Water Matters' survey)	84%	85%	Upper quartile

The C-Mex measure is a new metric that is still under development, so we do not have a track record against which to compare. For the trust measure, our recent performance has been strong. For both measures we will compare ourselves against the rest of the industry and will target at least an upper-quartile level of performance.

16 Non-household retail and customer service

Introduction

We currently serve around 125,000 non-household customers in our operating region, covering most of Wales and neighbouring parts of England, mostly in Herefordshire. Non-household customers are mostly businesses, and most of those are small businesses whose needs and priorities are not dissimilar to household customers. But non-household customers also include large businesses, councils, charities, universities and many other highly-varied organisations. It is therefore important we understand our customers and provide services delivered in a way that is matched to their particular needs and priorities.

Background

In England, the water retail market for non-household customers was extended to all customers in April 2017, meaning customers could choose to switch from the ‘incumbent’ provider to a different provider of retail services. In Wales, there was no change to the previous arrangement, meaning only non-household customer sites consuming more than 50 megalitres of water a year were eligible to switch retailers, and only for water retail services, not wastewater. Welsh Water currently has 110 sites which use more than 50 megalitres of water a year – and are therefore “eligible” for competition. These 110 sites are operated by 83 different customers.

We have a separate commercial retail team which provides retail services to “eligible” customers, following all of the same regulations and procedures as any other retailer in the market. In order to meet our obligations under the Competition Act, the team is physically separate, is under separate management, and uses separate systems. The costs of these activities are accounted for separately and are not included in our PR19 submission.

The vast majority of our customer base are unable to switch retailer, which means we are especially committed to ensuring they receive at least as good a service and excellent value for money as they would if they were included in the retail market. The business customer team has a dedicated director and delivery team, which focusses purely on the needs of non-household customers and developers, although it shares some systems and resources with the household customer teams in order to maintain the lowest cost provision for customers.

Welsh Water 2050

As noted above in relation to household retail services, retail services has, by its nature, a shorter-term outlook compared to the wholesale parts of the business, because of the nature of the assets involved. All the same, we have developed our plans for AMP7 taking into account the long-term trends, challenges and opportunities identified in Welsh Water 2050.

The key challenges in relation to non-household customers include:

- expectations will continue to evolve, with a desire for more personalised services, more detailed usage data, water efficiency support, and more flexible and user-friendly billing
- our base ranges from large and complex businesses to those similar to household customers, and their requirements will vary accordingly. Tailoring appropriate means of engagement and communication with these customers will therefore be a challenge

- as there is wider competition in retail services for non-household customers in England, it is important all non-household customers in Wales see that they are also benefitting from any new services and improved customer service and value for money delivered to such customers in England

The Strategic Responses in Welsh Water 2050 most applicable to the non-household retail business are as follows:

Strategic Response 8: *‘Ensuring affordability of services delivered to customers’* – ensuring our services remain affordable and good value for money for all customers.

Strategic Response 12: *‘Leading edge customer service’* – developing our culture and technology to provide a personalised, responsive and consistent service to customers through their preferred contact channel.

Customer views

Our extensive programme of customer engagement for PR19 included the views of non-household customers at every stage. Wherever appropriate the views of non-household customers were disaggregated from overall customer views to identify relevant considerations for our services to this customer segment. Around 1,200 non-household customers in total were involved through focus groups, online surveys, telephone surveys and one-to-one interviews.

As noted above, most of our non-household customers are small businesses with similar views to ‘mainstream’ household customers. Larger businesses often have specific needs, expect account-managed services, and in many cases have a particular dependence on a reliable supply of water with no interruptions.

We monitor the views of our business customers on an ongoing, twice-yearly basis, through a satisfaction survey carried out by an independent agency. The key results from the most recent survey include:

- customers give Welsh Water a satisfaction score of 4.37 out of 5, with satisfaction not changing significantly between recent waves
- key drivers of satisfaction are experiencing “no issues”, particularly supply interruptions
- service remains much more important than price as the reason for satisfaction
- only 15% of customers said they would like to have the opportunity to consider switching retailers
- among the small minority who were dissatisfied (5%), the key issue was poor communication and not being kept updated
- when asked, customers reported a desire for a wide range of additional services, (although in practice take-up of services on offer has been low)

Non-household customer service: our record in AMP6

The Measure of Success selected at PR14 to measure the performance delivered to non-household customers over 2015-20 was business customer satisfaction. An independent research company surveys 500 non-household customers every six months on our behalf. The reported measure is the average customer satisfaction score in the last two surveys.

Our performance during AMP6 on this measure has been strong, with the challenging targets being hit in two of the three years concluded so far. Our target was narrowly missed in 2017-18, achieving 87% against a target of 89%. However, the research suggested the slight dip was due to natural fluctuations rather than any fundamental issues in the service experienced by customers. We have achieved an average score of 88% over the last four years which demonstrates a consistently-high degree of customer satisfaction.

CCWater carries out an independent survey of non-household customer views across all companies in England and Wales every two years. In their most recent report (Testing the Waters, 2016), Welsh Water was the highest-rated company for net promoter score (NPS) by its non-household customers. Recent data published by CCWater also shows that Welsh Water has a significantly-lower level of complaints from non-household customers than the average for those companies operating in the retail market, with 28 complaints per 10,000 connections as compared to an industry average of 52.

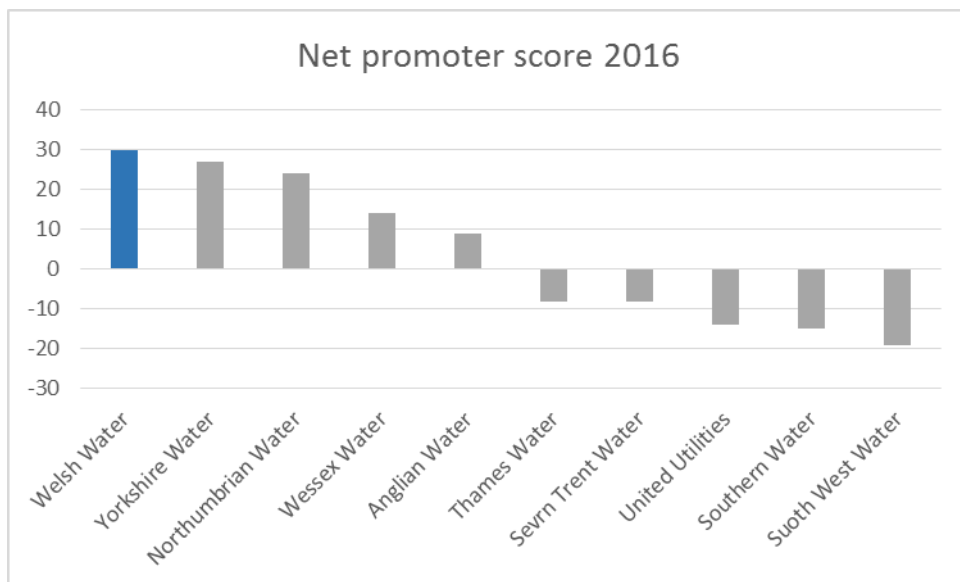


Figure 23: Business customers ‘net promoter score’ (NPS) (Source: CCWater 2016)

Customer services: plans for AMP7

Our non-household retail objectives for AMP7 can be summarised under each of the relevant Welsh Water 2050 strategic objectives as follows:

Strategic Response 8: Ensuring affordability of services delivered to customers

- Introducing new digital technologies and increasing self-service, reducing the cost to serve of the non-household retail business
- Introducing more flexibility into our billing and payment systems to support customers in budgeting and managing finances, as well as reducing the overall cost of debt management activities

Strategic Response 12: Leading edge customer service

- Reducing telephone and written complaints by 28% by 2025
- Expansion of our digital services to customers, while maintaining a commitment to retaining more traditional channels for those customers (such as small businesses) who require them
- Providing greater choice and control over the services customers receive
- Improving our response times for all services
- Increasing the use of data and insight within our customer billing and debt recovery systems allowing us to tailor our actions according to the circumstances and characteristics of our customers
- Working with non-household customer groups to co-create innovative, value-added services for them, giving our customers greater choice over service provision from Welsh Water

Our measures of success for AMP7 include a continuation of our business customer satisfaction measure from AMP6. However, the methodology will change to align with the new household C-Mex measure – with satisfaction sampled four times a year (250 customers each time).

Measure of Success	Definition	2017/1 8 outturn	2019/2 0 target (AMP6)	2024/25 target (AMP7)
Business customer satisfaction (Sv4)	The average customer score, out of 5, on business customer satisfaction surveys.	4.37	4.5	4.5

Our target is to maintain an average of 90% customer satisfaction over the period. We believe this is an appropriately-challenging target given ever-increasing customer expectations. We would expect our Measure of Success target would be consistent with continuing to deliver sector-leading levels of customer satisfaction for non-household customers, and we will review the findings of the ongoing CCWater sector-wide surveys in this light.

We will continue to carefully monitor developments in the non-household retail market in England, ensuring we rapidly adopt innovations and keep up with increasing standards of customer service and cost efficiency. We will also keep developments in the non-household retail services constantly under review, applying relevant developments to improve the service offerings for our household customers as well.

17 Developer services

Introduction

The efficient and timely provision of water and wastewater connections and support to all new developments is a crucial part of our role, both in providing great services to our customers and in supporting the broader economy within our operational area and beyond.

Our developer services team provides customers and all stakeholders with a single point of contact for all our services related to development – whether it be new housing, commercial or industrial development. The team also supports the delivery of major infrastructure projects, such as the proposed Newport M4 relief road and the Wylfa Nuclear Power Station. These schemes would require significant input and support from us to ensure the water and wastewater services provided to our customers are protected while meeting the needs of the project concerned.

Developer Services

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Welsh Water Developer Services website

Background

The population in our area is growing at a significant pace, with most of that growth coming in our most-populated area in south Wales. We are planning for 43,700 new homes to connect to our water and wastewater networks during the five years of AMP7. Cardiff, in particular is one of the fastest-growing cities in the UK, and the population is expected to grow by around 25% over the next 20 years. This means our developer services team faces a major challenge in providing support to a large number of major housing developments and infrastructure projects, both currently and throughout AMP7. We need to ensure we are planning ahead to ensure we have the assets and resources to support this development.

Our activities in this area fall under the legislative competence of the Welsh Government and there are growing differences in the applicable legislation between Wales and England. This deviation is likely to increase over the next few years with new charging arrangements and Schedule 3 of the

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Flood and Water Management Act 2010 coming into force in Wales, and ‘adoption codes’ for both water and wastewater self-lay activities. In our area, new connections to a public sewer must be subject to a sewer adoption agreement, and new foul sewers have to comply with compulsory-build standards. This helps us to ensure new sewers are fit for purpose and encourages developers to engage with us early in the process.

The Domestic Fire Safety (Wales) Measures introduced in January 2016 mean we are expected to provide sufficient water flow and pressure for fire sprinkler systems on new developments, and this has significant implications for our networks. We have changed our water connection arrangements to support our developer customers as far as possible – and this has included provision of improved guidance and support on an ongoing basis.

In both England and Wales, we have the status of a special consultation body when local authorities are preparing development plans. In Wales, we have recently become a statutory consultee for planning application consultations. The latter has formalised the importance of water and wastewater matters in the planning process, and has helped reduce incidents of developer customers approaching us late in the process.

Many of the services relating to providing new water and wastewater infrastructure are contestable and we ensure all of our customers understand the choices available to them so they can select the most appropriate option for their project.

Our record

Statutory consultees are required to submit annual information to the Welsh Government on their performance, and for the first year of operation (2016-17) we were the top-performing organisation in Wales.^{viii}



Working with our developer customers

We monitor the level of support we provide to all forms of developments seeking planning permission—we believe other companies do not do the same so we cannot compare our performance across the industry – and we now reach agreement for more than 98% of all housing units seeking planning permission. The majority of those not supported are due to safety concerns reflecting conflicts with our assets, rather than capacity constraints.

Customer engagement

Relationships, built through engagement with our developer customers, are critical – and we do this on an ongoing basis using various methods, including:

- developer forums which are held six-monthly in north and south Wales
- regular customer group forums (e.g. social housing providers)
- monthly account meetings with key customers and
- surgery days where customers can attend our offices for any support/queries or training

We maintain positive relationships with repeat developer customers, including national and social housing providers, and many of them regard Welsh Water as their ‘provider of choice’.

Customer service

Our quantitative performance is measured in accordance with the Water UK Developer Levels of Service that was introduced in April 2015. We have been the highest and most-consistent performer across the industry and have been an upper-quartile performer since April 2015 for every quarter for water measures and every quarter, except two, for wastewater measures. In 2017/18, we completed a total of 25,711 levels of service activities (2016/17 – 25,617) with 99.69% completed in target (2016/17 – 99.44%).

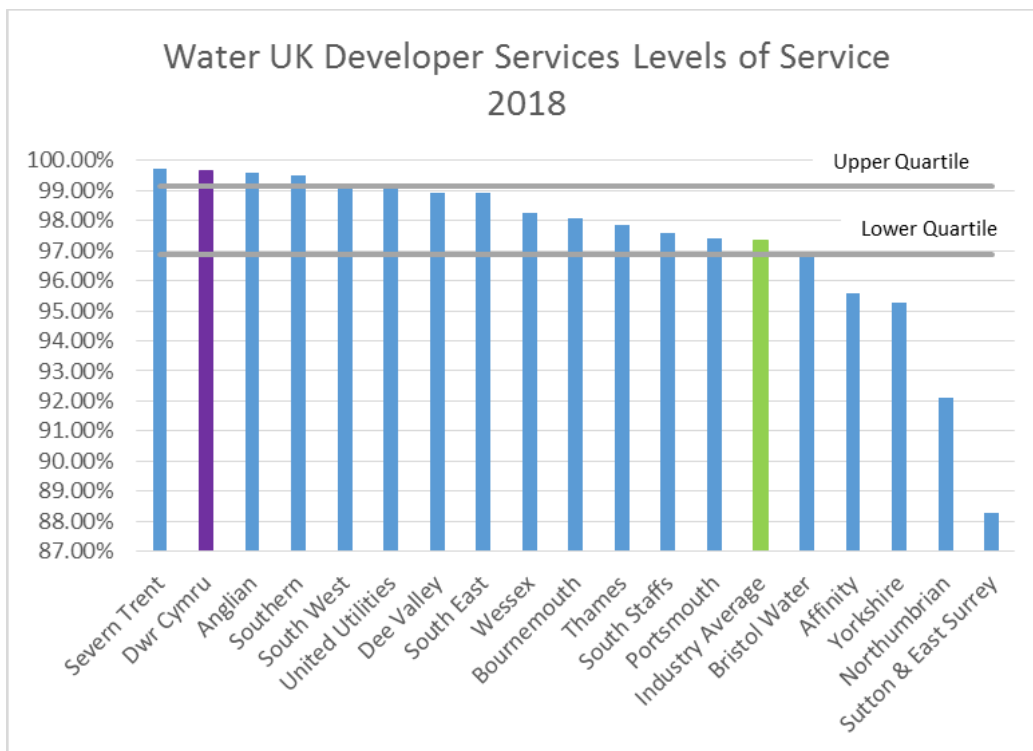


Figure 24: Water UK Developer Services Levels of Service 2018

We commission an independent research company to conduct a qualitative developer customer survey every year. Each year, we have increased customer satisfaction and trust in services and the support we provide them, and honesty and trust levels now surpass 95%.

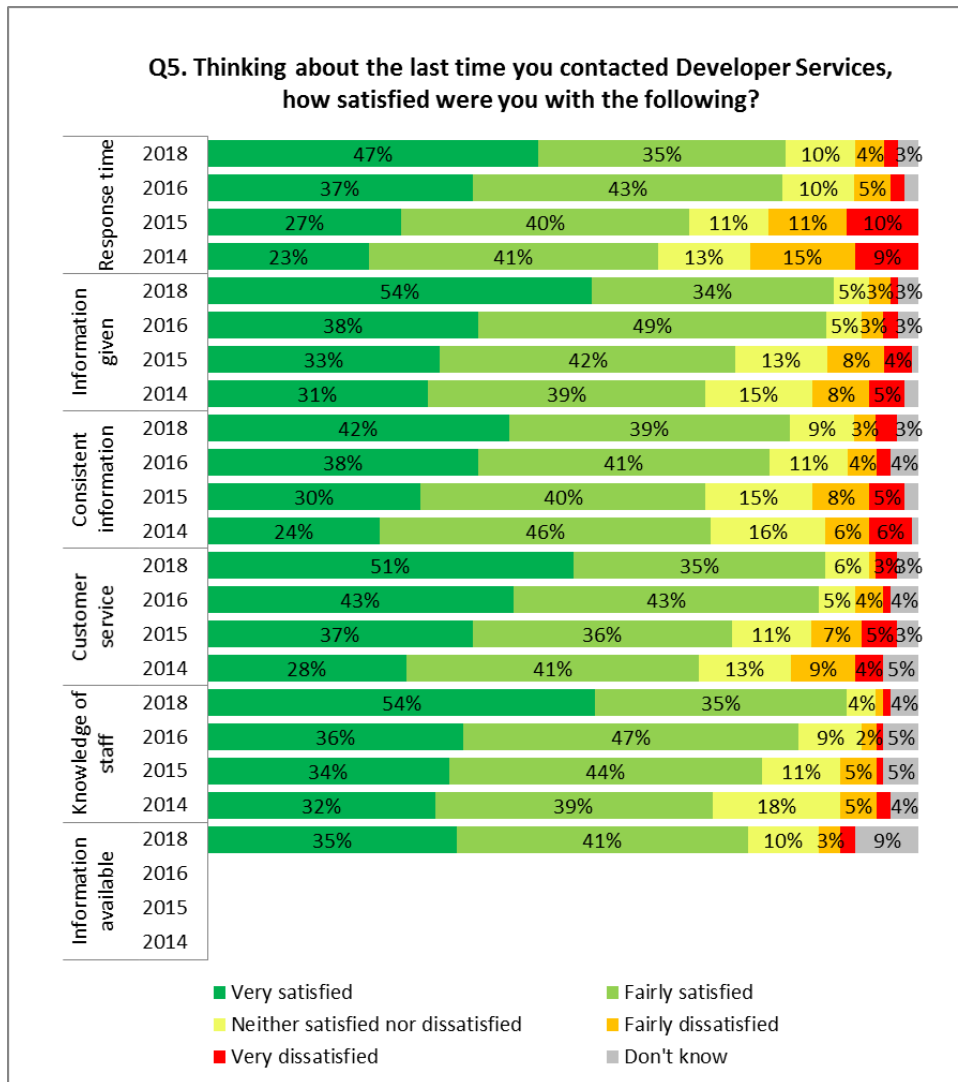


Figure 25: Customer satisfaction survey results, 2018 (Strategic Research & Insight).

We work hard to reduce the need for developers to make written complaints. As such, instances of complaints, where Welsh Water was at fault, were reduced from 151 in 2016-17 to 68 in 2017-18.

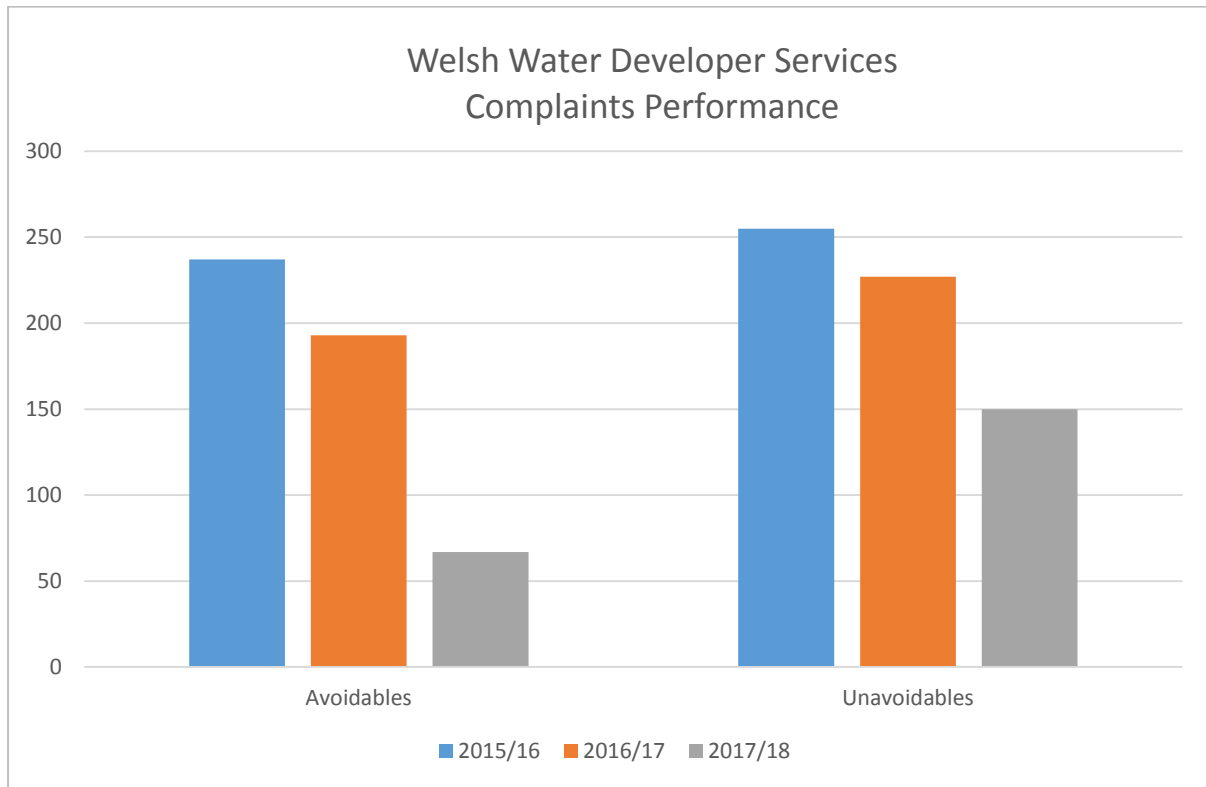


Figure 26: Developer services complaints performance

AMP7 plans

We are continually seeking ways of providing a better service for our customers, and addressing issues which can delay processes and cause inconvenience or uncertainty.

We recently implemented a much simpler set of requirements relating to our ‘build-over sewer’ policy, which has reduced timescales for completion. We were the first wastewater undertaker to take this approach and have reduced complaints in this area by more than 90%. We actively shared our new approach with undertakers in England, many of whom have adopted the key elements as best practice. We make much greater use of ‘smart’ technology to overcome capacity constraints on our wastewater systems and accommodate new development without the need for expensive upgrades.

Developer customers will benefit from a new developer “customer service commitment”, which means they will receive a payment should we fail to achieve any one of the Water UK Developer Services Levels of Service. We believe this is the first, and most comprehensive, scheme of this type to be voluntarily implemented for developer customers in the water industry. It demonstrates our commitment to delivering an excellent service for customers, and acknowledging it appropriately when we fall short. Any failure to meet the standards required will generate an automatic payment

to the customer by the 15th of the following month, which they receive together with a letter of apology and an outline of the steps we will take to avoid a repeat of a similar incident.

This new commitment was co-created with our developer customers and addresses the key service requirement they have consistently highlighted in our developers forums – for Welsh Water to deliver its obligations within the specified timescales so this does not hold up the wider development. The new commitment has been very warmly welcomed by developers, having been launched at our latest developer forums for north Wales and Chester and for south Wales and Hereford.

Developer services will be subject to a new incentivisation scheme aimed at encouraging developer customers to divert surface water from our wastewater networks. This scheme supports our extended surface water adoption policy and RainScape approach. We will pay developers up to £479 for every new house built, where they minimise the impact of surface water run-off from the development on our wastewater system.

This scheme not only financially rewards developer customers to ‘do the right thing’ with surface water, but also reduces the likelihood of flooding and pollution in the future. More importantly from the customer’s perspective – it frees up capacity for future developments and mitigates the need for costly network reinforcement. This approach is a flagship initiative for us, building on our RainScape approach and helping to prepare us to tackle possibly the biggest challenge from climate change for our customers and the environment.

We also plan to introduce a priority service for development applications, such as a ground level extension, which could help to relieve a case of “bed blocking” in a local hospital or care home.

We will continually-build on these and other initiatives and seek to maintain and consolidate our industry-leading performance, while continually working to improve our standards of service to customers. Ofwat is introducing a new ‘D-Mex’ measure of customer experience to allow comparison of developer customer satisfaction across the industry. We welcome this, and are working closely with Ofwat and the rest of the industry to ensure the definition of the measure is appropriate given the diverging regulations and legislation between Wales and England. Subject to this being the case, we are targeting an upper quartile level of performance on this new measure.

Measure of success	Definition	2017/18 outturn	2019/20 Target (AMP6)	2024/25 Target (AMP7)
D-Mex (Sv2)	Measure of developer customer satisfaction. Full definition not yet finalised.	n/a	n/a	Upper quartile

18 Customers in vulnerable circumstances

Introduction

Achieving our vision of 'earning the trust of our customers every day' means ensuring *all* of our customers receive a reliable service that meets their particular needs. Our customers do not all have the same needs and it is clear some customers require support from us above and beyond our core services.

Vulnerability can take many forms. The dimension that affects the highest number of our customers is financial insecurity, but we have also developed schemes to ensure our services are accessible to all and that, when things go wrong, help reaches those in greatest need as a first priority.

We have been recognised as a leading company for the work we are doing in this area, but we have an ambition to do even more. Our CCG is particularly focused on ensuring we are fully taking into account the circumstances of our customer base in Wales. Vulnerability is also a key element of our long-term strategy, Welsh Water 2050.

Over the past year we have listened to the views of our customers and worked with a wide network of partners and the CCG in the development of our new strategy for vulnerable customers (Ref 3.2). This section forms a summary of that strategy.

Background

'Vulnerable customers' are those customers who are in circumstances that make them vulnerable, or who are at risk of falling into such circumstances. A state of vulnerability may be temporary or sudden, meaning customers may be unaware how to access our services or to understand what support is available. Vulnerable customers are not a discrete group of people – and it is important we understand the many different factors likely to result in someone becoming vulnerable and adapt our services accordingly.

In designing service for these customers, we have considered all relevant aspects of vulnerability. Working with our partners, and in particular the CCG, we have adopted a best-practice framework from outside the water sector with four key categories of vulnerability:

- crisis: customers calling due to an emergency such as a bereavement or sudden illness.
- capability: customers who will need extra support, such as dementia or stroke patients.
- connectivity: customers who may be isolated, or do not have access to the internet and other resources.
- circumstances: where customers are facing a difficult situation due to, for example, flooding in their home.

Customers' financial circumstances form what is often an additional layer of vulnerability, which may be temporary (due to unemployment) or more permanent. When considering financial vulnerability, we think both in terms of poverty in absolute terms, but also 'water poverty' – which takes into account the size of customers' water bills in relation to their income. This may be pertinent in the case of customers who are in circumstances which mean their water consumption is above average, but whose financial resources are limited.

At Welsh Water, we are acutely aware that the areas we serve include communities among the most deprived in the UK. Our research suggests vulnerability affects a higher proportion of customers in Wales than in other regions of the UK.

As part of developing our vulnerable customer strategy we undertook an extensive review of the state of vulnerability among our customers. The key findings include:

- 107,000 adults in Wales have sight loss.
- 575,000 in Wales and 39,000 in Herefordshire have hearing loss.^{ix}
- 20,000 people in Wales and 1,200 people in Herefordshire are newly diagnosed with cancer each year.^x
- 43,000 people in Wales have dementia, or 1.4% of the population, a slightly-higher rate than the UK average (1.3%).^{xi}
- Wales has the highest proportion of older carers, carers providing over 50 hours of care a week, and carers under 18 in the UK.^{xii}
- Wales has a higher proportion of people with an ‘activity-limiting’ health problem or disability at 12% of the population (limited a lot) and a further 11% (limited a little). Comparative figures for England are 9% and 9% respectively.^{xiii}

In terms of financial vulnerability, certain pressures our customers face have become more acute in recent years. This was explored in detail by the Joseph Rowntree ‘Poverty in Wales 2018’ report. This highlights:

- While the proportion of households in poverty has fallen over the last 20 years, poverty among couples with children is rising
- A total of 39% of disabled people are in poverty compared to 22% of non-disabled, and the poverty rate for disabled people is among the highest in the UK
- The proportion of people renting privately has increased and this has exposed more people to lower standards and greater insecurity associated with that sector
- The proportion of people living in social isolation is greatest in lower-income groups

Welsh Water 2050 and vulnerable customers

In response to feedback from stakeholders on our Welsh Water 2050 consultation, we included a specific Strategic Response in our strategy on ‘supporting customers in vulnerable circumstances’. This is needed to address future trends, such as the expected doubling of the number of people living with dementia over the next 40 years (FCA occasional paper 8, 2015). Our strategy also supports the Welsh Government’s well-being goals of a more prosperous Wales, a healthier Wales and a more equal Wales.

The Strategic Response commits us over the long-term to making better use of our data systems, and working with the UK Government and other utilities under the Digital Economy Act to better identify customers in vulnerable circumstances and provide them with extra support, such as through our priority services scheme and other services we will co-create with our partners. We intend to implement most of the measures identified during AMP7 (see below).

Customer views

We undertook a programme of customer and stakeholder research in 2017 which aimed to better define and understand the views and needs of vulnerable customers in our area. The key findings of this research were:

- Our current handling of customers in vulnerable circumstances is generally considered ‘very good’
- Third-party stakeholders are very supportive of our approach to vulnerability
- There are many vulnerable customers who are eligible for help not currently receiving it
- We need to build greater awareness of our priority services register and affordability support, and there is an opportunity to target those who may be most in need.

Our strategy for AMP7 builds on this research, together with the feedback from key stakeholders such as the CCG and CCWater.

Our current social tariffs programme is based on research conducted in 2013 in advance of the last price review. As we have prepared our plans for PR19, we have updated this research, which asked customers about the principle of supporting customers who struggle to pay their bills through social tariffs, and how much they would be willing to pay extra on their bill to support them. We also asked about social tariffs in the context of our research about how we should use our ‘customer distributions’ in our 2016 Have Your Say research. In general our customers are positive about social tariffs in principle, though a minority seem strongly opposed. They have a higher willingness to ‘cross subsidise’ social tariffs compared to other companies, which may be partly explained by the knowledge that the company also makes a contribution through ‘customer distributions’.

Our record

We have an industry-leading record of supporting customers in difficult financial circumstances. In the first three years of AMP6, we increased the number of customers in support of financial assistance by 53,000 (143%), working with over 180 organisations to raise awareness of our various schemes and engage with those customers who are struggling to pay their water and wastewater charges. As a result, we already support over 100,000 households genuinely struggling to pay their water bill, proportionally by far the highest rate of support in the UK.

We have put significant focus in understanding what we can do to extend the reach of our services in other areas. We have used our network of local authorities, charities, support organisations, and other utility companies, to raise awareness of our priorities services register, share data (where consent has been given), train our teams, and signpost services to customers. Our priority services register ensures we have information to help those with particular needs. This may be due to age, health, or medical conditions. If water supplies are interrupted for any reason, we will ensure these customers are prioritised in delivering bottled water during supply interruptions. We currently have 26,000 customers on this register, which is proportionally a relatively-high rate for a water company.

We have been recognised as a company with aspects of high performance for services to our vulnerable customers – for example by Ofwat at the launch of their focus report on customer vulnerability, and this year by the National Mental Capacity Forum for the work we are doing to support customers with dementia by promoting awareness among colleagues.

More recently, we piloted a new community-based approach in the Rhondda Fach area, the Water Resilient Community (see Ref 6.5). Through this project, we are working with stakeholders including Welsh Government, Cwm Taf Public Service Board, Rhondda Cynon Taf County Council, Natural Resources Wales, Consumer Council for Water, and the local registered social landlord to understand the impact of our investment programme in the area, as well as explore new and tailored solutions to best-serve these communities and, in particular, to involve the local community to help us best-serve the needs of its vulnerable customers.

Our AMP7 strategy for customers in vulnerable circumstances

We plan to publicly launch our new strategy for customers in vulnerable circumstances, “Supporting Our Customers”, in the autumn of 2018.

Our strategy for AMP7 builds on our detailed research, together with the feedback from key stakeholders such as the CCG and CCWater, and learning from other sectors. There are five elements to this strategy:

- **Data:** leading the efforts with other utilities, government and government agencies to identify customers likely to need our help. In particular we have made a commitment with Western Power Distribution and Wales and West Utilities to work more closely to share information on indicators of vulnerability and priority services register. We will expand this to include local government, government agencies and the third sector over the course of AMP7
- **Priority services:** improving the support that we provide, based on feedback from customer, and extending the reach of our support by increasing the number of customers on our priority services register
- **Financial vulnerability:** making sure we support, on a targeted basis, low-income households with our financial assistance schemes and money-saving advice, as well as supporting people to move out of poverty by providing employment and learning opportunities
- **Partnerships:** building on our network of more than 180 partners to raise awareness of our services and to ensure our services meet the needs of vulnerable customers
- **Training:** developing our teams and supply chain to recognise the signs of vulnerability and provide them with the knowledge and skills to ensure these customers receive the support that they need

In addition to our performance commitment on social tariffs, we have a new Measure of Success on vulnerability. We have committed to a target of a fourfold increase in the support we provide to customers in vulnerable circumstances by taking the number of customers on our priority services register from 26,000 in 2018 to 100,000 by 2025.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Vulnerable customers on priority services register (Sv5)	The number of customers who are registered on our priority services register.	26,000	52,000	100,000

Partnerships

In delivering our strategy for vulnerable customers we will continue to collaborate actively with a wide range of groups, including:

- Customers and communities
- Other utility companies and public services
- Waterwise
- Energy Saving Trust
- Warm Wales (Arbed)
- Citizens Advice and
- Food banks.

A key part of the implementation of our strategy for customers in vulnerable circumstances will be an annual stakeholder event, to report back on progress and to secure active co-creation of new ways to further the objectives of the strategy. The further development of our strategy and plans for customers in vulnerable circumstances will form an important part of our ongoing relationship with the CCG throughout the period to 2025.

19 Community and partnerships

Introduction

Partnerships with customers, communities and other organisations are fundamental to our business. Our ambitious proposals for 2020-2025 (AMP7), and beyond, build on our strong record, offering us the opportunity to respond to our partners' priorities, helping us deliver our responsibilities more efficiently and to find ways to work together to deliver wider benefits for our communities and for the environment.

The importance we attach to these relationships is reflected in Welsh Water 2050. This includes 'working with customers and communities' amongst the Strategic Responses we have identified to equip us for the challenges ahead. Our community initiatives also support the Well-being of Future Generations (Wales) Act 2015 which makes "A Wales of cohesive communities" a statutory well-being goal.

Putting community engagement into practice

Community accountability is embedded in our unique business and governance model. The Glas Cymru Members who, in the absence of shareholders, play an important role in holding us to account, represent a wide variety of interests and are from communities across our supply area.

AMP6 (2015-2020) has seen community engagement becoming an increasingly mainstream part of how we go about our business. Our experiences during this AMP are shaping our approach to the future.



Participants in a joint workshop for the Rhondda Fach project held on 2 May 2018, Tylorstown Welfare Hall

For example, our ‘zonal’ approach to water mains refurbishment to improve acceptability for customers has prioritised community engagement – we want local customers to know what we are doing and why we are doing it, so that they understand why the inevitable, resulting disruption is worthwhile.

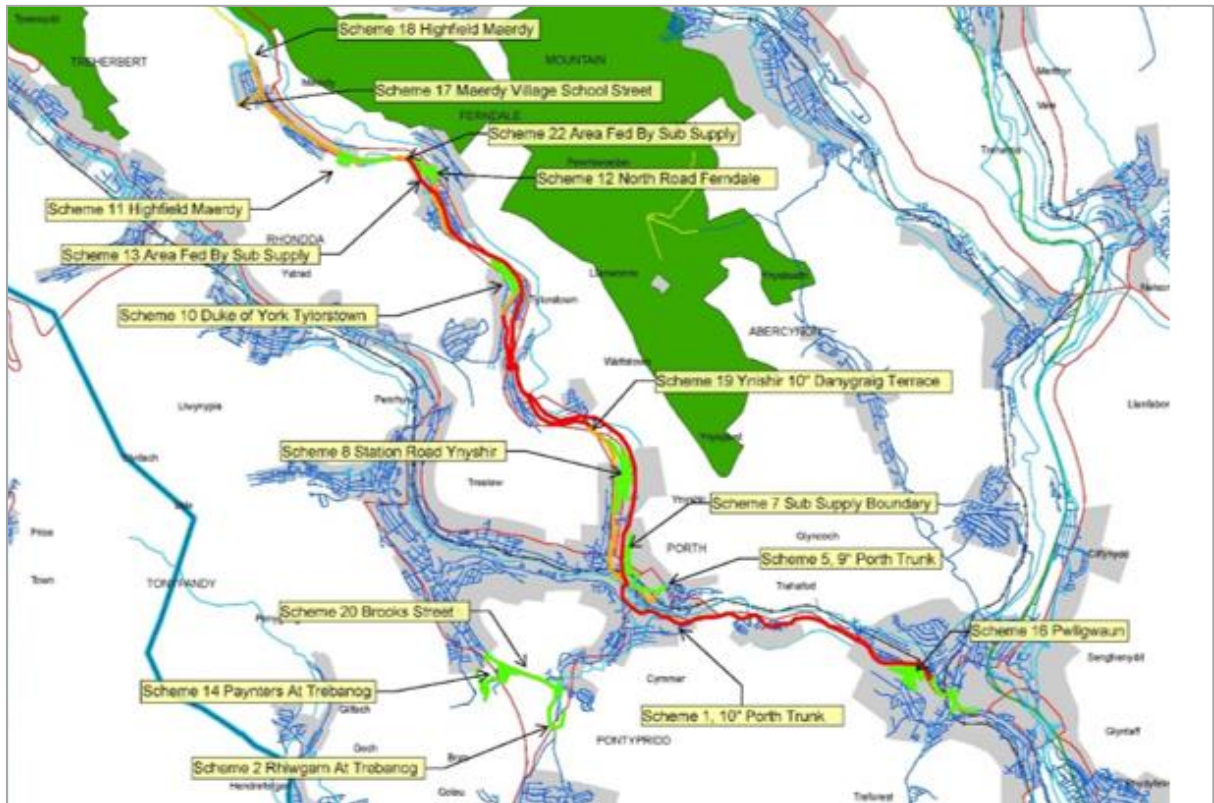


Figure 27: Rhondda Fach capital investment schemes

A ‘zonal study’ in the Rhondda Fach area, involving a major and invasive water mains replacement programme led to our first Water Resilient Community, a pilot project which is helping us to better understand community needs. The Rhondda Fach is an area comprising around 21,000 people, with many customers in circumstances which make them vulnerable. We are working closely with third parties in the community to build long-term trust and develop solutions that help us to reach those in greatest need. The feedback from customers and partner organisations has been overwhelmingly positive. See supporting document [Ref 6.5 Water resilient communities: Rhondda Fach interim report](#) for further information.

Rhondda Fach Community Project in numbers



We've helped customers save over £60,000 through lower bills



20 groups and organisations have worked with us to change the way we do things



2,000 children have received one of our lessons



19km of drinking water pipe have been replaced

£10,000

Community groups have received £10,000 through our Community Fund



6



6 local customers joined Prince's Trust 'Get Into Construction' programme

We continue to look for ways to foster community engagement in their local environment. This has included:

- educating groups of schoolchildren at our Discovery Centres and in schools about the water cycle
- opening wastewater treatment works across our region each year, inviting the local community to understand what we're doing in their area
- collaborating with the local groups, such as the Silver Slashers group (part of the Ramblers Association) who have adopted the paths around our Alaw Reservoir
- encouraging the use of refillable water bottles to reduce the amount of plastic reaching waterways and
- using our growing network of visitor centres, including our Llandegfedd Visitor Centre that opened early in AMP6, as a way of engaging with our customers and local communities

We have provided discretionary funding to support community groups and other environmental non-governmental organisations (eNGOs) who propose projects to help tackle invasive, non-native species (INNS) or improve water bodies not achieving good status under the EU's Water Framework Directive. In 2018, we plan to make funding available for biodiversity projects run by community groups and other eNGOs, where these have a link with our business objectives.

Subject to adequate funding being available, we would like to continue offering these forms of support in AMP7.

In 2017 we launched a new fund – the Welsh Water Community Fund. Inevitably, we can cause disruption in communities we are working in, and our fund provided the opportunity for us to boost fundraising efforts for local good causes which benefit health, well-being, or the environment, up to a value of £1,000 per project. The wide variety of local projects we supported included the provision of sports equipment for a women's football team in Porth; an outdoor learning centre at a charity-run nursery in Tremadog; planting native bluebells at sites in Cardiff; funding safety equipment for a walking group in Ferndale; and providing bat detectors for a wildlife-friendly farming group in Herefordshire.

Welsh Water is an active member and funder of the Water Health Partnership for Wales, bringing together key public health professionals to work on issues related to water and health. As well as the water industry and relevant medical practitioners, the partnership's membership includes Welsh Government, the DWI, CCWater, the Food Standards Agency, local government and NRW. The partnership continues, for example, to influence our efforts to reduce levels of lead in potable supplies.

The Independent Environmental Advisory Panel (IEAP), whose membership brings together senior representatives from a number of environmental NGOs, farming representatives, regulators and academia, continues to engage and challenge us on how we can help secure a safe and sustainable future for our environment.

We have signed up to a number of shared environmental principles with the Blueprint/Wales Environment Link groups, principles which should enable us to forge even closer working relationships with eNGOs and hopefully enable the co-design of more efficient and effective solutions to our challenges.

We are particularly keen to work with farming communities in catchments where we source our raw drinking water supplies. Increased levels of pesticides, fertilisers and pathogens in raw water, as well as increased turbidity due to the intensification of agriculture, poses significant threats to our supplies and increases the costs of the treatment. We want to find new ways to collaborate with land managers to our mutual benefit. See our PR19 Water Resources Business Plan (Ref 2.1) for more details.

Our proposals for AMP7

From our catchment improvement plans to supporting vulnerable customers, our plans for AMP7 build on existing collaborations and will develop new partnerships to support our objectives.

A flagship proposal is our Brecon Beacons Mega Catchment programme. The Brecon Beacons area supplies almost half the drinking water we supply. If further action is not taken to protect our raw water, we may eventually have to spend more than £100 million to protect the quality of water supplies by investing in our treatment works. To avoid this additional burden on customer bills, we want to work with local stakeholders to find new ways of protecting these key water sources.

Co-creating a common vision offers the opportunity to deliver the best outcomes for everyone who lives, works and benefits from the Beacons. We have established a steering group to help us develop the concept and to facilitate stakeholder communication. At its best, this partnership approach could not only protect our raw water supplies – helping to keep water prices down. It could also deliver benefits for local communities, land management, and tourism as well as for biodiversity. The approach has been developed in part through a series of best practice exchanges with organisations involved in the successful management of the Catskills water catchment for New York.

Our education and visitor centres help to build customer trust and wider understanding of our work, and that in turn helps us to involve our customers to drive both performance and efficiency. In 2020 a new visitor centre in north Cardiff will open, providing an exciting facility serving Wales' capital. We are aiming to almost double the number of visits to our visitor centres between 2018 and 2025 to 830,000 visits a year, and increase the number of children reached each year through the education programme to 75,000 over the same period.

Measure of Success	Definition	2017/18 outturn	2019/20 target (AMP6)	2024/25 target (AMP7)
Community education (Ft10)	The total number of children and adults who have participated in educational activities.	62,000	67,000	75,000
Visitors to recreational facilities (Ft11)	The number of visitors to our recreational sites across Wales.	450,000	570,000	830,000

A volunteering framework is in development to encourage individuals and groups to volunteer on our property through 'friends' adoption schemes. The intention is to work with many more community groups in AMP7, empowering them to take a greater level of ownership of their local beauty spots.

Building on our successful Rhondda Fach pilot, we will target an additional five Water Resilient Communities in areas of special need by 2025 – aligned with our water networks investment schemes. We will continue to work with a wide range of voluntary organisations (more than 180 as of 2018) to support customers in vulnerable customers and promote the uptake of social tariffs.

We will continue to work with our supply chain, particularly local businesses, to help support the local economy, while ensuring high-quality products and the highest health and safety standards. We will also work with academia and other researchers to help us to identify innovative ways of providing our services.

Our proposals for AMP7 include trialling the practical application of the sustainable management of natural resources (SMNR) approach in four key catchments selected jointly with NRW. If that approach is to work, it will need the buy-in of other key sectors and communities so the best overall outcome for the environment can be achieved.

20 Financial resilience

Introduction

Ensuring the financial resilience of our business is a core requirement for our customers, so they can trust us to have the financial resources to provide the essential services, whatever shocks we might face, such as costly extreme weather events or a serious economic recession.

Further information on financeability can be found in 4.3 PR19 Financial Resilience.

Customer views

Throughout the extensive programme of engagement activities we have undertaken in recent years, the overriding priority for all customer groups has been the continuity and reliability of the essential public services we provide. Customers also consistently place a high value on the predictability and stability of bills, wanting to avoid sudden or unexpected price increases. Financial resilience therefore, not only underwrites service provision but also allows us to maintain sufficient financial resources to smooth the impact of any unexpected cost pressure on customer bills.

Our record

Since 2001 when Glas Cymru acquired Welsh Water, the level of gearing (the ratio of net debt to Regulatory Capital Value) has been brought down from around 93% to around 60%. This reflects the high priority placed by the Board on the need to establish a strong and stable balance sheet for the company, so we can ensure the continuity of finance for the service we provide, given we do not have shareholders as funders of last resort, and also raise future finance for investment at the lowest-possible rates of interest, which is key to keeping down customers' bills in the long-term.

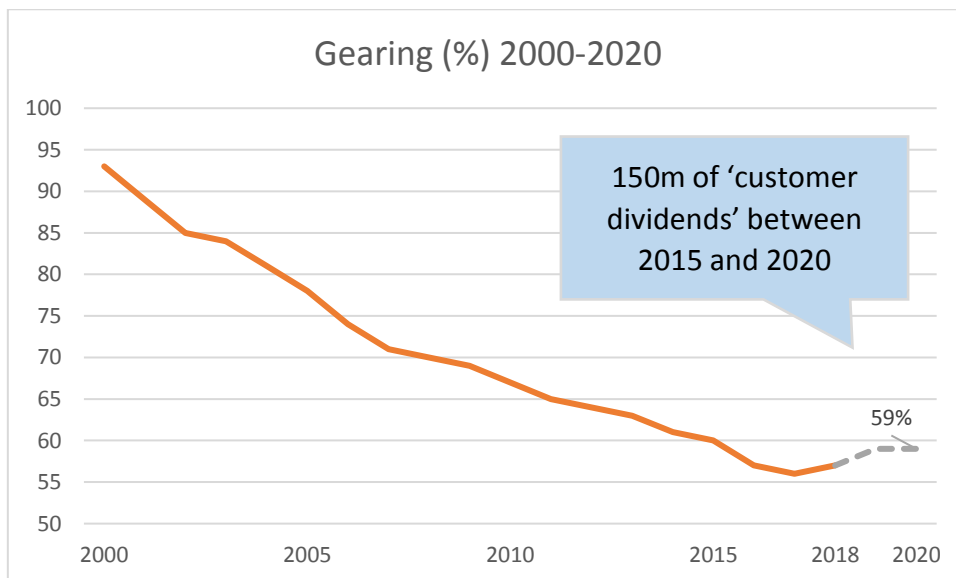


Figure 28: Reduction in gearing 2000-2018

Having achieved the targeted 60% level early in the AMP6 period, we have since been able to maintain a steady and growing stream of 'customer dividends', which returns value to customers consistent with maintaining gearing at around the 60% level. Further detail on customer dividends

process is described in 6.2 PR19 Putting the sector back in balance: Dividend policy and performance related pay.

As shown in the chart above, Welsh Water has achieved a 'win-win' position for its customers in recent years, with a secure financial position with gearing at just below 60%, while some £150 million is expected to be applied to the benefit of customers by way of 'customer dividends' between 2015 and 2020.

Welsh Water now has the strongest credit ratings in the UK water sector, as shown in the table below. This is highly beneficial for our customers as it ensures we should always have reliable access to a range of financial markets, so we can raise finance for investment as and when needed. Our credit rating also helps us to issue bonds at rates that minimise the interest costs borne by our customers over the long-term.

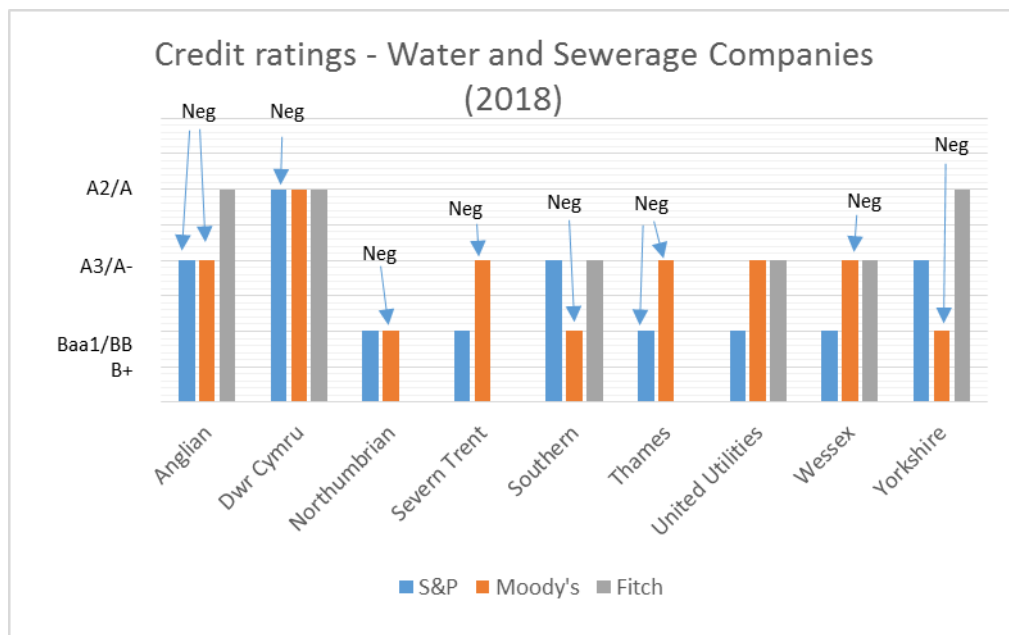


Figure 29: Credit ratings of the 10 England and Wales water and sewerage companies as at 9 August 2018. ("Neg" = 'negative watch')

Our approach to financial resilience

The Board has set out the following approach to ensure the financial resilience of Welsh Water post-2020:

- maintain a secure, investment-grade credit rating in our central case financial projection and in a range of downside financial scenarios, looking forward to 2030
- continue to target gearing at or around 60% in our central case
- maintain a stable level of 'customer dividends' consistent with that gearing objective, targeted at areas highlighted by customers through ongoing research and engagement as being of particular importance to them, such as funding part of the cost of social tariffs, and
- enhance customer trust by being transparent about our future financial resilience. For example, we published a 12-year financial viability statement to 2030 in our 2018 Annual Report and Accounts.

There is considerable uncertainty about future credit ratings across the sector at present, with all of the three credit ratings agencies signalling likely downgrades. Indeed, Standard & Poor's (S&P) assigned a "negative outlook" to Welsh Water's credit rating for the first time in July 2018. Against this uncertain backdrop we have assessed our business plan against the metrics required to maintain a secure corporate investment grade credit rating.

Our assessment of financial resilience has used Ofwat's financial model and the assumptions set by Ofwat in its December 2017 methodology. We recognise Ofwat may need to reconsider these before the final determination in December 2019, for example to reflect changing market conditions or the potential impact on sector credit ratings.

In considering the resilience of its central case financial projections and potential downside scenarios, the Board has looked at a wide range of evidence and metrics, including in particular the following ratios:

- Gearing
- Ofwat-adjusted Interest Cover Ratio (ICR)
- Moody's adjusted ICR
- Ofwat funds from operations (FFO) to net debt ratio
- S&P FFO/net debt.

The Board has assessed financial projections over the period to 2030 against an assurance threshold of maintaining an expected secure investment grade credit rating from at least two of the three main credit rating agencies – Moody's, S&P and Fitch Ratings.

Following Ofwat's requirements, we have made this assessment both on the basis of a *notional company* balance sheet, which has Ofwat's standard assumptions for opening gearing and interest rates, and also on the basis of the *actual company* balance sheet. In the case of Welsh Water, there is little difference in practice between the opening gearing of the notional and actual companies, although future assumed dividend policies and interest rates do vary materially between the two approaches.

Our plans – central case for 'notional' company

The Ofwat PR19 Methodology document defines a notional company structure for the purposes of assessing the financial resilience of companies' business plans. The key Ofwat assumptions are shown below, with comparison to the equivalent assumptions at PR14:

	PR19	PR14
Opening Gearing	60%	62.5%
Return on equity	7.1%	8.4%
Cost of existing debt	4.6%	5.4%
Cost of new debt	3.4%	4.7%

For our notional company modelling, we have assumed a level of dividends payable to shareholders which is consistent with Ofwat's assumed return on equity – with an opening yield of 2.6% and a

rate of dividend growth of 4.5% (i.e. some 1.5% above the assumed 3% rate of RPI inflation). The assumptions made for other key financial parameters, the PAYG and RCV run-off rates, broadly reflect the “natural rate” of financing the existing assets and the composition of the AMP7 investment programme.

On this basis, the central case financial projections for the notional company appear consistent with the maintenance of a secure, investment grade credit rating. A selection of key ratios are shown below:

Notional Company	2020	2021	2022	2023	2024	2025
Central Case						
Gearing	60%	61%	61%	61%	61%	61%
Ofwat adjusted ICR	1.7x	1.4x	1.3x	1.3x	1.3x	1.4x
Moody’s adjusted ICR	1.5x	1.4x	1.3x	1.3x	1.3x	1.4x
Ofwat FFO/net debt	7.3%	7.3%	7.0%	6.9%	7.1%	7.1%
S&P FFO/net debt	6.3%	6.4%	6.1%	6.1%	6.2%	6.3%

We have also considered the likely trajectory of credit ratings and financeability after 2025, although this is inherently more judgemental. Assuming an indicative AMP8 investment programme of around £2.3 billion (in 2017/18 prices) customer bills would be expected to show only a modest increase in real terms during AMP8, and credit metrics would be broadly stable, with gearing at around our target level of 60%.

Our plans – central case for ‘actual’ company

We have used our own financial model to assess the financial resilience of a standalone Welsh Water appointed business – that is, the regulated activities of the company which are covered by the PR19 regulatory process. On this basis, the central case financial projections for the actual company appear consistent with the maintenance of a secure, investment-grade credit rating. A selection of key ratios are shown below:

Actual company central case	2020	2021	2022	2023	2024	2025
Gearing	59%	60%	60%	59%	59%	59%
Ofwat-adjusted ICR	1.6X	1.2X	1.3X	1.3X	1.4X	1.2X
Moody's-adjusted ICR	1.6X	1.6X	1.8X	1.8X	1.8X	1.8X
Ofwat FFO/net debt	7.6%	6.9%	7.2%	7.2%	7.5%	7.0%
S&P FFO/net debt	6.1%	5.5%	5.9%	6.0%	6.3%	6.4%

Overall, the credit ratings of the actual company will come under pressure at the start of the AMP7 period, given the substantial reduction in the allowed return on capital (WACC), but would be expected to remain in a secure, investment-grade.

We have also considered illustrative financial projections out to 2030, on the same basis as for the notional company. The actual company shows a modestly-improving profile of financial metrics in the AMP8 period, reflecting the refinancing of higher-cost embedded debt with cheaper new debt at forecast low rates of interest. Gearing also shows a modestly-declining trend, suggesting there may be scope to consider additional 'customer dividends' to be paid post-2025, following ongoing engagement with our customers and the CCG.

Scenario testing

In addition to the 'central 'case' scenarios for the notional and actual company, the Board has considered the impact of a range of downside scenarios, as far as 2030, which need to be severe but plausible. In most extreme scenarios there is considerable downward movement in key financial metrics, as would be expected in what are intended to be severe, stress cases. In all cases, whilst a decline in credit ratings would be anticipated, there is a reasonable expectation that an investment grade credit rating would be maintained, albeit under pressure in some cases. Full details are provided in supporting document 4.3 PR19 Financial Resilience.

21 Financial returns and outcome delivery incentives

Introduction

Ofwat's approach to the regulation of the water industry includes various mechanisms designed to incentivise companies to deliver the best-possible package of services at the lowest overall cost. Companies that deliver additional efficiencies, or outperform on performance targets, generate additional financial returns that accrue to shareholders.

As a non-shareholder company, any financial surpluses we generate are applied to the benefit of our customers, for example in the form of increased funding for social tariffs or additional investment. We are, however, as focussed on making 'profit' as any shareholder-owned company so as to maximise these 'customer dividends', which are crucial to helping gain the trust of our customers, and to maintaining the positive reputation of the company. Our Board incentivises our management to outperform stretching service targets and to achieve agreed objectives in the most efficient way possible, not least by avoiding any financial penalties that would reduce profit to be applied to the benefit of customers.

Return on capital

Ofwat's allowance for the return on capital (WACC) is likely to be reduced significantly compared to the last price review (PR14). We have developed our business plan, taking Ofwat's "early view" of the return on capital published in December 2017 of 5.37% (in nominal terms) for the wholesale price controls. However, this assumption may need to be reconsidered by Ofwat before the final determination in December 2019, for example to reflect changing market conditions or the potential impact on sector credit ratings. We believe it is very important Ofwat gives full weight to the likely impact on credit ratings in making their final determinations for PR19 in December 2019, as strong credit ratings and low financing costs are crucial to our ability to keep down bills for our customers in the long-term.

Retail margin

We have used a retail margin of 1% for residential retail activities and (non-contestable) business retail activities, as per Ofwat's guidance.

Totex incentives

We have set ourselves stretching targets for efficiency improvements over the next AMP (see section 7), both in terms of ongoing operating and maintenance costs, and expenditure to improve services. Depending on the outcome of the price review process, we would not expect to materially outperform these targets. However, any financial surpluses that may arise due to better than expected efficiency performance would be returned to customers via our 'customer dividends'.

We will be further enhancing the incentivisation of our Capital Alliance partners, following a successful market testing exercise in 2018, to offer potential rewards at a project and a programme delivery level which will incentivise the lowest, whole-life cost solution. In this way, the capital programme is targeted at delivering unit costs by 2025 which are some 12% below their current levels. We have applied the same stretching efficiency targets to capital projects delivered in-house or through other elements of our supply chain, including innovative new network delivery alliances

for water and wastewater networks, which have been openly tendered so as to deliver significant reductions in unit rates and in programme overhead costs.

Outcome Delivery Incentives (ODIs) – principles

Ofwat introduced ODIs at the last price review (PR14). Companies were expected to propose payments for outperformance and underperformance against their performance commitments. Our final determination included ODIs for a subset of our measures, which will be ‘reconciled’ at the end of the period (2020).

In deciding our approach to ODIs for PR19, we are mindful of the views of our customers. We held two phases of focus groups with customers in north and south Wales on ODIs, the first dealing with their views on ODIs in principle, and the second looking at the proposals in greater detail. Because of our not-for-shareholder model, customers struggled to see the motivation for including ODIs in our business plan. Customers generally did not wish to see any unnecessary bill volatility arising from ODIs. Their overall view was that, if there were to be ODIs, these should be smaller rather than larger and customers should not pay more as a consequence.

Having considered the results of the initial customer research, our Board agreed the following approach to ODIs:

- include a broad range of both outperformance and underperformance payments in line with Ofwat’s guidance, where applicable to our measures of success
- weight the ‘package’ of ODIs more towards underperformance payments than outperformance payments
- ensure a stretching set of performance targets against all measures, to ensure outperformance payments could not be ‘easily’ earned
- weight the individual ODI payments in line with customer priorities on performance for each measure, and consistent with customers’ ‘willingness to pay’ for performance improvements where relevant

The resulting overall total package of ODI payments comes out towards the lower end of Ofwat’s stipulated range, which is in line with the views expressed by customers

WaterShare

In AMP7 we will introduce a new scheme called ‘WaterShare’- by which 50% of any net outperformance payments over the period will not be ‘claimed’; instead they will be returned directly to customers. The remaining 50% will be set aside in a WaterShare fund. We would then consult with customers, regulators and the CCG before committing any of these funds. These funds will be applied to the benefit of customers, which might involve bill reductions, extra funding for social tariffs or additional service, environmental and resilience-related investment. Any unclaimed outperformance payments may be used to offset future underpayment payments.

Outcome Delivery Incentives – proposals

In designing our ODI scheme, our default position was that all of our measures of success should have ODIs attached. However, a number of them are unsuitable for ODIs for various reasons (see [Ref 5.5 PR19 Outcome delivery incentives](#) for details). We then determined the ‘high’, ‘medium’ or ‘low’

category for the size of the ODI payments depending on customer views from the research on ODIs and other relevant customer engagement on their priorities. The actual value for each category was then set in accordance with the results of our 'willingness to pay' research and other relevant customer information.

The resulting ODIs scheme is summarised in the table below.

Performance Commitment	Maximum (Over 5 years)	
	Underperformance Payment (£m)	Outperformance Payment (£m)
Customer Trust	32	32
Tap Water Quality Compliance Risk Index	25	-
Water Supply Interruptions	25	25
Leakage	25	25
Sewer Flooding on Customer Property (Internal)	25	25
Pollution Incidents from Wastewater	25	25
Acceptability of Drinking Water	13	13
Wastewater Treatment Works 'look-up' Table Compliance	13	-
Km of River Improved	13	13
Total Complaints	13	13
Asset Resilience (Reservoirs)	13	13
Asset Resilience (Water Network+ Above Ground)	13	13
Asset Resilience (Water Network+ Below Ground)	13	13
Asset Resilience (Waste Network+ Above Ground)	13	13
Asset Resilience (Waste Network+ Below Ground)	13	13
Water Mains Burst	7	-
Sewer Collapses	7	-
Water and Wastewater Treatment Works Compliance	7	-
Sewer Flooding on Customer Property (External)	7	7
Business Customer Satisfaction	7	7
Visitors to Recreational Facilities	7	7
Community Education	7	7
Surface Water Removed from Sewers	7	7
Bioresources Product Quality	7	7
Bioresources Disposal Compliance	7	-
Lead Supply Pipes Replaced	7	7
2017-18 Prices	351	285

We calculate that the return on regulatory equity of this package of ODIs, at the 10% level of probability, would be 1.2% for outperformance payments and 1.5% for underperformance penalties, which satisfies Ofwat's requirements and constitutes a package which is consistent with the views of our customers.

Performance-related pay and incentivisation

Our executive reward structure has both annual bonus and a long-term incentive plan. The annual bonus is achieved by delivering against a subset of our measures of success. Our long-term incentive plan will measure cumulative achievement over the five-year AMP period against those measures

that most closely reflect the long-term objectives set out in our Welsh Water 2050 vision. Achieving against stretching measures within these objectives will enable our executive team to earn a level of variable reward appropriately benchmarked against the sector. In addition, our remuneration schemes incentivise sustained cost reduction in the business, which is essential to maintain affordability for customers.

The same customer performance measures in the executive reward scheme are mirrored in our whole-company annual performance bonus scheme, to incentivise innovation and high performance right across our business.

Details of our executive remuneration policy, schemes and payments are disclosed in our Annual Report and Accounts, which fully complies with the requirements of the Combined Code for listed UK companies. In this way, customers and other stakeholders can see our schemes incentivise only outcomes in the best interests of our customers and the environment, including over the long-term.

22 Delivering our plans

Introduction

The previous sections have set out our plans to meet our customers' expectations for great service and improved value for money, while complying with our legal obligations and making a significant step towards achieving our Welsh Water 2050 vision of a resilient and sustainable service. It has also explained how we will provide for the needs of customers in vulnerable circumstances.

Implementing these plans for significantly-improved service levels, while simultaneously making significant reductions in our costs, will challenge the company more than ever before. We will also need to work in partnership with our Capital Alliance partners to find new and better ways to deliver our biggest-ever investment programme to the highest standards of safety and cost efficiency.

Delivery strategies

The detailed delivery strategies for each part of our business are set out in the supporting documents for water resources (Ref 2.1), water 'network plus' (Ref 2.2), wastewater 'network plus' (Ref 2.3), bioresources (Ref 2.4), the household and non-household retail businesses (Ref 2.5 and Ref 2.6), and developer services (Ref 2.7). These delivery strategies are 'multifunctional', in that we have designed each delivery strategy so it can provide multiple benefits for our customers, for example by supporting required regulatory compliance, while also reducing costs and improving performance for customers. This approach allows us to generate the most 'value' for customers from our investments.

Because we run our business as an integrated whole, we have been able to seek additional benefit by co-ordinating delivery strategies across business functions. For example, we will ensure our water resources catchment management work and our environmental quality catchment management solutions (which form part of the National Environment Programme – NEP) work together to achieve our improved outcomes for customers at the lowest-possible cost, while also hopefully achieving wider biodiversity and well-being benefits.

In a particularly-innovative example of co-delivery, we are promoting our new Water Resilient Communities as a place-based initiative to bring together our operational delivery strategies (through water network Zonal Studies and wastewater system RainScape investments) and our customer and community strategies (for example, promoting social tariffs, water efficiency and the proper use of sewers.) This co-creation of delivery plans with local communities will lead to better, and more cost-effective, outcomes particularly for some of our most "hard to reach" customers.

Further detail on our cost-reduction and efficiency plans for each part of our business is contained in section 7.

Organisational design and change management

In anticipation of our ambitious service targets post-2020, we have recently reorganised our operational business units to make it easier for them to work together to provide a joined-up and responsive service to customers. All wholesale water, wholesale wastewater and customer service (retail) functions for our core business customers now report in to a new role of Managing Director, with individual managing directors responsible for water, waste, household customer service and business customer service. Early indications are that this is helping us to provide a better service to

customers, in particular business customers, while making it easier for the business to co-ordinate and deliver complex change projects across customer service functions.

To deliver our ambitious operating cost-reduction plan for AMP7, we will need to plan and deliver a large number of major IT system improvements and business change projects, in a relatively short space of time. The scale and complexity of this change programme introduces business risk, both in terms of the potential not to deliver the required cost reductions on time and also in terms of its potential impact on business-as-usual customer service.

To mitigate this risk, we are introducing a comprehensive AMP7 change management programme and governance structure, which will monitor the inter-dependencies between projects, potential resource conflicts, and the danger of possible change overload. This approach uses LEAN management techniques, which we have employed successfully during AMP6 to date, albeit on an even larger scale.

The resilience of our people will be key to us successfully managing this degree of change and innovation in our business, without adversely impacting on customers. To this end, we will continue with our long-term people development plan within the business, with well-developed succession plans providing good knowledge transfer and sustainable resourcing over the next 10 years and beyond. While an ageing workforce is apparently an issue for some utility businesses, we have been very successful in recent years in attracting new, young starters to join our business, so the average age of our people is now 40 (down from 47 in 2012).

Motivated and well-trained people, working within a positive culture in which they can flourish, are key to good customer service and high levels of customer satisfaction. Our well-established engagement process involves both local engagement champions and a company-wide annual engagement plan. The success of this approach has been seen in the results of the latest annual employee engagement survey, which showed 80% engagement on the basis of an 82% return rate – both upper-quartile performance in the UK private sector according to the independent survey provider (ORC International). We will also plan to retain our platinum Corporate Health Standard and to build on our recently awarded Investors In People (IIP) gold accreditation (putting us in the top 7% of IIP-accredited organisations in the UK) by targeting the achievement of the platinum level during AMP7.

Capital investment

Delivering on our ambitious plans for customer service, the environment, resilience and efficiency over the next period means implementing a large and challenging programme of capital investment. We will invest around £2.2 billion (2017/18 prices – post-efficiency) over the next five-year period (AMP7), as against some £2 billion in the current period (AMP6). This will be achieved by working with our Capital Alliance partners to employ worldwide innovation and best-value solutions. This investment programme will be provided to our partners well in advance, avoiding the ‘peak and trough’ cycles of the past and enabling a stable supply chain to deliver lower unit costs.

A key component of our AMP7 investment plan is the NEP which is determined by NRW, including the Environment Agency’s Water Industry National Environment Programme (WINEP). Together, these total around £360 million in AMP7. Further environmental investment will be required in AMP8, although the optimal delivery means to achieve these required outcomes is under development, to be informed by scientific research and the piloting of new, catchment-based

delivery solutions. At present, an AMP8 cost of some £375 million would be implied by the delivery of the expected obligations using relatively conventional methods. This initial assessment of the NEP post-2025 is included in our indicative AMP8 investment programme of some £2.3 billion (2017-18 prices, pre-efficiency), which we have used for the purposes of assessing the stability of customer bills – and the financial resilience of the business in the period 2025 to 2030.

The key elements of our investment programme are summarised in the tables below, by the main service areas: water service (including water resources), the wastewater service (including bioresources), and household and non-household retail, plus cross-service investments that are allocated across each of the price controls (including water resources and bioresources). Full details can be found in the data tables that accompany our PR19 business plan submission to Ofwat.

AMP7 Water Service investment programme

<i>(at 2017/18 prices, pre efficiency)</i>	Spend £m	Key outputs
<u>Water resources</u>		
Water Resources Management Plan	73	Pembrokeshire and Tywyn Aberdyfi water resource improvements. Vowchurch area drought resilience. Brecon Beacons Mega Catchment and at least 15 high risk catchments improved
Reservoir safety	116	Improvements to spillways and pipes in dams to meet new legal requirements at about 40 locations
<u>Water 'network plus'</u>		
Growth	73	New customer meters. Network flexibility improvements in Cardiff and Swansea. Developer Services expenditure
Leakage	90	Project Cartref ('Home') at customers' houses and continued work in water networks to achieve 15% reduction in leakage
'Zonal Studies'	131	Comprehensive work at 17 zones targeting customer acceptability and customer minutes lost improvement, meeting DWI requirements
Customer service	12	Investment at worst-served properties for interruptions, acceptability and low pressure
Acceptability of water	21	Manganese treatment at six treatment works
Lead pipe replacement	20	Expansion of lead supply pipe strategy
Resilience improvements	52	Additional storage to mitigate risk of treatment loss. Surveys and contingency plans for critical mains. Additional network connections to increase flexibility in south east Wales
Merthyr Treatment Works	91	First phase of two-AMP project to construct a new treatment works to meet DWI requirements, initially replacing three ageing works
Water treatment maintenance	144	Proactive and reactive maintenance at treatment works to protect drinking water quality for customers, including new contact tanks and additional water sludge treatment capability
Water networks maintenance	238	Enabling expenditure to meet supply interruptions and other customer performance targets through proactive and reactive maintenance to water networks, pumping stations and service reservoirs
Total capital expenditure	1,062	

AMP7 Wastewater Service investment programme

<i>(at 2017/18 prices pre-efficiency)</i>	Spend £m	Key outputs
<u>Wastewater 'network plus'</u>		
National Environment Programme (NEP & WINEP)	236	Total of 25 treatment works upgrades. Plus seven works combined to one new works for Gwili-Gwendraeth catchment
NEP – Loughor catchment spills	73	Additional investment to reduce spills in the Loughor estuary by the end of 2020, following the change to the NEP requirement post PR14
NEP – flow through treatment works and spill reduction	49	Total of 20 catchments improved for dry weather flow, approximately 25 overflows improved following Event Duration Monitoring (EDM) results.
Population growth	89	5-10 treatment works upgrades plus network improvements and connections
Sewer flooding	61	Investment to enable a net reduction in internal sewer flooding by 22 incidents per year and 384 external flooding incidents per year, allowing for growth in flooding due to climate change and increased urbanisation
Treatment works odour affecting customers	3	Investment to make improvements through the AMP as problems are identified
Resilience	29	Emergency storage facilities for sludge. Resilience of power supplies and systems at 15 treatment works. Improvements to Newport sewer tunnel to mitigate risk of severe sewer flooding in the city
'First-time' sewerage connections	7	Three known locations to be improved
Treatment works maintenance	188	Investment to enable compliance through proactive and reactive maintenance at treatment works and outfalls, including pass forward flow compliance
Waste networks maintenance	251	Investment to enable compliance and performance targets for customers through proactive and reactive maintenance to sewer networks, including pumping stations and overflows
<u>Bioresources</u>		
Bioresources maintenance	33	Proactive and reactive maintenance of sludge treatment assets, to meet environmental objectives
Total capital expenditure	1,019	

AMP7 Retail Service investment programme

<i>(at 2017/18 prices pre-efficiency)</i>	Spend £m	Key outputs
Retail business	21	Change programme to meet cost savings challenge
Retail IT	21	New software to improve personalised customer service and allow customers to track when their jobs will be complete
Total capital expenditure	42	

AMP7 Cross-service investment programme

<i>(at 2017/18 prices pre-efficiency)</i>	Spend £m	Key outputs
SEMD	14	Security upgrades at 80 water sites
Health & Safety	49	Start of a three-AMP programme of high voltage asset replacements. Compliance with water regulations. Replacement of work equipment (e.g. lifting gear)
Systems and change	92	Maintenance of systems and IT equipment. New contact management software. Additional data analysis capability
Automation	54	SMART network improvements to support water supply availability target. Maintenance of automation, telemetry and control assets at treatment works
Energy saving	28	Further energy saving and generation activities as new technologies become available
Research / Innovation	9	Supporting efficient delivery of investment plan
Other cross service	51	Emergency planning, recreation assets, facilities, transport, laboratories etc.
Total capital expenditure	297	

Capital investment to deliver Welsh Water 2050 Strategic Responses

Following the strategy set by the Board, we have committed to making significant progress against our Welsh Water 2050 objectives during AMP7 and subsequent periods, in a manner which reflects customers' priorities and at an affordable rate. The table below highlights the major AMP7 capital expenditure items which contribute to the delivery of each of the relevant Strategic Responses. (For some Strategic Responses we are able to make the necessary progress without the need for significant capital investment in AMP7.)

Strategic Response	AMP 7 spend	Summary of AMP7 progress
1 Safeguarding clean drinking water	£25m	Risk Management Plans produced for all 30 Safeguard Zone catchments. Brecon Beacons Mega Catchment scheme.
2 Enough Water For All	£183m	WRMP to meet forecast deficits and Reservoir safety programme (AMP6, AMP7, AMP8).
3 Improving the reliability of the drinking water supply systems	£126m	New Merthyr works to commence (completion in AMP8). Extra storage in Hereford. Link mains between Cardiff and Swansea systems.
4 Protecting our critical water supply assets	£97m	Continuing to improve security at critical water supply assets and addressing vulnerabilities in the network.
5 Achieving acceptable water quality for all customers	£155m	Includes 420km of water mains replaced as part of the zonal studies approach (AMP6, AMP7, AMP8)
6 Towards a Lead Free Wales	£20m	Lead pipes replaced in vulnerable customer properties, with particular focus on Water Resilient Communities.
10 Addressing our 'worst served' customers	£27m	Issues resolved for customers facing repeated problems of low pressure, interruptions to supply and sewer flooding.
12 Leading edge customer service	£20m	Investment in IT systems to improve the customer experience and reduce need for interaction with contact centre including job tracking.
13 Smart Water business	£44m	Increased use of analytical tools to gain insights into operations and improve customer service through increasing predictive capability. Cyber security.

14 Supporting ecosystems and biodiversity	£6m	Investigations and schemes to reduce our impact on watercourses.
15 Using nature to reduce flood risk and pollution	£56m	Removing 22,000 roof equivalents of surface water from the sewerage system through Rainscape. (AMP6, AMP7, AMP8 and beyond)
16 Clean rivers and beaches	£356m	418km of river improved towards good ecological status, through delivery of NEP requirements in AMP7.
17 Protecting our critical waste water assets	£34m	Includes Western District (Cardiff) sewage pumping station upgrade.
18 Playing our part in combating climate change	£25m	Additional 12 GWh energy saving and 17 GWh energy generation per year by the end of AMP7.

Note: These are the key capital investment schemes which contribute to the delivery of Strategic Responses (2017/18 prices).

By taking a long-term business planning approach, rather than focussing exclusively on the next AMP period, we have been able to take advantage of welcome, new regulatory flexibility at PR19 to plan delivery of some particularly large and complex investment programmes over multiple AMP periods – as highlighted in the Strategic Response Investment table above. This long-term approach allows us to spread the cost and the impact on customers’ bills, while also planning for delivery at the optimal rate in terms of cost efficiency, disruption to customers and the operational risk created during the investment programme (for example, risk to supplies in reducing reservoir levels so as to enable the required upgrading of spillways, pipework and valves.)

23 Managing risks and uncertainties

Introduction

In preparing our business plan, we have reviewed, at an individual and a programme level, the risks and uncertainties which the company and the services we provide will potentially face over the course of the next price control period and beyond. This builds on our assessment of the long-term challenges and opportunities that underpinned our Welsh Water 2050 strategy.

Business plan delivery risks

Each part of our business has reviewed the issues that could put at risk its ability to achieve its delivery plan. The Executive has considered each of these risks and has put appropriate mitigations in place where possible. The top business risks are captured in a monthly risk register which is reviewed by the Board at every meeting. Overall, the Board is confident that the mitigated risks are manageable and that the PR19 business plan is deliverable in the round.

Delivery risks can be characterised into technical risks (including technology, planning and innovation risks), operational performance risks (including weather, asset and system related risks), and cost risks (including efficiency, change and investment risks). Examples of these risks, drawn from the business plan risk register, are summarised below:

Risk type	Risk driver	Examples in PR19 business plan	Mitigations
Technical delivery risks	Technical challenges	Reservoir safety programme – complex and highly dangerous work to replace pipes and valves inside dam structures	Specialist supply chain in place. Managed by Gold command
	Obtaining planning permission	Gwili-Gwendraeth – site for new wastewater treatment works Merthyr Tydfil – site for new wastewater treatment works	Early engagement with planning authorities
	Innovation risk	RainScape - surface water removal in areas of differing housing stock and at reduced unit cost Project Cartref ('Home') – obtaining customer support for disruptive "tap and toilet" repairs in homes Growth in customers' expectations exceeds our PR19 improvement plans	Co-creation with local authorities, to share best practice Pilot schemes underway. Co-delivery with government energy schemes Best practice exchanges with service businesses outside the water sector

Risk type	Risk driver	Examples in PR19 business plan	Mitigations
Operational performance risks (impacting on ODIs)	Weather risks	Cold weather impact on water supply and leakage Severe flooding risk of sewage flooding and environmental pollution Drought risk to water resources Hot weather risk to water supply and acceptability of water (high flows)	Targeted extra resilience investment following Storm Emma in 2018 Emergency procedures in place. Additional network flexibility from lessons of 2018 summer Zonal Studies investment in AMP7&8 targets hotspots
	Asset and system risks	Loss of IT systems – due to technical failure or cyber security breach Major asset failure – treatment works, pumping station or trunk main/sewer Asset deterioration – e.g. asbestos cement mains approaching end of life and exposed to greater weather variability	Cyber Essentials Plus in place. Continual improvement programme Targeted resilience investment in AMP7 Ongoing data analysis of operational data and customer sentiment
Cost of delivery risks	Efficiency plans	Major IT system upgrades required to enable cost savings Size and interdependency of change management programme for the business, including the pace of change for colleagues and the need to maintain high quality business as usual service	Framework of specialist delivery partners in place. Comprehensive Change Management programme and governance across all customer service activities
	Investment scheme costs	Cost uncertainty in final scheme design and in scheme delivery	Early release of scheme outcomes to Capital Alliance for design optioneering

Economic and financial risks

We face a number of economic and business risks, such as fluctuations in input prices, the impact of inflation and movements in financial markets, all of which may lead to financial performance that is materially better, or worse, than projected. In particular, future interest rates will impact on our interest costs and future inflation rates impact on the level of net debt.

Economic developments could also have a material impact on our customers and, thereby, an indirect impact on our business finances. For example, economic growth could result in demand from housebuilders and businesses in excess of the projections allowed for in our business plan, requiring us to carry out and fund additional investment schemes. This is a particular risk for us along the M4 corridor in south Wales, and in areas around Hereford and Chester. Alternatively, an economic recession, potentially combined with changes to the social benefits system, could result in many more households and businesses struggling to pay their bills, leading to increased bad debt and debt recovery costs.

Our plan includes an ambitious package of ODIs and other measures which will incentivise innovation and improved service performance for customers and the environment. However, variations in these ODI payments could have a material impact on the profitability of our business. At an extreme, our risk modelling ('Monte Carlo' simulation) suggests aggregate penalties could be up to 1.5% of our Return on Regulated Equity (RoRE) and aggregate outperformance payments could be 1.2% of RoRE.

Legal and regulatory uncertainty

We bear a number of, mainly asymmetrical, risks associated with changes in legal and regulatory obligations. The possibility of future changes in environmental or drinking water standards remains a material risk, especially given the uncertainty over the UK's position with regard to European Directives post-Brexit. For example, the implementation of the Water Framework Directive could impact on the National Environment Programme, in the same way that infraction proceedings by the European Commission resulted in major and unexpected changes to discharge permits at the Loughor Estuary in west Wales soon after the finalisation of PR14.

With the provisions of the Wales Act due to come into effect after 2020, there could be further divergence in regulatory rules between our activities in Wales, and those in England. For example, there is ongoing consideration of a transfer of customer supply pipes to water companies, and of changes to the rules for water abstractions, which could materially affect our cost base in either or both jurisdictions. Significant changes to the levels of business rates are also possible in the period after 2020, with an expectation of two business re-ratings in Wales in the following five years.

Given the significant uncertainties regarding the scope of statutory obligations during the AMP7 period, we have given careful consideration to what process for managing change best meets customer priorities and provides an appropriate balance of risk. We have a good track record of dealing with such changes in the past. During AMP6, we have been able to defer passing on to customers the very significant costs of the new wastewater system permits at the Loughor estuary, with the understanding these will be allowed for in full at the subsequent periodic review in 2019. However, while we would wish to avoid unexpected changes to customers' bills ('interim determinations') between regulatory reviews, the reduced profitability of companies post-2020 and the generally tighter financial environment for the sector may mean it will be increasingly important

to have the options of “logging up” and ‘Interim determinations’ available to companies, to ensure their financial resilience given the risk of unexpected, new regulatory requirements.

New market opportunities

As we progress through the next period, new market opportunities are expected to emerge to deliver value for our customers. We will seek out and exploit these opportunities as a way of keeping bills as low as possible, particularly by taking advantage of the potential to trade with neighbouring companies and third parties, where there is mutual benefit for customers and no risk of harm to the environment. In particular, as noted in the respective sections above, we are already exploring opportunities from the development of markets in bioresources and water resource trading.

We have built potential financial upside from possible additional water resource transfers and bio resources capacity trading into our RoRE risk and return assessment. Given the Glas Group has no shareholders, any additional profitability would be applied to the benefit of our customers through our innovative WaterShare scheme.

Overall ‘Risk and Return’ package

We have used return on regulatory equity scenario analysis as a tool to quantify the potential financial impact of the risks identified on the business plan and to assess the overall risk and return package.

Alongside the base case our analysis considers a high and low scenario for each of the following:

- movements in revenue (including water trading and bio resources trading);
- movements in totex;
- residential retail costs
- business retail costs;
- outcome delivery incentive (ODI) performance;
- WaterworCX (C-Mex and D-Mex); and
- financing performance – the cost of new debt.

The scenarios represent the situation where the assumptions used for the key risk factors have a 10% probability of falling outside the low case (P90) and a 10% probability of falling outside the high case (P10).

For the most part revenues in the appointed business are protected due to the revenue controls, which means that due to the regulatory true-up mechanisms we do not face demand risk as over the AMP we can recover any shortfall in demand from other customers. The risk and return package does however include the upside and downside risk associated with the new market opportunities outlined above and risk to the non-household retail margin.

Our quantification of downside and upside risk to total expenditure including retail costs, considers fluctuations in input prices, delivery risk in our efficiency programmes, the technical challenges and cost uncertainty in investment schemes and exceptional costs. Further detail are included in the supporting document 5.6 PR19 Risk and return analysis.

Full detail of our ODI package is available in Supporting Document [Ref 5.5 PR19 Outcome delivery incentives](#). We performed detailed risk modelling (‘Monte Carlo’ simulations) on our performance

and the likely range of ODI impacts. Our ODI package is designed with caps and collars where appropriate to protect customers and prevent ODI payments being much higher than the overall ODI range assessment.

We putting customers and customer preferences at the heart of everything we do and our unique structure means we have a different relationship with our customers compared to other companies and have the highest levels of customer trust from our customer in the industry. It is on this basis that we have included the maximum level of C-Mex and D-Mex performance payments in the high RoRE scenario and do not expect to incur penalties in the low scenarios.

The cost of new debt for PR19 will be indexed and therefore scope for financing out performance is limited to our ability or otherwise to beat the selected index for the cost of new debt. Our high and low cases take account of the likely spread around the index based on our historical performance in raising new debt and our expectations based on our current and expected credit rating over the period.

The table below summaries the overall range of risk and return in our business plan.

	Low case	High case
Base RoRE	4.66%	4.66%
Revenue RoRE impact range	-0.03%	+0.23%
Totex (including retail costs) RoRE impact range	-2.0%	+1.0%
ODI RoRE impact range	-1.5%	+1.2%
WaterworCX (C-Mex and D-Mex) RoRE impact range	-0.0%	+0.3%
Financing performance RoRE impact range	-0.1%	+0.1%
Total overall RoRE impact range	-3.55%	+2.83%
Total overall RoRE range	1.11%	7.49%

Impact of risks on financial resilience

A key part of the Board’s assessment of the long-term financial viability of the business is our ability to continue to finance our functions, by raising capital in financial markets, even in the event that a number of the downside risks discussed in this section crystallise at once.

Ofwat have specified a range of stress cases to 2025 that it requires companies to consider, as listed below:

Scenario 1.	Totex underperformance (10% of totex) over 5 years;
Scenario 2.	ODI penalty (3% of RORE) in one year;
Scenario 3a.	Low inflation RPI 2%, CPIH 1% (1% below central case);
Scenario 3b.	High inflation RPI 4%, CPIH 3% (1% above central case);
Scenario 4.	Increased in the level of bad debts (5%) over current bad debt levels;
Scenario 5.	Higher interest rates on new and refinanced debt (2% above forward projections);
Scenario 6.	Financial penalty (3% of Appointee turnover in one year);
Scenario 7.	Any relevant intercompany financing scenario; and
Scenario 8.	Ofwat Combined Scenario – totex underperformance (10% in each year), ODI penalty (1.5% of RORE in each year) and a financial penalty (1% of revenue in one year).

For Welsh Water, 10% totex underperformance is approximately £70 million a year, 1.5% of RoRE is around £37 million a year and 1% of turnover is some £7 million (all in 2017-18 prices).

We have reviewed these stress scenarios and concluded they capture the major risks identified above, including operational performance risks (ODI penalties and financial penalties), totex underperformance risk (due to technical delivery risks or cost of delivery risks), economic risks (level of bad debts) and financial risks (higher interest rates and lower inflation). As discussed above, a continuation of regulatory uncertainty mechanisms should be able to deal with legal and regulatory risks and so these do not need to be covered in financial scenarios.

We have also considered two further combined-stress scenarios, which we consider are 'worst case', but not impossible. The first (scenario 8a) involves a combination of totex underperformance and ODI penalties throughout the period, set at levels which are appropriate for the RoRE ranges put forward in our business plan. In the second (scenario 8b), these ongoing stresses are combined with a low inflation scenario to 2025.

Scenario 8a.	Welsh Water combined scenario – totex underperformance (5% of totex each year), ODI penalties (0.75% of RORE in each year), 1% financial penalty in one year
Scenario 8b.	As per 8a, combined with low inflation (1% below central case in each year).

As described in section 20 we have reviewed the financial impact of these stress scenarios in the period to 2030, on both the basis of our *actual* company and *notional* company balance sheets. In all cases, while a decline in credit ratings would be anticipated in the tested scenarios, there is a reasonable expectation an investment-grade credit rating would be preserved, albeit under pressure in the most extreme cases. In addition, in the event of prolonged stress events, the Board has considered a number of mitigating options, such as reducing the level of 'customer dividends' or issuing subordinated debt, which would give it additional assurance a secure investment-grade credit rating for its senior debt could be maintained in practice. On this basis, the Board has concluded it can continue to give assurance to customers of the likely financial viability of the company over the period to 2030.

24 Assurance and transparency

Introduction

We have recognised we need not only to develop an ambitious PR19 plan which offers great service and improved value for our customers, but also to demonstrate that our customers and stakeholders can place their trust in the information contained in this document and in our ability to deliver this plan for them. Robust internal and external assurance has, therefore, been at the heart of the process of developing our plan.

Board involvement

The Board has provided strategic leadership and direction to the preparation of the company's PR19 business plan from the outset of the process. Oversight of the development of the plan has run in parallel to the Board's ongoing governance role over the last two years. All the major strategic decisions that have shaped the plan have been made at Board level, reflecting the results of our extensive programme of customer research and engagement and having taken into account continuing input and challenge from the CCG, from the Members of Glas Cymru, and from our regulators and other stakeholders. As a result, the Board is able to provide comprehensive assurance this is a high-quality plan that delivers the optimal value to customers and the environment, today and in the future, balancing affordability, quality of service, and resilience.

Internal plan development

Our plans have been worked up over the last 24 months in each business area by dedicated multi-disciplinary teams, supported by external consultants and experts in the field, using a wide range of data from our live asset, operational and risk management systems, together with extensive customer information coming from our customer service systems and the extensive process of engaging directly with customers at each stage of the plan's development. The governance of this process has involved monthly Executive Team meetings to discuss options and approve proposals to go to the Board.

Data assurance

Alongside this document we are submitting to Ofwat a large volume of data covering, among other things, our historical performance, asset information, financial data, and performance targets. This data has been subject to a rigorous process of internal and external audit, following a risk-based Assurance Framework developed by our independent external 'reporter' (Jacobs). This framework has been developed from our well-established company monitoring framework, which governs the production of information for our Annual Performance Report.

The highest 'risk' areas have been externally audited by independent experts in the relevant areas. Lower risk items have been through two levels of internal audit and signed off by the Executive.

Transparency

We hold ourselves to the highest standards of openness and transparency in the implementation of our plans. We will publish our performance against our plans on an annual basis, in a clear and accessible format that makes it easy for customers to see how we are doing and how we have spent their money. We will set out the return of the WaterShare scheme and of our other 'customer

dividends' along with the details of executive remuneration, showing how their incentives are clearly linked to performance. We will also publish details of our tax policy and our gearing policy. Our performance report will be subjected to rigorous independent audit to ensure customers and stakeholders can have confidence in the accuracy of our reporting.

We will engage the CCG and CCWater in regular discussions about our performance, our ongoing programme of customer involvement and our customers' priorities for further improvement.

Board assurance statement

The Board is satisfied this business plan constitutes a high-quality plan. It has stretching targets for affordability, for customer service, for support for customers in vulnerable circumstances, for environmental performance and for cost efficiency, together with improved long-term service resilience and value for money for customers.

The Board has provided detailed leadership of all aspects of the business plan throughout its development. This has included the following key steps:

- The Board set the approach to PR19 at the outset of the process in September 2016, requiring the plan to be driven by the views of customers and to be developed in the context of a long-term vision for Welsh Water by 2050
- During 2017, the Board set the strategic parameters for the business plan, based on the extensive first phase of our customer engagement programme, ensuring the plan strikes the optimal balance for customers between investment requirements for service improvements and resilience, and affordability for customers, both over the next five years and the longer-term
- The Board has ensured the targets set are challenging and deliverable, reflecting the criteria set by Ofwat, customer views, and historical and comparative information
- The company has engaged directly with the Customer Challenge Group and other key stakeholders, including Natural Resources Wales and the Drinking Water Inspectorate, during the development of the plan. Executive and non-executive Board members have also attended customer engagement sessions and reviewed extensive customer research findings, to develop a personal understanding of customers' needs and priorities
- The Board has reviewed its plan and can confirm that it fully meets the company's legal and statutory obligations, and also takes account of the Welsh Government's Strategic Priorities and Objectives Statement, as well as the Water Strategy for Wales.
- The Board has reviewed its plan against Ofwat's expectations, as set out in its detailed methodology statement, and found it to have met the requirements for a high-quality plan. The Board has also had the benefit of external assurance from the reporter, and our auditors, on key aspects of the plan and supporting data, where appropriate
- At the end of the process, the Board commissioned independent customer research into the overall acceptability of the plan for customers, which concluded that 92% of customers found the plan acceptable and 95% found it affordable (including those who considered that it would be "affordable at a stretch"), with consistent high support across all customer groups

Having reviewed the main delivery risks, and also the financial and corporate resilience of the business to a range of severe and combined risk scenarios, the Board is satisfied the business plan is financeable and deliverable.

Appendix 1: Summary of AMP7 performance commitments

Clean, safe water for all		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 Target
Tap Water Quality Compliance Risk Index (Wt1)	The DWI's Compliance Risk Index	2.85	-	0	0	0
	This is a new measure introduced by DWI, replacing the current 'Mean Zonal Compliance' measure. Although we are unlikely to achieve zero in any given year, this is a compliance measure and the formal requirement is that there be no failures.					
Water supply interruptions (Wt2)	Supply interruptions greater than three hours (expressed in minutes per property).	43.3	12	8	6	2
	Although the period 2012/13 – 2017/18 had seen a significant reduction, our interruptions performance continues to lag behind the industry. Storm Emma affected our reported performance in 2017/18. Our plan for AMP7 is to make a further significant improvement, reflecting customer views and the costs of making further improvements.					
Acceptability of drinking water (Wt3)	The number of contacts received from customers per 1,000 population served.	2.79	2.4	2	1.75	1
	Our performance on this measure has been behind the rest of the industry, the main reason being because of our operating circumstances. The findings from our research suggest that although discolouration does raise some modest concerns for customers, the support for significant investment is limited. Nonetheless, we are committed to bringing our performance closer into line with the rest of the industry.					

Clean, safe water for all		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 Target
Water mains bursts (Wt4)	The number of bursts of water mains / 1000km	151.5	133.2	128.4	123.4	105
Bursts are an indicator of asset health, but they do not, of themselves, have a direct impact on customers. We are forecasting a steady continued decline in the rate of bursts as a by-product of our strategies to achieve improvements in other performance measures.						
Water process unplanned outages (Wt5)	Total unplanned outage as a proportion of the company's total production capacity (%).	1.57%	-	0% change from 2019/20	0% change	0% change
This is a new measure recently introduced by Ofwat. 2017/18 was the first year in which performance was measured. In general, unplanned outages in production capacity do not affect customers because we manage our systems to ensure that they are unaffected. We have set the target for each year of AMP7 at 0% change from the figure we report in 2019/20.						
Tap Water Quality Event Risk Index (Wt6)	DWI's Event Risk Index	-	-	UQ	UQ	UQ
This measure is being introduced by the DWI but has not yet been fully implemented. As a result, few details are available. However, since customer engagement has reinforced our view that drinking water quality is of the highest priority, we are setting ourselves the target of being upper quartile for each year of the AMP7 period and beyond.						
Water Catchments improved (Wt7)	The number of our Water Treatment Works with catchments designated as requiring Safeguard Zones under the Water	1	23	18	13	5

Clean, safe water for all		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 Target
	Framework Directive					
	This is a new measure, and represents the reduction in the number of catchments designated as Safeguard Zones under the Water Framework Directive, which we expect to be 23 by the end of 2019/20. As this is a new area there is some uncertainty over the rate at which catchments can be improved sufficiently to have the 'Safeguarding' designation removed. However, we think that the removal of 5 zones by 2024/25 is realistic and achievable.					
Lead pipe replacement (Wt8)	Number of customers' lead supply and communication pipes replaced (cumulative over an AMP).	-	1,800	7,000	7,000	50,000
	Our strategy for AMP7 is to replace lead supply pipes as part of integrated initiatives intended to achieve leakage and water efficiency benefits as well, on top of our existing approach of offering free lead pipe replacement when a property has a sub-threshold failure of a lead water quality sample.					

Safeguard our environment for future generations		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Treatment works compliance (En1)	Percentage of treatment works that are compliant with their environmental permits	96.7%	100%	100%	100%	100%
Although it is very difficult to achieve a score of 100%, this is the benchmark to which we aspire, and a legal obligation. Accordingly, our target for every year of AMP7 (and beyond) is 100%.						
Wastewater treatment works look-up table compliance (En2)	Percentage of sewage treatment works with numeric limits, which were compliant	99.46%	99%	100%	100%	100%
This is an additional measure which we think more accurately captures our environmental impact than En1. Although it is difficult to achieve the perfect score of 100%, this is the benchmark to which we aspire, and a legal obligation. Accordingly, our target for every year of AMP7 (and beyond) is 100%.						
Pollution incidents from Wastewater (En3)	Category 1 - 3 pollution incidents, as reported to EA and NRW per 10,000 km	28	29	24	21	10
Based on the results of our customer engagement and our forecast for the industry upper quartile of 92 in 2024/25, we have settled on a stretching target of 90 incidents per annum for 2024/25.						
Leakage (En4)	Leakage in mega-litres per day (ML/d). Three-year average.	176.1	171	148.2	128	75
Our economic analysis suggests that a reduction of between 15% and 20% would be cost beneficial. However, this involves a significant change in our strategy, which is not yet proven. We have settled on a target of a 15% reduction, which we believe is achievable whilst we test and develop our new strategies.						

Safeguard our environment for future generations		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Per Capita Consumption (En5)	Average water use by each person in a residential property (litres per head per day). Three-year average.	145	145	139	136	100
	Our reported per capita consumption (PCC) figure in 2017/18 was 145 l/h/d, somewhat higher than the estimated upper quartile for the industry of 135. There is industry evidence that suggests that we could target a level of PCC as low as 100 l/h/d by 2050. To achieve this would require average annual reductions of 1.4 l/h/d per annum. For AMP7 we are targeting a slightly lower – but still significant – rate of improvement of 1 l/h/d. This produces a target in 2024/25 of 138 l/h/d .					
Km of river improved (En6)	The length (in km) of river improved as a result of Welsh Water action (cumulative within an AMP).	36	562	418	128	N/A
	We are targeting improvements to 418km of rivers over the course of the AMP7 period, and a further 128km during AMP8. These figures have been agreed with NRW and the EA under the WINEP and the NEP respectively, and as such have the status of formal legal obligations. Any further longer term additions will be the subject of future consideration in discussions with our environmental regulators and other stakeholders.					
Bioresources product quality (En7)	The percentage of our total wastewater sludge processed through our Advanced Anaerobic Digestion facilities, producing an enhanced treated biosolids product and meeting the Biosolids Accreditation Scheme (BAS) accredited standard.	60.2%	95%	97.3%	100%	100%

Safeguard our environment for future generations	2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
	<p>Our long term target is to treat 100% of our sludge to an enhanced standard. We have not specifically sought customers' views on this target, but we know that they expect us to deliver services as efficiently as possible. Our 2024/25 target of 97.3% reflects the fact that there is one small site where it makes sense to invest in the necessary plant during the following AMP8 period instead, but by 2030 the 100% long-term target will have been achieved.</p>				
Bioresources disposal compliance (En8)	The percentage of sludge disposed of satisfactorily.	100%	100%	100%	100%
	<p>Customers expect us to comply with our legal obligations. We have achieved 100% compliance with bioresources disposal requirements in recent years, and plan to maintain this level for every year going forwards.</p>				

Personal service that's right for you		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Household customer satisfaction (C-MeX) (Sv1)	Customer Experience Measure of satisfaction	-	-	UQ	UQ	UQ
	This is Ofwat's new measure of customer satisfaction, which has not yet been finalised. Historically we have generally achieved upper quartile performance on customer service measures, and the evidence suggests that customers would expect us to maintain this relative position. We are therefore targeting industry upper quartile performance in every year of AMP7.					
Developer services customer satisfaction (D-MeX) (Sv2)	Developer Services Experience Measure of satisfaction	-	-	UQ	UQ	UQ
	This is Ofwat's new measure of developer services customer satisfaction, which has not yet been finalised. Historically we have performed well on the Water UK-led metrics and we believe that our customers would expect us to maintain this position. We are targeting industry upper quartile performance in every year of AMP7, subject to the measure appropriately reflecting the regulatory divergence between Wales and England in this area.					
Customer trust (Sv3)	Trust score (from CCWater survey)	8.15	8.04	UQ	UQ	UQ
	Our stakeholder engagement has provided extensive evidence on customer attitudes to the drivers of customer trust, and it is clear that this is of core importance to the communities that we serve. Our target is to achieve upper quartile performance on the CC Water survey measure in every year of AMP7 (and beyond).					

Personal service that's right for you		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Business Customer Satisfaction (Sv4)	The average customer score out of 5 on non-household customer satisfaction surveys.	4.37	4.5	4.5	4.5	4.5
	Our performance on this measure in recent years has been consistently high. We believe that raising our score above 4.5 will be very difficult because there will always be a sizeable minority of customers that will be reluctant to express positive views regardless of the service they have received. Accordingly, our target for each year of AMP7 and beyond is to maintain our high customer satisfaction score of 4.5 out of 5.					
Vulnerable customers on priority services register (Sv5)	The number of customers who are registered on our Priority Services Register.	26,000	52,000	100,000	105,000	127,000
	The number of customers on our priority services register has risen slightly in recent years, from 23,000 in 2014/15 to 26,000 in 2015/16. Our research has shown that customers are strongly supportive of the register. We have set ourselves the ambitious target of matching the performance of the energy sector, where 8% of household customers are registered for priority services. This implies a target of 100,000 for us, which we plan to achieve by 2024/25, with moderate growth thereafter.					
Customers on Welsh Language register (Sv6)	Number of customers registered for Welsh language services	6,430	-	25,000	35,000	50,000
	It is the policy of the Welsh Government to promote the use of the Welsh language, and it has set a target of doubling the number of Welsh speakers by 2050. We are committed to supporting this initiative, and have set ourselves the challenge of increasing the proportion of Welsh speakers who are on our register by a factor of a little over three by 2025.					

Put things right if they go wrong		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Sewer flooding on customer property (internal) (Rt1)	The number of internal flooding incidents per year, including severe weather events	297	300	273	252	100
	We have been one of the top performers in the industry on internal flooding. Customers understandably give internal flooding a high priority. Although willingness to pay is quite high, the incremental cost of achieving further improvements is also high. For AMP7 we are targeting all of the remaining incidents caused by hydraulic overload, which will take our performance down from 297 to 273, still well inside the forecast industry upper quartile figure of 346.					
Sewer flooding on customer property (external) (Rt2)	The number of external flooding incidents per year within property curtilage.	3929	4121	3800	3420	2500
	Our performance on external flooding has shown some improvement in recent years, and the number of incidents is on a downward trend. We consider that a reduction of around 10% to 3,800 by 2024/25 represents a proportionate response to the modest priority that customers have given this measure, whilst enabling us to address the small minority of incidents that are classified as severe, together with many of the locations that are subject to repeat flooding. In the longer term, as the benefits of our Rainscape programme are delivered and we are able to utilise our Strategic Drainage Plans we believe that the rate of external flooding can be steadily brought down to a level of 2,500 by 2050.					
Sewer collapses (Rt3)	The number of collapses on sewers per 1000km.	7.5	7.5	0% change from 2019/20	0% change	0% change
	Collapses are an indicator of asset health, but they generally do not of themselves have a direct impact on customers. For PR19 Ofwat has introduced a new measure which uses a very different definition. Our proposed performance target for each year of AMP7 is to achieve at most a 0% change from the 2019/20 baseline, i.e. no deterioration.					
Total complaints (Rt4)	The number of household	84	76	60	54	35

Put things right if they go wrong		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
	written and telephone complaints per 10,000 customers.					
	In 2017/18 we had 84 written and telephone complaints per 10,000 customers. We are targeting a rate of improvement that will take us to 60 by 2024/25, which is our estimate of industry upper quartile in that year. The proposed target represents a reduction of nearly 30% on the out-turn figure for 2017/18, and as such represents a very considerable challenge.					
'Worst served' customer for water service (Rt5)	The number of customers that have had repeat incidents of low pressure or interruptions to water supply.	-	1131	871	670	0
	This measure reflects the principle that no customer should have to put up with a persistently sub-standard service, however expensive it might be to eliminate the most stubborn of service problems. We have made a commitment to reduce the number falling within this category from 1,131 in 2017/18 to zero by 2050. As an interim step, by 2024/25, we are targeting a reduction of 25% in the number of customers suffering multiple supply interruptions, and a reduction of 10 in the number of customers suffering long term pressure problems. This will take the number to 871.					
Worst served customer for wastewater service (Rt6)	The number of properties at risk of repeat internal or serious external flooding.	-	368	359	270	100
	This measure reflects the principle that no customer should have to put up with a persistently sub-standard service, however expensive it might be to eliminate the					

Put things right if they go wrong	2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
	<p>most stubborn of service problems. We have made a commitment to reduce the number falling within this category from 368 in 2017/18 to 100 by 2050. As an interim step, by 2024/25, we are targeting a net reduction of 9 in the number of customers at risk of repeat flooding, and takes into account the rate of new additions we see each year.</p>				

Fair bills for everyone		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Change in average household bill (B1)	The average percentage annual increase in the average household bill over the 5-year period.	<RPI	<RPI	<CPIH	=CPIH	=CPIH
	The essential message that emerges from all our stakeholder engagement is that there is no consensus for an increase in bills. Accordingly, our target going forwards is to cap average household bills each year at the same level that they were in the last year of AMP6, after allowing for CPIH inflation.					
Vulnerable customers on social tariffs (B12)	The unique number of customers who are benefiting from our social tariffs.	90,300	133,100	148,000	148,000	148,000
	This is the total number of customer on our social tariffs, including HelpU and Welsh Water Assist. We are targeting an increase in line with our Social Tariffs Strategy for AMP7.					
Company level of bad debt (B13)	The annual doubtful debt charge as a proportion of total of revenue.	2.90%	2.50%	2.00%	2.00%	2.00%
	We serve some of the most deprived areas of England and Wales, and our bad debt costs have always been higher than industry averages. Since 2014/15 we have made considerable progress and reduced the ratio of bad debt costs to revenue from 3.9% to 2.9%. This is still higher than the industry upper quartile of 2.0%, though, so notwithstanding our disadvantages in terms of the prevalence of deprived areas, we are adopting 2.0% as our target for 2024/25. As we think this may prove very difficult to achieve, we are holding our target constant at this level beyond 2025, for now.					

Fair bills for everyone		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Unbilled properties (BI4)	The percentage of connected household properties that are void.	4.30%	4.00%	3.50%	3.50%	3.50%
	At present, 4.3% of our connected properties are shown as “voids”, i.e. unoccupied, on our billing system. This compares to an industry average of 2.3%. Our current analysis indicates that the economic level of voids is 3.5% . Accordingly, we are forecasting progressive improvements in performance over the course of AMP7, and have adopted this figure for our 2024/25 target.					
Financial resilience (BI5)	“High” means a strong investment grade rating from the three main rating agencies.	High	High	High	High	High
	Our financial resilience target for AMP7 and beyond is to maintain a strong investment-grade credit rating on our senior class bonds from at least two out of the three main ratings agencies. This has been a core objective of the company since Glas Cymru acquired Dŵr Cymru in 2001.					

Create a better future for all our communities		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
Risk of severe restrictions in a drought (Ft1)	Percentage of the population the company serves, that would experience severe restrictions in a 1-in-200 year drought.	4%	4%	0%	0%	0%
	This is a new measure, and is based on modelling estimates. At present, 4% of our customers are at risk of severe restrictions (standpipes or rota cuts, for example) in a drought. As a result of interventions in AMP7 we are able to target an improvement in performance to 0% in 2022/23, which we plan to maintain thereafter.					
Risk of sewer flooding in a severe storm (Ft2)	Percentage of population at risk of sewer flooding in a 1-in-50 year storm.	3.63%	-	5% reduction from baseline	10% reduction from baseline	30% reduction from baseline
	This is a brand new measure, and it will take some time to carry out all the modelling necessary to produce a sound estimate of the number of properties that meet the criterion. We intend to have a good estimate of the number of properties at risk of sewer flooding in a severe storm in 2019/20. This will provide the reference level from which we are targeting a 5% reduction in AMP7.					
Energy self-sufficiency (Ft3)	Electricity generated and gas injected to grid as a percentage of all electricity and gas consumed (gas expressed as an electricity equivalent).	20%	26%	35%	50%	100%
	Our long term aspiration is to achieve 100% self-sufficiency by 2050, but this will very much depend upon harnessing technologies that do not yet exist. So far as the					

Create a better future for all our communities	2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target	
	near term is concerned, our policy is to exploit opportunities as and when they arise.					
Surface water removed from sewers (Ft4)	The volume of surface water removed from the sewers (measured as roof equivalents)	15,097	25,000	47,000	94,000	400,000
	Our pioneering Rainscape programme has already removed surface water equivalent to over 15,000 roofs from the sewer system this AMP, delivering important benefits including a reduction in sewer flooding and spills at intermittent discharges. As it is unique, there are no industry comparisons against which it can be compared. We are targeting the removal of 400,000 roof equivalents by 2050, For the purposes of AMP7 we are proposing schemes that will broadly maintain the current rate of progress.					
Asset Resilience (reservoirs) (Ft5)	Percentage resilience of critical assets against a set of criteria.	-	92.2%	95.5%	97%	100%
	Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. The rate at which our performance can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which work on reservoirs can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of 95.5%. After that, we are planning a further step to 97% by the end of AMP8, on the way to our eventual goal of 100% by 2050.					
Asset Resilience (water	Percentage resilience of critical assets	-	84.0%	86.5%	90%	100%

Create a better future for all our communities		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
network+ above ground) (Ft6)	against a set of criteria.					
	Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on treatment works and other above ground assets can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of 86.5%. After that, we are planning a further step to 90% by the end of AMP8, on the way to our eventual goal of 100% by 2050.					
Asset Resilience (water network+ below ground) (Ft7)	Percentage resilience of critical assets against a set of criteria.	-	47.0%	56.2%	67%	100%
	Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on trunk mains and other strategic mains can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of 56%. After that, we are planning a further step to 67% by the end of AMP8, on the way to our eventual goal of 100% by 2050.					
Asset Resilience (waste network + above ground) (Ft8)	Percentage resilience of critical assets against a set of criteria.	-	77.7%	80.0%	85%	100%
	Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. The rate at which this can be improved is substantially limited by severe deliverability constraints: put simply, there are only certain times and circumstances in which particular types of work on sewage treatment works and strategic sewage pumping stations can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively					

Create a better future for all our communities	2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target	
	determined our 2024/25 target of 80%. After that, we are planning a further step to 85% by the end of AMP8, on the way to our eventual goal of 100% by 2050.					
Asset Resilience (waste network + below ground) (Ft9)	Percentage of critical assets that are resilient against a set of criteria.	-	28.3%	45%	60%	100%
	Our long term target is to achieve a score of 100% on this measure, because we want to minimise the risk of failures of assets that would have a major impact on service to customers or the environment. The rate at which this can be improved is substantially limited by severe deliverability constraints: Put simply, there are only certain times and circumstances in which particular types of work on strategic sewers can be carried out, and it is not possible to take multiple assets off-line at the same time. This has effectively determined our 2024/25 target of 45%. After that, we are planning a further step to 60% by the end of AMP8, on the way to our eventual goal of 100% by 2050.					
Education participation (Ft10)	The total number of children and adults who have participated in educational activities.	62,000	67,000	75,000	85,000	85,000
	We have set ourselves the target of moving up to 75,000 by 2024/25, an increase of 13,000 on the 2017/18 out-turn figure, moving to our long term target of 85,000 by 2030.					
Visitors to recreational facilities (Ft11)	The number of visitors to our recreational sites across Wales.	450,000	480,000	830,000	880,000	1,000,000
	We are targeting a near-doubling of visitor numbers to 830,000 by 2024/25 which we think is challenging but achievable, and a further increase to 880,000 by 2030.					

Colleague Promises		2017/18 Outturn	2019/20 Target	2024/25 Target	2029/30 Target	2050 target
RIDDOR injuries (Co1)	The number of RIDDOR injuries recorded per year.	14	10	5	3	0
	This was one of our performance targets at PR14, and we have steadily improved the number of RIDDOR injuries. In the long run we are aiming to eliminate RIDDOR injuries completely, but we acknowledge that this is challenging and will take time. Over the course of the AMP6 period we are committed to halving the number of injuries to 10, and we are aiming to do the same in AMP7 so as to hit a target of 5 injuries or better in 2024/25.					
Employee training and expertise (Co2)	The percentage of our employees who are evaluated as having the necessary skills, experience and knowledge to carry out their specific role safely.	82%	95%	95%	95%	95%
	Our performance on this measure was 82% in 2017/18, but this represented a decline from 88 in 2015/16 and 91 in 2016/17, so we think there is considerable room for improvement. The maximum achievable score on this measure is believed to be about 95%. Customers see this as an internal matter for the company, but we know that they expect us to ensure that all our resources are fit-for-purpose. Accordingly, we have set ourselves the challenging target of reaching 95% straight away in 2019/20 and maintaining that level thereafter.					

Employee Engagement (Co3)	ORC (an external company) calculate the Engagement Index based on the responses to a standard set of questions.	80%	80%	80%	80%	80%
	This measure is based on an externally-conducted survey of employees and their response to standardised questions about how they view the company and their role. Our performance in 2017/18 was 80%. With continuing organisational change likely to be a feature of the coming years we think this will be difficult to maintain, but we are committed to trying to do so. Accordingly, we have set the target for each year of AMP7 and thereafter at 80%.					

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