SERVING OUR CUSTOMERS AND COMMUNITIES

Severn Trent
Business Plan 2020-2025

WONDERFUL WATER TOUR

SEVERN TRENT

WONDERFUL ON TAP

SEVERN TRENT

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WELCOME TO OUR BUSINESS PLAN

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Our core purpose is to serve our customers and communities. This drives our vision to be the most trusted water company, delivering an outstanding customer experience, best value service and environmental leadership.

This is our business plan for 2020-25. It sets out the improvements we're committing to deliver for our customers over that time, including how we'll keep bills lower. And it looks to the future of our service to 2045 and beyond.

Driven by our company purpose to serve our customers and communities, this is a plan that's not just about what we're going to do, but also how and why. And it's founded on the values that are led by our Board and lived by our people:

We put our customers first.

We're passionate about what we do.

We act with integrity.

We protect our environment.

We're inspired to create an awesome company.

This plan was submitted to Ofwat, our economic regulator on 3 September 2018 as part of the 2019 Price Review.

SERVING YOU AND YOUR COMMUNITY

Introducing our plan for our customers

Today, we all expect the companies that serve us to be a positive influence in our lives, and to benefit the society we live in. Being 'almost good enough' is, frankly, just not good enough - we'll only give our custom to the brands we trust.

While none of us have a choice about who provides our water - so we can't vote with our feet - customers quite rightly have very high expectations of water companies. At Severn Trent, we know we are uniquely privileged. We see the next five years as a critical opportunity to show how we're running a public service for the public good. And we're going to build on our long term track record and take service standards to new, ambitious levels. We'll do this by:

- further reducing the service failures that irritate and inconvenience you;

- giving you the respect, attention and personalised service you deserve, particularly when things go wrong; and

- playing a much bigger role in your community.

And we're going to do all this while lowering bills and providing financial support to customers who still struggle to pay.

But is this good enough? We understand the scepticism about 'big business' and the role 'private' companies have in providing essential services like water. So we want to be a role model for private companies delivering a public service. We're going to show that we're a responsible organisation that does things for the right reasons – that makes balanced decisions for the long term and always considers you and your interests. A company that's more than a 'silent partner' in your life, we want to be a company that you'd positively choose to provide your water, if you had the choice.

Our goal is to be the most trusted water company by 2020 and every year thereafter. But trust has to be earned - it is given, not taken, and it has to be given by you, our customers.

What you told us

Good listeners make better decisions. So before we started writing a single word of our plan for 2020-25, we started by listening to what you think and want from us. We focused on having good *quality* conversations, rather than quantity, because we want to keep these conversations going in the future. Even so, more of you than ever before took part in our research - over 32,000 of you - and we looked again at 24,000 complaints we'd received, as well as taking on board criticisms made on social media. In brief, this is what we learnt:

You want bills that are no higher than absolutely necessary. Water is essential - and it must be affordable for all. At the same time, you're concerned that even the lowest bill can be too high for some people. So you want us to find new and better ways to help the 11% of our customers who told us that they might struggle to pay, and to understand that your personal circumstances may change from time to time.

You think that a reliable supply of clean water and an effective wastewater service are absolute non-negotiables, and you want us to keep improving in these areas. But it's also clear that we need to focus on other important aspects of service that haven't been high enough on our radar (because we hadn't always seen them from your perspective) - such as low pressure.

You don't want us to cut corners when it comes to looking after and improving water infrastructure – you want to know that your children and grandchildren will also have access to reliable water and wastewater services. And you want us to do everything we can to conserve water.

Like us, you know that we don't always get everything right. But while this frustrates you, what really upsets you is when we don't take responsibility for a problem, fail to fix it first time or don't give you the respect and care you deserve.

You expect us to do more for the towns, cities and villages where we all live and work. You value your local environment and rivers, so you want us to look after them properly. And you support our efforts to improve habitats on our sites, and to create more green spaces for you to enjoy.

You also understand the importance of us being financially sound and not carrying too much debt. A sense of fair play and transparency matters. So while you don't want us to pay excessive dividends, you agree that really good performance should be rewarded, as long as poor performance is penalised. And when we do perform well, you expect us to share the benefits with everybody, not just with shareholders.

So what are we going to do?

This is what you can expect from us over the next five years:

Affordability

Not content with having the lowest average bills in the country since 2010, we're now going to go even further to help your household finances by reducing bills by 5% (taking into account the Government's preferred measure of inflation) - that's more than double our 2015-20 plan on a like-for-like basis. So we'll keep delivering the lowest average bills in England.

Over the next five years our investors will be earning a lower return – so there'll be a drop in bills straight away in 2020/21. We're also committing to become more efficient – by around 13%. These efficiencies will help us to keep bills down in the following four years, as we deliver around £6.6bn of investment to maintain and improve services.

And we've also thought carefully about when is the right time to deliver these savings – for customers today or for customers in the future? We asked some of you in research, and 88% supported the balance we've struck.

Supporting those in need

We already help almost 36,000 people per year who are struggling to pay their bills with our social tariff. But we know that even more people need support. We're going to almost triple the number of customers benefiting from our social tariff, which you helped us design. We're also introducing more options, like payment breaks, because some of you told us your money worries were temporary, and you just needed some breathing space to get back on track. We'll be making this much easier for you by proactively contacting you and making the process easier. In total, we'll be helping 47% more customers.

Some of you have circumstances that can make you more vulnerable if there's an issue with our service, or mean that you find it difficult to contact us. You told us you don't want to be treated differently, just as a valued customer like any other, and given a service that meets your needs. So we not only designed our service with our customers, but also with the help of experts like St John's Ambulance and Guide Dogs for the Blind. We'll keep working with them and others to identify those of you who may benefit from a more tailored service – ideally before you even ask.

A better service

The last few years have seen us make some solid improvements in the service we provide. For example, your wastewater services are amongst the best standard and value in our industry. We consistently score in the top two on the Environment Agency's assessments, and since 2015, customers have experienced 6,000 fewer sewer flooding incidents. But we want to set the bar even higher. So we're targeting another 8% reduction in all forms of sewer flooding and a 17% reduction in pollutions in the next five years.

In some areas we haven't performed as well. We know the frustrations some of you felt with our water service during the extreme freeze and rapid thaw weather conditions in late February and early March 2018. Some customers didn't receive the service they rightly expect, so we're reviewing where we invest in our infrastructure, how we make sure any disruption to you is minimised if something does go wrong, and in the case of very cold weather, how we can better help you to protect your pipes.

We're targeting real improvements in other areas too, so that we give you a water service that's one of the best in the industry. We're committing to a 48% improvement in managing drinking water quality risks, 5% fewer complaints about the appearance of drinking water, and we're making a new commitment to resolve 95% of low pressure complaints first time (because previous measures we used weren't quite getting to the root of your issue). And we'll keep reducing interruptions to your supply, so that we're in the top 25% of all the water and wastewater companies.

We're also going to do more of the things that can lift your day a little. Showing that we really do care can make a real difference – you want a service that's human and receptive, especially if we've got something wrong. We'll do our very best to sort your problem out - compensating you if appropriate - and learn lessons from it. We've already extended our non-emergency contact hours to 24/7, just like our operational contact centre, so you can contact us about anything, at any time.

Investing for the long term

We're planning ahead so that the generations to come can rely on us. In our last plan, we were given the go ahead to safeguard the next 100 years of water supply to Birmingham with a major infrastructure scheme - and while we don't have any projects of this magnitude planned over the next five years, we're going to continue investing in our strategic grid to improve the ability of our water supplies to cope with shocks and strains - like the extreme weather we experienced in February and March 2018.

We need to safeguard the future of the water environment and make sure that when we draw water from it, we're not putting it at risk. And we know that we need to prepare for population growth and uncertainty from climate change. To meet these challenges and protect our water for future generations, we're committing to reduce leakage by 15% - our biggest ever reduction in a five year period. We know that many of you want to help too, so we're aiming to triple the rate at which we install water meters and do even more to encourage everyone to use water more efficiently.

And where there's uncertainty about how climate change could impact us, we'll only share the costs of any investment with you once we know that it's needed.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

So how are we going to deliver?

How (and why) we deliver is just as important as what we'll deliver. We'll hold fast to our values of putting you first, acting with integrity, protecting our environment, and creating an awesome company for our people... by supporting our culture and our commitment to diversity and inclusion for all... and by using our skills to build relationships which provide practical benefits to our communities.

For example, we've created a culture that encourages all of our people to think of each day as an opportunity to do something better. Many of our best ideas come from our people - helping to improve our service and keep our costs down. Our most ambitious goals will depend on brilliant ideas. So in the case of leakage, we're already using satellites and trialling robots to detect leaks in pipes.

Being innovative also means looking at how we can work with others to improve our services. So we've started to trial trading sludge, explore trading water and going out to the market to seek creative proposals to increase the availability of raw water in the East Midlands. And we're playing our part in the nationwide picture by working with others to look at how an interconnecting pipe could move water from the North West to customers in the South East.

Playing a bigger part in society

We want to show the difference that we can make to the communities we all call 'home'.

Almost a third of the UK's social mobility 'coldspots' are in our region. While we already focus our apprenticeships and graduate schemes in these areas, we're going to change our recruitment practices so that everybody in our region is aware of the fantastic career opportunities we offer. We're also going to put £10m of our own money into a technical academy that will not only bolster our own engineering skills - it will help to underpin the skills of the Midlands as a whole, and also be a place where other water experts, such as local authorities and smaller water companies, can come together to share expertise.

We'll do our bit to help make where you live greener. Over the next five years, we'll improve up to 2,100km of rivers, taking the total since 2015 to 3,600km - more than half of the rivers in your region. Working with other organisations like the Wildlife Trusts, we're going to encourage local communities to help us improve biodiversity in areas covering the equivalent of 1,500 football pitches. Where we're working to fix sewer flooding, we're going to take the opportunity where we can to create new green spaces to enjoy – adding up to £600,000 of new natural capital. And volunteering by our own people will keep playing an important role too. Over the last year, 40% of us have volunteered our time to clean up around 40km of riverbank.

Some of the problems our communities face can't be solved by us alone, like complicated flooding issues that need different organisations to work together to fix. We've great experience of working in partnership and we're going to keep working with local authorities, the Environment Agency and local communities to tackle these tough issues.

We're making sure we provide as much support to your children and grandchildren as we do to you. We want to inspire a generation to change their water use, so we're taking an innovative roadshow into primary school playgrounds across our region. We'll also promote the benefits of hydration and spark their interest in a career with us in the future. At the same time, we're helping almost 500 schools in our region to find and tackle issues with lead in their pipework.

And throughout all this, we'll make sure we keep you really informed, because when you do hear a little bit more about what we do, you're usually positive about it and want to know more. So, we'll tell you about how your money is spent, how you're making a contribution to your community, how your service compares to others and how you can get more out of it. One of the first examples of this commitment in action is that this summer, for the first time in over a decade, we've used TV adverts to promote how we can all use water wisely.

Being a responsible company

Who owns water companies and how they're financed has been a hot topic lately. While many of you don't worry about it, others are uncomfortable with the idea of a private company providing a public service. But what you all have in common is the desire for things to be fair and transparent.

As one of the country's 100 largest companies listed on the London Stock Exchange, we have a responsibility to identify and implement best practice, and to be a role model for others. For example, we're helping set the standard for our sector regarding transparency and fairness on a range of topical issues such as executive pay and financing, as well as on the taxes and dividends we pay. And we know the importance of explaining how we've reached the decisions that we've made, and how we've considered your interests.

Explaining how our finances work and how we've calculated dividends in everyday language can be difficult. So to keep things simple, we've established a set of principles, and every year we'll keep you informed about how we've followed them.

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Sharing the benefits with everybody

When we deliver better performance to you than we promised, we're rewarded financially. We're going to carry on sharing those benefits between our customers and our business - just as we have done in the last five years for example we chose to reinvest £220m of our cost savings into areas such as water quality, security, improving the health of our assets, innovating for the future and supporting vulnerable customers.

We're also going to continue linking the bonuses of everyone in our business directly to the performance we achieve for you. This isn't a one-sided deal - if we don't deliver what we've promised, we give money back to you.

From 2020/21 onwards, we're going to do even more to serve our communities by creating a new community dividend. Comprising employee volunteering time, donations to the Severn Trent Trust Fund and 1% of our profits (which could amount to £2.5m a year), this package will help our most vulnerable customers, enhance the environment and make a real difference to communities. We'll be establishing an advisory board – that will include representatives from customers - to guide where best to spend the money and also obtain match funding from other bodies.

Our plan - responsible, challenging but can be done

We believe we've created a responsible, challenging but achievable plan that will set the benchmark for how a privately owned company can deliver public good, not just in the water sector but across UK industry in general. But the last word should be yours. You gave our plan an 85% acceptability rating – we now need to deliver it.

WHAT YOU CAN EXPECT FROM THIS DOCUMENT

Many different people have an interest in our plan – our customers, our investors and our wider stakeholders, as well as our regulators. So we've written it with everybody in mind. It started with a summary for our customers, and the remainder is in four main parts, with more detailed information in separate appendices.

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In-depth information about how we'll deliver our plan, aligned to Ofwat's test and controls.

APPENDICES

More detail and supporting data on the complex areas of our plan, included in separate documents.

PART 1:
AN OVERVIEW OF OUR PLAN

1 A MESSAGE FROM OUR CHIEF EXECUTIVE

No matter who they are or what they do, our customers' days always start in the same way - with water. At Severn Trent, our days start and end with making sure we provide those customers with a water service of the highest possible quality

In a series of workshops in 2015, I met with all our people personally so as to take a moment to stop and think about why we all come to work - to provide an essential public service - and who we do it for, namely our customers and communities. Together, we united under a very simple purpose: 'to serve'.

In this plan we've challenged ourselves to get right to the heart of what it really means to serve. So yes, we're pushing the benchmark for our sector in areas where we have a strong track record, like sewer flooding, and yes, we're committing to becoming amongst the very best in the industry in areas where we've not been as good, like managing drinking water quality risks. And we'll offer our biggest bill reduction in two decades.

But we also know that this isn't enough. Serving our customers and communities isn't a right, it's a privilege that we have to earn every single day. And our customers want to know we do the right things for the right reasons - they want to be confident that their interests are at the forefront of everything we do.

I personally believe that one of the most important things we can do is ready our future customers to be active participants in their water service. With our new schools programme, we're building a legacy to inspire an entire generation ... taking our roadshows into their playgrounds to encourage children to think differently about water - and I'd love it if they pestered their families to do so as well! But our commitment to our communities doesn't end there. We wanted to do more. So while we already share our success with customers, we're now going

to do something more by giving 1% of our profits to community projects that can really make a difference for our customers.

It's important to point out that this plan hasn't been created in the Severn Trent boardroom. It's been built collaboratively with our customers and through constructive challenge by the Water forum. On behalf of the Board I want to thank everyone who took part, including Water forum members, for their time, expertise and commitment — they've dedicated a huge amount of personal energy to help us create a better plan for our customers.

Finally, while this plan is ambitious, I'm confident that it's also practical and doable. We can deliver it because doing the right thing for our customers and communities — and doing it really well — is precisely what motivates and drives us. In September 2018, I'll be meeting personally with all our people managers across three days to discuss our plan and inspire our teams to deliver it.

Liv Garfield
Chief Executive

2 CONFIDENCE AT BOARD LEVEL AND BEYOND

From boardroom to treatment works and from the engineers on the front line to the people who answer customer phone calls in the middle of the night, this plan will be delivered by the entire Severn Trent team. But ultimate accountability for its quality rests with our Board.

Board statement

We want this plan to create a new benchmark for a private company delivering a public service. As a Board, we're collectively responsible for making sure that the values of our organisation recognise our privileged role as a supplier of an essential public service. This business plan is the cornerstone of everything Severn Trent will do over the next five years and beyond, so it's important that it too is underpinned by these values – put simply, 'doing the right thing'.

High quality business planning, strengthened by Board engagement

In planning our submission over the last two years, we have been collectively, individually and actively engaged in the development of our plan, having taken part in customer research events, attending our customer challenge group (the Water Forum) meetings, Ofwat Non-Executive Director events and our own employee forum (the Company Forum); and reviewed, challenged and shaped the elements of the plan and specific risk areas regularly at our Board meetings and Committees. In addition, our two executive Board members, the Chief Executive Officer and the Chief Financial Officer have overseen the day to day development of the plan through their executive function.

> "One of the things I am most pleased about is the continuous development of our plan; thoughtfully taking account of the careful balance of the needs of all our stakeholders in delivering a public service for the public good. As a Board we have carefully considered our social purpose when making our choices and trade-offs. It is also clear that the openness, transparency and the commitment of the executive to our strategic purpose and plan provide a strong foundation for its successful delivery."

(Andrew Duff)

Our Board and customer engagement programme, combined with the completion of our assurance programme described below, has enabled us to provide high quality challenge, ownership of the overall strategy and provided the direction of the plan in the long term. Through this highly engaged approach, we are satisfied that the chapters of our plan add up to an overall robust and deliverable plan that is of the highest quality - underpinned

by a data assurance framework and governance processes designed to deliver high-quality data.

Our business plan will deliver operational, financial, corporate and reputational resilience over the next control period and the long term, through our well established, robust and independently assured governance and assurance processes. We know resilience goes beyond traditional risk management, and we take a holistic, systems level view of our business resilience and operating environment.

> "It's great to see the significant progress made, guided by the Corporate Responsibility Committee, to ensure our social and environmental values are embedded within our decision making at all levels – including our supply chain. The executive team has worked hard to gain our key suppliers' commitment to comply with those same values - not an easy task from my previous executive experience but a very worthwhile one!"

(Dominique Reiniche)

Our resilience approach starts with a solid understanding of shocks, stresses and risk - we have a long established Enterprise Risk Management system for assessing and managing significant risks which we review as a Board regularly and at least half-yearly.

> "One of the things I've been most pleased to see embedded in our approach over the last few years, and being driven into our culture going forward, is our focus on operational resilience and innovation to optimise the efficiency of our operations. The transformational change we are proposing will be a key benefit to our customers not only to improve the services we provide, but also to be on the forefront of readiness for new markets."

(Angela Strank)

The customer voice in decision making

Our aim has been to create the most ambitious but achievable plan we could for our customers, building on our strong track record of delivery since our last plan. We did not believe we could achieve this without gaining a deeper understanding of our customers' thinking and then making sure that we acted on that insight - our customers' voice, in our decision making.

We've overseen our most in-depth customer engagement programme ever to create this plan, as well as the ongoing tracking and reviewing of customer feedback and sentiment. In addition to the established engagement with our regulators, investors, customers, our communities and other political, societal and environmental stakeholders to create this plan, our targeted research with over 32,000 customers - including willingness to pay and deliberative research on strategic investment areas, has had a major influence on the development of this plan. Our research has also helped us develop a better understanding of how we can provide more help to customers who are struggling to pay their bills. Many of us have attended these sessions to hear from our customers first hand. And to ensure that our customers' views have been accurately represented, we engaged specialist external independent assurers to verify our insights.

> "The role we play in our customers' lives is vital. Whilst our customers may not always think about the water they consume every day – we do. Being able to take part in one of our customer co-creation sessions has provided me with first-hand experience of the things that matter to our customers and has provided me, and the rest of the Board, a useful basis upon which to guide our future plans and strategy in line with their wishes, not least through keeping the lowest possible bills and helping to provide an affordable bill for all."

(Kevin Beeston)

It is also important to us that our plan promotes our customers' trust and confidence through high levels of transparency and customer engagement on issues such as our corporate and financial structures; so our customer engagement included surveys and focus groups on how we share the benefits of outperformance with our customers and communities, as well as topics such as renationalisation, company ownership and the fair balance of charges between current and future generations of customers. Sharing knowledge of our approach to funding investment and balancing charges over time helps engender trust that we will behave in our customers' interests.

> "Over the last year or so public sentiment on water services has been highly visible. Our focus on doing the right thing is something I am proud of, as is our continued focus over the last decade or so to build and maintain a company with strong viability and a balanced long-term financing plan. The depth of scenario planning and financial risk management I've seen through both the Board and the Treasury Committee has provided me with the confidence to argue for our long-term viability statement to be extended to cover the next seven years, and to support the overall financeability of our plan."

(Philip Remnant)

We worked constructively with the Water Forum as our plan developed and the Forum has spoken to us plainly if it felt we needed to better respond to our customers' voice.

> "I have been impressed by the strength of the Water Forum process throughout the creation of this plan, particularly over the last year. The quality of the forum's experts and members generally has been impressive and very effective in challenging the Board and management on delivering stretching targets and appropriately balancing these against company rewards, as such fully justifying the 'Customer Challenge Group' name. Seeing first-hand the depth of engagement in the development has provided a good basis for my confidence in signing our Board 'assurance statement' to Ofwat."

(Dominique Reiniche)

High quality and ambitious commitments, underpinned by robust assurance

Our approach to assurance is the result of our work over the past decade to build what we believe to be best-in-class governance and a robust assurance framework that is used for all of our performance reporting – be that our financial statutory reports or our many regulatory submissions – to ensure we are transparent, honest and open with our customers, and our regulators who hold us to account.

To support our own independent challenge, using our collective broad knowledge and expertise, we engaged an independent external specialist, PwC, to develop a bespoke risk-based approach to our PR19 plan assurance - building on our already established assurance framework[1] which is summarised in the following diagram:

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[1] https://www.stwater.co.uk/content/dam/stw/regulatory-library/STW-Assurance-Summary-2018-final-signed.pdf
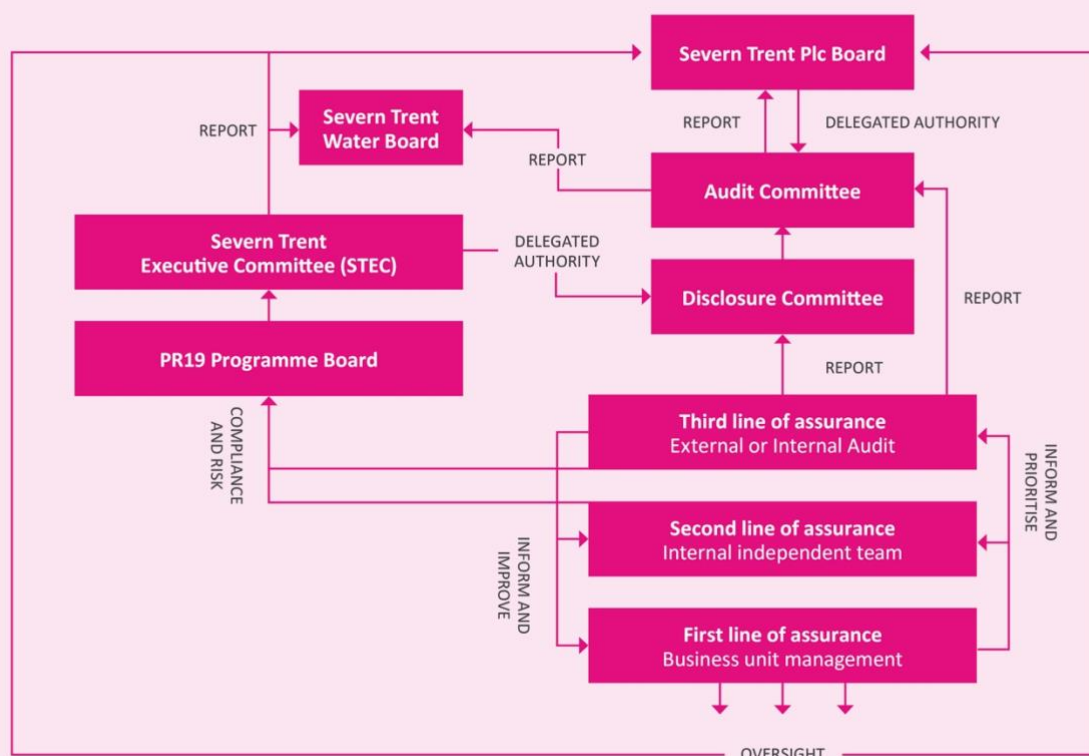
We approved our PR19 plan assurance framework - built from the Ofwat methodology building blocks – in July 2017 and asked our Audit Committee to oversee its rigorous implementation over the last year or so, including to review and approve amendments following the publication of Ofwat's final methodology in December 2017. We determined the areas of greatest risk by using a number of factors including materiality in terms of operational, financial and customer impact. The framework provides comprehensive coverage from both bottom-up and top-down analysis, and for areas that were assessed as medium or high risk, we appointed independent third line assurance providers to validate our proposals and associated data, including all the data tables. Among others, this included comprehensive challenge and support from Jacobs, the international management, technical and engineering group.

Our framework was managed by our internal Strategy and Regulation team. Regular updates were scrutinised by our Audit and Disclosure Committees, prior to us reviewing the findings at our Board, in line with our established best-practice governance. Further details of how our assurance approach was developed and will continue to develop and adapt to meet evolving future needs, can be found in the 'Securing trust, confidence and assurance' chapter of our main plan.

Following the completion of the total assurance process, prior to finalising our PR19 plan for submission, our Internal Audit team performed a further check, as programmed: an independent review to confirm to the Audit Committee and the Board that all aspects of the pre-agreed assurance programme had been fully and satisfactorily completed.

> "The early design of such a comprehensive assurance programme, and the rigour and discipline of its execution by both the internal teams and our panel of external assurers as the PR19 plan progressed, over the last year or so, has been hugely reassuring to the Board as to the plan's quality and robustness."
>
> **(John Coghlan)**

Having approved the assurance framework, reviewed the assurance findings and management's response, and considered the Water Forum challenge, we have collectively satisfied ourselves that the assurance undertaken demonstrates that our business plan:

- Has been informed by customer engagement and by feedback from the Water Forum about the quality of that customer engagement and how this has been incorporated into our plan.

- Is affordable for our customers including in the long term, and includes appropriate assistance for those struggling or at risk of struggling to pay.

- Can deliver our outcomes, performance commitments and outcome delivery incentives (ODIs), and we will continue to monitor delivery of them through our well established governance approach.

- Outcomes, performance commitments and ODIs reflect customer preferences and are stretching.

- Is supported by a proposed approach to reporting on our performance commitments, ODIs and projections of outcomes that is robust and transparent.

- Has been informed by a robust and systematic assessment of the resilience of the company's systems and services.

- Has been informed by customers' views about managing resilience.

- Has been informed by a comprehensive and objective assessment of interventions to manage resilience in customers' long-term interests.

- Is built on expenditure forecasts which have been produced using a robust and efficient process.

- Contains large investment proposals that are robust and deliverable, that a proper assessment of options has taken place, and that the options proposed are the best ones for our customers.

- Is financeable on both the notional and actual capital structure and that the plan protects customer interests in both the short and the long term.

Having taken account of and applied learnings from our track record of performance, we have reviewed the conclusions expressed in the plan, collectively identified the risks associated with its delivery, and are satisfied that the risk mitigation and management plans in place are appropriate to protect our customers and meet our statutory and licence obligations now and in the future – taking account of both the UK and where relevant, Welsh Government's strategic policy statements.

Signed:

Andrew Duff
Non-Executive Chairman
Chairman of the Nominations Committee

Olivia Garfield
Chief Executive

John Coghlan
Independent Non-Executive Director
Chairman of the Audit and Treasury Committees

Dame Angela Strank
Independent Non-Executive Director
Chairman of the Corporate Responsibility Committee

James Bowling
Chief Financial Officer

Kevin Beeston
Senior Independent Non-Executive Director

the Hon. Philip Remnant
Independent Non-Executive Director
Chairman of the Remuneration Committee

Dominique Reiniche
Independent Non-Executive Director

3 WHO WE ARE AND WHERE WE SERVE

We're privileged to serve over 8 million people and businesses in an area stretching across the heart of the UK, from the Bristol Channel to the Humber, and from the West to the East Midlands.

Serving a diverse region

We serve a rich mix of customers of different cultures, interests and experiences. Our region includes some of the most affluent areas of the country as well as some of the most deprived. We have more urban conurbations than any other water company, yet we also serve predominantly rural counties. So while our region is home to manufacturing, space technology and teaching excellence, it's also where you'll find the National Forest... in short, it's characterised by and draws its strength from its diversity. We provide a service for everyone, and always aim to do something more for our region than just water and wastewater services.
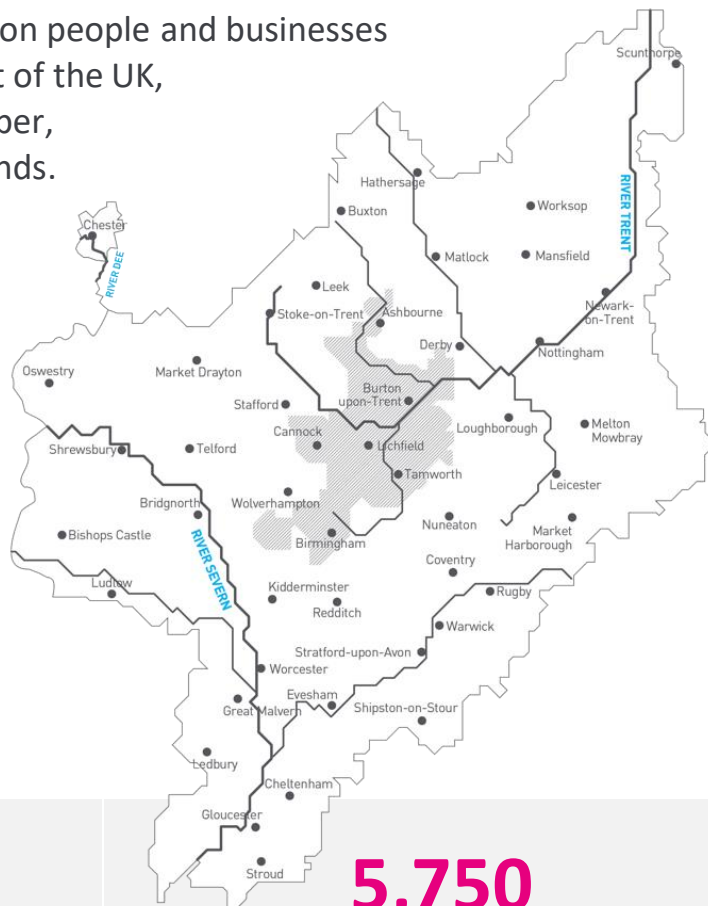
£21bn

invested since 1990

5,750

employees

Working in, and for, the environment

We take our name from the two main rivers, the Severn and the Trent, which run through our region - two of the three biggest rivers in the UK. To us, the health of rivers represents the health of the whole landscape and the communities that they exist alongside.

From abstracting raw water to returning safely treated wastewater, everything we do is intrinsically linked to rivers and other water bodies in our region. So we work hard to play our part in protecting them. That includes collaborating with stakeholders to help manage their catchments, and 40% of us volunteered time in order to clean up 40 kilometres of riverbank

19,500km²

area served

6,800km

rivers in our region

Welcoming new customers

This is our first business plan since our region's boundaries were changed. On 1 July 2018, we re-aligned our boundaries with the other regulated water company within the Severn Trent group, Hafren Dyfrdwy in Wales, and welcomed new water customers from Chester (while saying goodbye to water and wastewater customers in Powys). This business plan, including our customer engagement and the baseline we've used for our costs and performance commitments, reflects these changes.

Working closely with the Water Forum

waterforum

While our plan has been co-developed with customers, we've also collaborated closely with the Water Forum, our customer challenge group. The Water Forum's remit is to rigorously challenge the quality of our customer engagement, and our response to it - so the Forum has been instrumental in the development of this plan.

The Forum's chair, Gill Barr, has extensive executive level experience at leading retailers. Working with existing members from our regulators including the Environment Agency and Natural England, and the statutory customer representative, CCWater, she has created a dedicated group that balances a wide range of expertise (customer research, social responsibility, climate change and investment appraisal), with extensive knowledge of our customers, the environment and our region.

The Forum has had unprecedented access to our operations and our Board. It has constructively challenged us over two years - with four subgroups focusing on the most material areas of our plan for customers - and we're confident we have a better plan for our customers because of it.

You can read the Water Forum's independent views on our plan in a separate report at: stwater.co.uk/waterforum

A FTSE company providing an essential public service

Severn Trent Water Limited is part of the Severn Trent Plc group. Listed on the London Stock Exchange, we're committed to upholding the highest standards of governance. We believe in transparent reporting about our performance and decision making that considers the interests of all our stakeholders.

You can find out more about our structure and governance at: severntrent.com

A pathfinding social purpose company

We believe that if we're united by a clear social purpose we'll deliver better outcomes for all our stakeholders – our customers, our people, our investors, the society we live in and the environment that we depend on.

In 2015 we worked to better define our purpose and the reason we all come to work. We tried lots of different ideas and definitions, but when we talked to our people, and when we really got right to the heart of what we do, we agreed that our core purpose is to serve our customers and communities. This simple, unconstrained approach captures the spirit that our service, and *how* we deliver it, has far-reaching potential to benefit others.

Since 2015 we've made other changes to reinforce our purpose. We've embedded the values that we all expect of each other, introduced a new approach to employee volunteering, integrated corporate social responsibility into our annual report and accounts, and we've welcomed new non-executive directors– Dominique Reiniche and Kevin Beeston – who bring a wider wealth of experience to our Board.

This year (2018/19) we began a new initiative with the Purposeful Company Taskforce, becoming a pathfinder social purpose company. We're grateful for the advice, encouragement and support of the steering group of the Purposeful Company Taskforce. As a pathfinder social purpose company, we've set ourselves a high ambition, and the steering group's support is invaluable as we continue on our journey with this plan.

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4   A PLAN THAT PUTS PEOPLE AND SOCIETY FIRST

We believe this is our most ambitious and innovative plan ever - and not just because it promises better service and lower bills.

Firstly, it's a plan based on understanding our customers better than ever before. Our plan has been created with our customers - it includes new commitments that get right to the heart of their needs, and it seeks to deliver much more for customers and the communities they live in.

Secondly, we're ambitious in terms of how we'll deliver these commitments. We've built this plan in line with the cost parameters that Ofwat, our regulator, believes an efficient company should operate within and in response to the cost benchmarking we carried out within our sector, and outside it. This assurance, together with lower returns for our investors, means we can deliver lower bills. But, at the same time, adhering to the cost parameters also places much more onus on us to be innovative in every sense, including making the best possible use of markets.

Most of all, this is a plan with a purpose – to serve. And we've thought hard about what 'to serve' means in the context of a private company delivering a public service. We don't just want to be satisfactory in this respect - we want to be the benchmark for water companies specifically as well as for UK industry as a whole.

In this section we explain:

- where our plan started – with people;
- what we learned;
- how our purpose drives our plan;
- how we're keeping bills lower; and
- the improvements we'll deliver, by outcome.

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4.1   A PLAN THAT STARTS WITH PEOPLE

Through the most in-depth programme of customer engagement we've ever carried out, we first worked to understand what's really important to our customers in their day-to-day lives. We wanted to understand them as people first - and then we built our plan as a direct response to their needs. This 'outside-in' approach truly puts our customers at the heart of all we do.

We've deliberately focused on the quality of our engagement, not the quantity. We wanted to really understand our customers, to uncover new insight that would help us create new value for them, and to make a fundamental change in how we engage with our customers that sets a new standard for what we do in the future. This meant trying new approaches, building a cumulative picture of customer needs and embracing challenge from our Water Forum. We made this step change in the quality, breadth and depth of our engagement by:

Starting with what's important in our customers' lives

By starting with a person as an individual - not just as a customer – we've better understood the broad needs and motivations that drive choices and opinions.

Choosing insight tools from our customers' perspective

From pinpointing customers' everyday experiences to holding discussions around issues they'd never previously thought about, we've used different tools to make sure we get the very best insight from our customers. And we haven't shied away from asking the difficult questions – from their views on intergenerational fairness to those on renationalisation – in order to uncover meaningful insight.

Sampling that reflects the diversity of our region

We've embraced the rich mix of ages, experiences, faiths, cultures and interests that our region enjoys. And for the first time, we've proactively re-engaged the 'non-responders' - those who initially didn't take part in research – by finding an alternative method that worked better for them.

Learning something from our customers every day

Every contact from our customers is an opportunity to learn more about them. We've reviewed 24,000 complaints, analysed 1.9m contacts and asked the 5,000+ people who have a totally unique perspective – our employees.

Creating a plan based on customer value

The incentives in our plan reflect the value that customers place on service improvements. Using different approaches, which we designed to be much simpler to take part in, we've gained a rich picture of our customers' priorities and what they value.

Keeping the dialogue going

Our engagement model is designed to expand naturally over time. For example, our online community panel of 15,000 customers is enabling us to maintain and keep building a culture of 'asking our customers first' before we make changes to their day-to-day service.

15,000
CONSUMERS ON OUR ONLINE PANEL

32,000
CONSUMERS INCLUDED IN RESEARCH

24,000
COMPLAINTS REVIEWED

1.9m
CONTACTS ANALYSED

7m
SOCIAL MEDIA COMMENTS ANALYSED

5,000+
EMPLOYEES ASKED FOR THEIR VIEWS

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What we learned

Our customers expect many different things from us - and not all of their needs are equal. These range from functional needs, such as the services they rely on every day, to how we make them feel as our customers - as well as the wider fulfilment they gain from knowing they're buying a service from a responsible company that works hard to do the right thing. So we created our insight programme to follow the concept of a 'hierarchy of needs'.

These are the four things we heard very clearly from our customers, supported by their own words.

4. Be a company that customers can trust.

3. Do more for communities, and play a bigger part in society.

2. Treat customers as individuals. Listen, understand and respond – especially if we get something wrong.

1. Prevent the problems – from the little irritations to the bigger inconveniences that disrupt customers' days.

"I think it's great that they want to give some profits back, it shows they're thinking about people in the community."

"What matters to me... what the future holds for my children, what world we are leaving them. What I do impacts them, and what businesses do impacts them."

"Advice for Severn Trent? Be that person on the other side, not a machine and not invisible."

"What do I want from my water company? I want it to work 24/7 – and that it's clean and drinkable."

And all of this should be just as true for future generations as customers today –
it should not be achieved at the expense of either - and at a price that is
affordable for all.

4.2   A PLAN WITH PURPOSE

We believe that companies with a clear societal purpose deliver better social, environmental and economic outcomes over the long-term. Our purpose is 'to serve'. We've built our plan to be consistent with that purpose and with our values - and to highlight the potential as well as the responsibilities that a private company has in delivering a public service.

Our purpose drives our plan in seven ways:

1.   Better service

We're pushing our industry's benchmark in areas where we perform well with an 8% reduction in all forms of sewer flooding and a 17% reduction in pollutions. And in areas where we haven't performed as well, we're targeting improvements to make our service one of the best in the industry, including a 48% improvement in managing drinking water quality risks and 5% fewer complaints about the appearance of drinking water.

2.   Created together and delivered in partnership

From inspiring a generation of primary school students to change their water use, to working with flood risk authorities on community resilience, our plan has been co-created with our customers and uses collaboration to tackle shared issues.

3.   For today, tomorrow and future generations

We're balancing the needs of customers today with those of generations to come. We're investing £135m in creating more resilient infrastructure and £540m towards safeguarding our natural environment. We've adopted a robust and sustainable approach to financing which doesn't overburden us with debt, but does allow us to fairly spread the cost of investment. And where there's uncertainty about the need for future investment, we'll carry the risk ourselves. This means that customers' bills will only be impacted once an investment is proven to be needed.

4.   Creating not depleting

We're not only aiming to make the best use of all our resources – such as our people, experience, networks, assets, finance and natural resources – but also to add value to them wherever and whenever we can.

For example, we're generating more natural capital by increasing biodiversity and creating new green spaces as we manage flood risks. And we're investing in our people and region with a £10m technical academy.

5.   Embracing markets and driving innovation

Through our activities in direct procurement, bioresources and water trading, we're embracing markets where they'll deliver benefits for customers – and committing to bold incentives and transparent reporting where they won't yet do so. And we're investing in innovation in its widest sense – from the incremental changes that make a difference to our customers every day to the game changers that fundamentally transform what we do.

6.   Doing the right thing

Having the right behaviours and making the right decisions for the right reasons can make all the difference. There's a common thread of continuing culture change throughout our plan and we've introduced a new outcome – a company you can trust – which captures the degree to which we consider the interests of all our stakeholders in our decisions.

7.   Sharing success

We believe that when everybody shares in success, we'll all be united in making it happen. Our plan continues our commitment to sharing the benefits of outperformance with our customers, our people who helped to deliver it, and the people who invested in us. In this five-year planning period we're reinvesting £220m of outperformance in our services.

And we want to do something more, so we've created a community dividend. Comprising employee volunteering time, donations to the Severn Trent Trust Fund and 1% of our profits (which could amount to £2.5m a year), this package will help our most vulnerable customers, enhance the environment and make a real difference to communities. We'll be establishing an advisory board – that will include representatives from customers – to guide where best to spend the money and also obtain match funding from other bodies.

4.3   A PLAN THAT OFFERS BETTER VALUE

During 2020-25 we're going to deliver our biggest bill reduction for two decades. How have we been able to do this? By working hard with our customers to get the balance right... striving to become more efficient while lowering investor returns... and increasing the proportion of our revenue that relies on performance, so that while excellent performance is rewarded, poor performance is also penalised.

Lower bills through to 2025

By 2025 our bills will be 5% lower than 2020 – based on the new measure of inflation we're using (CPIH) and taking into account the potential for rewards and penalties (which in turn depends on the performance we deliver for our customers). That's more than double the reduction on a like-for-like basis with our last plan.

Average household bills in today's prices (2017/18)

| 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
| £345 | £330 | £334 | £335 | £333 | £327 |

A lower return for our investors and greater efficiency

We'll be keeping bills lower, while spending around £6.6bn in maintaining and improving service. We can do this because:

- our investors will be earning a lower return – reducing from 3.7% to 2.4% - which will create an immediate drop in bills in the first year; and

- we're becoming more efficient – by around 13% overall (before real price effects) – and we'll time these savings carefully with our investment in improving service to help smooth bills in the following four years.

We've also thought carefully about how we share these benefits between the bills of customers today, and those of customers in the future. We asked our customers what they thought about our longer term approach, and then tested our proposals – 88% of those we asked supported our approach. In addition to this we asked what customers thought of our plan for the next five years overall and 85% of customers found our plan acceptable.

| £6.6bn | 13% | 85% |
| expenditure on maintaining and improving service | efficiency on wholesale costs | customer acceptability rating |

4.4 DELIVERING WHAT CUSTOMERS AND SOCIETY WANT

Our plan focuses on nine outcomes that we've designed to meet the needs of our customers and wider society. While these have a long term perspective and look 25 years ahead, the next five years will see real progress - driven by the performance commitments that are designed to hold us to account to our customers.

We've summarised our nine outcomes across the following pages. As a set, they broadly – although not exactly – follow the concept of the hierarchy of needs. So at the base of the hierarchy sit outcomes that show how we're working to make a difference to the most fundamental aspects of what we do: providing a safe, wholesome supply of water. But we've started our plan with bills – a totemic issue for all customers.

We've used quotes from customers, our people and other stakeholders in our communities to bring each of our outcomes to life - demonstrating how our plan has been created from their perspectives and underlining the collaborative way in which we'll deliver the plan.

THE LOWEST POSSIBLE BILLS
Water should be affordable for all.
p24

GOOD TO DRINK
Our water is consistently safe, clean and good to drink.
p26

WATER ALWAYS THERE
Our customers can rely on water to start their day, and throughout their day, every day. And we all work together to make sure it stays that way.
p28

WASTEWATER SAFELY TAKEN AWAY
We safely take wastewater away, ready to be made clean again.
p30

A SERVICE FOR EVERYONE
Everyone can access our service and enjoy its benefits, no matter what their circumstances.
p32
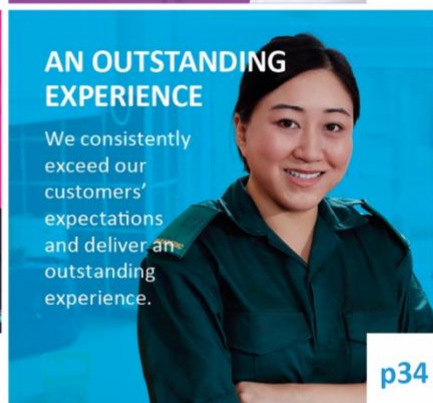
AN OUTSTANDING EXPERIENCE
We consistently exceed our customers' expectations and deliver an outstanding experience.
p34

A THRIVING ENVIRONMENT
We safeguard the natural resources we use, and we work in partnership to improve the rivers and habitats that provide them.
p36

A POSITIVE DIFFERENCE
While we focus on providing a consistent, reliable and affordable service to our customers, our ability to positively impact our communities extends much further.
p38

A COMPANY YOU CAN TRUST
Because delivering a better service and lower bills isn't enough.
p40

" We're starting the next five years as we mean to finish – with the lowest bills "

To keep bills as low as possible, we're relentless in our pursuit of efficiency and treat every day as an opportunity to innovate - just like the winners of our 2016 employee innovation competition. Their idea for using drones to inspect our most inaccessible assets has helped to keep our people safer, and saved our customers £0.75m in just one year.

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THE LOWEST POSSIBLE BILLS

We're always searching for efficiencies and opportunities to innovate to keep bills as low as possible.

We want our bills to be affordable for all. At a time when the economic outlook for many of our customers is uncertain, we need to do everything we can to keep our bills as low as possible.

We'll do this without compromising on standards of service or the investment in infrastructure that will continue to meet customer needs tomorrow and beyond.

By 2025:

Ending the five year period as we began it – with the **lowest combined household bills in England.**

Doing more to ensure **all customers pay their fair share** by tackling bad debt and pursuing occupiers that have fallen off our radar, but are receiving services.

Helping our customers **understand the value of water** by making them aware of how their bill is spent, the contribution they're making to improve our region's environment and communities, and the support they're helping to fund for those struggling to pay.

Introducing **a new capital procurement model** that innovatively shares risks with our supply chain, allows more flexibility for us to innovate and adapt - and ultimately delivers better value for money.

Making the most of **water trading and the bioresources market,** maintaining our focus on and financial commitment to **innovation, and embracing incentives** that return money to customers if we don't deliver.

Fostering a **culture** that understands that every pound spent is our customers' money, and every day is an opportunity for us to innovate and deliver better outcomes.

Achieving efficiencies responsibly, maintaining our commitment to paying suppliers on time, our zero tolerance to modern slavery, and a supply chain that signs up to the same values as all our employees.

5%

REDUCTION IN BILLS
(OR MORE THAN DOUBLE OUR 2015-2020 PLAN
ON A LIKE-FOR-LIKE BASIS)

£327

AVERAGE BILL IN 2025 (2017/18 PRICES)

4,531

UNDER THE RADAR 'VOID' OR 'GAP'
PROPERTIES THAT DON'T CURRENTLY PAY
WATER BILLS PURSUED FOR PAYMENT

"From field to tap, we're playing our part to protect your product"

We're transforming our water production line. The 2,000 farmers we've recruited so far to our catchment management programme are helping us make sure that every link in the chain is focused on consistently high standards. By 2025, we're aiming for there to be 4,000 farmers helping to protect our raw water supplies by changing their agricultural practices.

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GOOD TO DRINK

Our water is consistently safe, clean and good to drink.

Providing a safe supply of water for our customers to enjoy every day is at the very heart of what we do. It's our customers' greatest need from us, and our biggest responsibility.

We've been working to transform our service over the last five years - and while we've made some great improvements, there's more to do in the coming five years. We're investing to create a resilient, adaptive service that keeps public health at its heart, and delivers extra benefits for the environment too.

And where our past service hasn't been as good as that provided by other water companies, using comparable measures, we're committing to a step change in performance - so that we're one of the best in the next five years.

By 2025:

Improving how we manage risks to customers' supplies, achieving **higher compliance** with the industry's new risk-focused measure.

Doing more to **meet our customers' expectations of the taste and appearance of their water.** While these issues can be aesthetic rather than safety related, they still cause dissatisfaction - so it's important that we do more to stop them.

Expanding our **industry-leading approach to catchment management** by working with a further 2,000 farmers to change agricultural practices and **protect our raw water sources** from pesticides and other chemicals. This solution is better for our natural environment and saves customers money by avoiding the need to invest in extra treatment at our works today.

Providing more **support to address lead pipes** – starting with helping schools and nurseries in our region locate any lead pipes on their premises.

Continuing to invest in **skills development,** building a regional workforce that's not only passionate about our product but also **recognised for technical excellence.**

48%
IMPROVEMENT IN THE INDUSTRY'S NEW RISK INDEX FOR DRINKING WATER QUALITY

5%
REDUCTION IN DRINKING WATER QUALITY COMPLAINTS

16 schemes
WORKING WITH FARMERS TO PROTECT WATER SOURCES

500 schools
HELPED TO TACKLE LEAD PIPES ON THEIR PREMISES

" I can never have a shower while the washing machine's on "

When we took a different approach to listening to our customers, we learned something new about low water pressure. Our innovative approach to research has given us a valuable new perspective. Low pressure isn't the only example - across our service we're going to do more to fix the small irritations that make a big difference to our customers' days.

WATER ALWAYS THERE

Our customers can rely on water to start their day, and throughout their day, every day. And we work together to make sure it stays that way for future generations.

Water is a limited resource - so we all need to manage it well in the face of climate change impacts, changes in the way we live, an increasing population, and our responsibility to safeguard the environment.

Over the next 25 years, if we're to protect our water environment from damage, we'll need to address our biggest ever gap between the supply and demand for water. Using an adaptive approach that allows for future uncertainty, we're going to make ambitious leakage reductions, champion water efficiency, exploit the opportunities provided by water trading, and make the best possible use of our environmentally sustainable sources of supply.

To keep our water flowing to our customers' homes every day, we're working hard to better understand risks by looking at all our assets as a single ecosystem - this will enable us to target investment so that our most versatile assets can help others if they have a problem.

By 2025:

Bringing forward our 2040 ambition to **reduce leakage by 15%** to 2025 – securing an unprecedented five-year reduction for us.

Using a **systematic approach to improve resilience** to long term outages by investing in our main water transfer system – the strategic grid.

Fixing the small changes in **pressure** that can have a big impact on our customers' days by resolving more complaints first time.

Protecting our customers from the uncertain impacts of climate change by **creating a 'real options mechanism'** that allows us to keep bills low and make sure we only invest when the time is right.

Inspiring our customers to **reduce their water use by encouraging behavioural change** and trebling the number of meters we install compared to today.

Exploring water trading options and using the new option of **direct procurement for customers** to incentivise the development of innovative solutions towards our supply and demand challenge.

Playing **our part in the bigger picture** by working with United Utilities and Thames Water towards an **interconnector** to take water from the North West to the water scarce South East.

15%
REDUCTION IN LEAKAGE

96% 24h
CUSTOMERS' SUPPLIES RESTORED WITHIN IN 24 HOURS

1st time **95%**
PRESSURE COMPLAINTS RESOLVED FIRST TIME

> **"The people of Newark didn't care whose responsibility it was, they just wanted it sorted"**

With multiple organisations responsible for different types of flooding, sometimes one organisation fixing their issue isn't enough. Just like our work with the flood forum in Newark, we'll take a leading role with other flood authorities to deliver a coordinated response that prioritises people, not roles and responsibilities.

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WASTEWATER SAFELY TAKEN AWAY

We safely take wastewater away, ready to be made clean again.

Our sewers provide a vital service - but if there's a problem it can lead to inconvenience to our customers and, at worst, could mean that their home is flooded with sewage or their local environment is polluted.

We never want our sewers to create an issue for our customers - so we focus on how we can all use the wastewater system for the good of local communities and the environment.

By 2025:

Keeping up our momentum by pushing forward the industry benchmark on **external sewer flooding.**

Using information on our **communities' vulnerability to flood risk** (their personal, social and environmental circumstances) to help **prioritise improvements**.

Looking after and **enhancing the community spaces** that our customers enjoy by tackling sewer flooding in public areas, and by looking to create new green spaces when we put in new drainage schemes to reduce flood risk.

Creating **a more resilient region** by taking a leadership role in **collaborative schemes** with other flood risk organisations on flooding issues that can't be solved in isolation.

Learning from our successes with commercial customers to **build even stronger relationships** with our household customers - for example, by continuing to **encourage behavioural change** to stop sewer misuse, prevent blockages and reduce pollution incidents.

Deploying **innovative new solutions** like bio-augmentation to prevent the build-up of fatbergs, delivering higher standards and ideas to share with our wider industry.

8%
REDUCTION IN ALL TYPES OF SEWER FLOODING

£0.6m
NEW NATURAL CAPITAL CREATED WITH GREEN COMMUNITIES SCHEMES

360
PROPERTIES OR AREAS HELPED THROUGH COLLABORATIVE FLOOD RESILIENCE

17%
FEWER POLLUTION INCIDENTS

"

A company that helps you before you need to ask

"

With our new 'Matching Plus' scheme, we'll give our struggling customers a fresh start by paying off their arrears with them, step-by-step. And because it can be hard to see money troubles coming, we'll be smarter about how we use data, looking for the warning signs and offering our customers support before their debt builds up.

A SERVICE FOR EVERYONE

Everyone can access our service and enjoy its benefits,
no matter what their circumstances.

Like our customers, we think that water should be affordable for all. And while we work to keep our bills as low as possible for all our customers, we know that for some the issue of affordability is more acute. We therefore want to do what we can – with the support of all our customers – to take away the worry for those in genuinely difficult financial circumstances.

We also believe water should be accessible for all. For some of our customers, their circumstances can make them more vulnerable if there's a problem. Others may even struggle to access our service in the first place. So we aspire to design a service that works for every single person in our region.

By 2025:

Providing more support, with the help of our wider customer base, for the **11% of customers who tell us they currently find their water bills unaffordable.**

Improving our existing support options based on customer feedback, maintaining our commitment to providing **meaningful support with a social tariff** that makes a genuine difference, and offering **new options** - including match funding and payment breaks - that better reflect the diverse circumstances in which our customers struggle with their bills.

Understanding that few of us may think of ourselves as vulnerable, and that our vulnerability may be transient - we'll do more using expert third parties, community groups and responsible data sharing to **identify those customers who may need a more tailored service.**

Creating **communication and support options that better respond to customers' specific needs** - ensuring they're included and feel empowered but not unnecessarily differentiated.

Tailoring our service to ensure we can better respond to our customers' individual circumstances and what could trigger an issue for them – including during a water supply incident.

Reinforcing a **culture** that treats every customer as an individual and creating **vulnerability experts** in our field teams better equipped to meet our customers' needs.

X2.8 INCREASE IN NUMBER OF CUSTOMERS BENEFITTING FROM OUR SOCIAL TARIFF

47% INCREASE IN CUSTOMERS HELPED BY ALL OUR SUPPORT OPTIONS

100% OF CUSTOMERS WHO REGISTER WITH US HAVE THEIR NEEDS MET IN AN INCIDENT

" We work the nightshift too "

Sometimes our customers just want to talk to a real human being. We were the first water company to offer a 24/7 service for non-emergencies, so our customers can talk to us in the middle of the night if that works best for them. But if they find it easier to drop us a line, we offer eight other ways to contact us. And no matter what their preference, we always want our customers to receive a service that's human, receptive and seamless.

AN OUTSTANDING EXPERIENCE

We consistently exceed our customers' expectations and deliver an outstanding experience.

For our household customers

Our business is all about the customer experience. Everything we do, every day, ultimately contributes to our customers' experience of us. We want that experience to exceed expectations. So by focusing on the quality of service we offer, how we make our customers feel, and keeping our costs to serve sharp, we'll strive to deliver an experience that's human, receptive and seamless.

By 2025:

Creating an **insight driven service** using predictive technologies, interaction analytics and behavioural analytics to understand our customers and pre-empt their needs better than ever before.

Continuing to drive a **'customer first' culture** throughout our organisation – understanding that how we behave can make a real difference for our customers.

Engaging our customers with a **personalised, multi-channel service** and **better information** about the choices available to them.

TOP 25%
ON OUR INDUSTRY'S NEW
CUSTOMER EXPERIENCE MEASURE

For developers and customers wanting to connect to our network

Every year, we connect around 20,000 new properties and install and adopt around 100km of new water and wastewater pipes. Whether we're working with an individual with a self-build, a national homebuilder constructing a new housing estate or a farmer wanting a connection for a new cattle trough, we want to make sure that we support their build schedule and that the process is as simple and as cost effective as possible.

By 2025:

Developing our current approach of **tailored service offerings,** based on the diverse customer base we serve.

Enhancing contact availability, channel choice and new technologies that help to ensure that our work passes the quality test first time, every time.

Continuing to develop **innovative new tariffs** like our current infrastructure discount scheme which encourages the building of sustainable, water efficient homes.

TOP 25%
ON OUR INDUSTRY'S NEW
DEVELOPER EXPERIENCE MEASURE

> "
>
> There's no such thing as 'surplus to requirements'. We're giving old operational land a new lease of life
>
> "

Because we've invested to make our treatment processes more efficient, we're freeing up land across our estates that we can put to new uses in our communities. At our Wolston works in Warwickshire, we're working with the neighbouring Wildlife Trust on how we can create a wildlife haven across land that we no longer use.

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A THRIVING ENVIRONMENT

We safeguard the natural resources we use, and we work to improve the rivers and habitats that provide them.

Our customers value the natural environment and want to ensure it's protected - for their wellbeing and that of future generations. We're committed to improving rivers and habitats so that they can support a greater diversity of wildlife and plants, and to creating a better environment for the recreational activities that our customers enjoy.

We'll do more to make the true value of the environment become part of our everyday decision making. And we're aspiring to transform our treatment works so that they don't just make wastewater safe again, but also to strip out every bit of value from it – including biogas for renewable energy, phosphate for resale and sludge fertilizer for agriculture - in the most energy efficient way possible.

By 2025:

Building on our Environment Agency 4* status for environmental protection by investing to **improve the ecology of up to 2,100km of rivers** in our region (including a mechanism to protect customers from uncertainty) and provide solutions that also **support the wellbeing of communities downstream** by helping protect habitats and improve river flow through public amenity areas and visitor attractions.

Enriching the biodiversity of our region by changing how we manage our estates, working in partnership with expert organisations - like Wildlife Trusts and Moors for the Future, and using spare operational land and our customers' passion for the environment to engage communities with projects to create new habitats.

Creating a circular economy by investing in anaerobic sewage treatment - including a demonstration works, part funded by the Horizon 2020 innovation fund – to test if we can transform traditional resource-intensive sewage treatment works into low-energy biorefineries.

Embracing the opportunities of new markets – by recycling sludge from wastewater more efficiently than our neighbouring companies (or working with others if they're more efficient than we are) in order to make sure that biosolids trading is both good for our customers and our sector's customers.

2,100km
RIVERS IMPROVED

1,090ha
HABITATS IMPROVED

100%
COMPLIANCE WITH DISCHARGE STANDARDS INTO RIVERS

100%
COMPLIANCE WITH BIOSOLIDS RECYCLING STANDARDS

> # We're putting a water expert in every home

Our most innovative schools programme yet will bring a virtual world of water straight into the playgrounds of primary schools across our region. We're inspiring a new generation of customers to completely change how they think of, relate to and use water (and pester their families to change too).

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A POSITIVE DIFFERENCE

While we focus on providing a consistent, reliable and affordable service to our customers, we also know that our ability to positively impact our communities extends much further.

Being a large company doesn't mean we can't have a local focus. In fact, it's precisely because we're a large company that we have a whole host of resources we can use to make a positive difference. And because of the unique nature of what we do – a service that literally flows right through communities – we have lots of opportunities to do so.

We'll use the resources we have in the broadest sense of the word – our people, our knowledge, our land and networks – to make the sort of changes right across our value chain that will add up to a bigger difference for our communities.

By 2025:

Aspiring to reach every primary school in our region with an innovative mobile **education programme** that visits playgrounds and immerses students in a world that reinforces the value of water, responsible sewer use and the importance of hydration for health.

Changing how we use our resources to deliver wider societal and environmental benefits – reflected in a suite of eight performance commitments across our outcomes.

Investing in our people – £10m investment in **a new academy, a centre of excellence** that will help us create **a more resilient regional workforce,** and a training programme that we'll share with smaller water companies that don't have the resources to create their own.

Adopting initiatives to help people progress their careers. With over **30% of the UK's social mobility 'coldspots'** in our region, we'll be using open employee recruitment practices, structured work experience for people from disadvantaged backgrounds, and partnerships with schools and colleges to provide coaching and careers advice that make a difference.

Connecting people in our region to water, helping them **enjoy biodiversity and appreciate the health benefits of the outdoors** by improving the offer at our main visitor sites.

155,250
INDIVIDUALS COMMIT TO CHANGE THEIR WATER USE BEHAVIOUR

TOP 20
COMPANY ON THE UK'S SOCIAL MOBILITY INDEX

4 million
VISITORS TO OUR RESERVOIRS EACH YEAR

" Because it's something more for our communities, because it motivates our people, because we think it's the right thing to do "

We already share our successes with customers, but we want to do something more for the communities where we all live. So we're committing to give 1% of our profits to community projects – part of a community dividend that we think can make a big difference.

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A COMPANY YOU CAN TRUST

Because delivering a better service and lower bills isn't enough.

While our customers expect a high quality service from us, this alone isn't enough to earn their trust - and nor should it be. We must prove to our customers that we're a company that does the right things, for the right reasons and that their interests are always at the forefront of what we do.

Every day:

A Board who is accountable for the **purpose, culture and values** of our company, and makes its decisions by them.

A team of people who come to work totally **motivated to serve our customers and communities,** not to make profits, and to live by our values to do the right thing.

Corporate reporting that goes **further than the new UK Corporate Governance Code,** with **greater focus on our customer, community and social impact,** as well as our financial performance.

Continued **transparent reporting on executive pay,** with the publication of an annual remuneration report and a reward scheme that focuses more on customer service, health and safety and personal objectives about performance, than profitability.

A **dividend policy** that understands that shareholder returns should be transparent, promote us exceeding our commitments to customers, support sustainable financing (gearing) and are fair and balanced – so that **everyone shares in success.**

Greater communication with our customers so that they know all the things we do and we all share in the wonder of water on tap.

A new **community dividend** comprising employee volunteering, donations to the Severn Trent Trust Fund and from 2020/21, **1% of profits going towards water focused community projects** and overseen by an advisory board.

1%
PROFIT TOWARDS A COMMUNITY DIVIDEND FROM 2020/21

2 days
VOLUNTEERING PER EMPLOYEE PER YEAR

3:1
RATIO OF INDEPENDENT TO EXECUTIVE BOARD MEMBERS

5   SIGNPOSTING

As many people and organisations are interested in our plan, we've designed it to work for different audiences. This section signposts where we've included detailed information for our regulators and stakeholders.

5.1   ALIGNMENT TO OFWAT'S INITIAL ASSESSMENT OF BUSINESS PLANS

Ofwat's four themes for the price review

Ofwat created four themes for the 2019 price review. Below, we summarise how these themes are embedded throughout our plan.

- To offer **great customer service** we need to truly understand what our customers want. We've carried out our most in-depth period of customer research ever, and in future we'll do even more to show them that they are at the forefront of everything we do. We've created new commitments focusing on communities and collaborative working, and we're reinforcing our core company purpose 'to serve' with a community dividend that includes 1% from our profits.

- We've looked at **affordability** from our customers' perspective, with 11% telling us they find their bills unaffordable. So as well as a 5% bill reduction, our biggest in two decades, we're going to do more for our struggling customers with a social tariff that offers meaningful discounts and new options, to help 47% more customers in total.

  We understand that few of us may think of ourselves as vulnerable, and that vulnerability is often transient. So we'll significantly expand our priority services register and work with expert third parties and community groups to better serve those who may need a more tailored service.

- We know our customers expect us to be **resilient** and we're responding: we're on track to deliver the industry's biggest resilience scheme in recent history; we've always geared our company close to Ofwat's notional levels; we've strong governance and Board leadership; and we're building people

resilience in our region too with a new academy (which we'll open to smaller water companies).

- Over the last three years we've created a culture (and provided the financial backing and expert support) so that anyone in our company can **innovate**. Our track record demonstrates our potential - early renewable energy adoption; leading phosphate removal; and a behaviours focused approach to catchment management. And we've consistently led the sector in promoting markets. We're already trialling bioresources trading, exploring water trading options, and working towards a north-west to south-east interconnector.

Ofwat's initial assessment of business plans

We've structured our plan to make sure that it evidences all of the tests that Ofwat, our economic regulator, will be using to assess its quality. Ofwat's initial assessment of business plan (IAP) tests are designed to protect the interests of customers by appraising whether the 17 water companies in England and Wales have produced business plans that are high-quality, ambitious and innovative - as well as being grounded in excellent customer engagement. The following matrix illustrates where in our plan we provide evidence against these tests:

✓ Primary source of evidence.

✓ Secondary source of evidence.

Where our plan evidences Ofwat's tests

OFWAT IAP TEST:	Engaging customers	Addressing affordability and vulnerability	Securing long term resilience	Delivering outcomes for customers	Accounting for past delivery	Targeted controls, markets and innovation	Securing cost efficiency	Aligning risk and return	Securing trust, confidence and assurance
PART 1 — AN OVERVIEW OF OUR PLAN									
2. Confidence at Board level and beyond	**✔**	**✔**	**✔**	**✔**	**✔**	**✔**	**✔**	**✔**	**✔**
PART 2 — DESIGNING BETTER OUTCOMES									
6. Engaging customers	**✔**	✔	✔	✔				✔	
7. Addressing affordability and vulnerability	✔	**✔**							
8. Securing long term resilience			**✔**						✔
9. Delivering outcomes for customers	✔		✔	**✔**				✔	
PART 3 — DELIVERING BETTER OUTCOMES									
10. The lowest possible bills	✔	**✔**		✔	✔	✔			
11. Good to drink	✔		✔	✔	✔	✔			
12. Water always there	✔	✔	✔	✔	✔	✔			
13. Wastewater safely taken away	✔		✔	✔	✔	✔			
14. A service for everyone	✔	**✔**		✔	✔	✔			
15. An outstanding experience	✔		✔	✔	✔	✔			
16. A thriving environment	✔		✔	✔	✔	✔			
17. A positive difference	✔	✔		✔					
18. A company you can trust	✔		✔	✔				✔	**✔**
PART 4 — FINANCING, EFFICIENCY AND INNOVATION									
19. Accounting for past performance					**✔**				✔
20. Securing cost efficiency		✔					**✔**		
21. Markets and innovation			✔			**✔**	✔		
22. Aligning risk and return		✔	✔					**✔**	
23. Securing trust, confidence and assurance			✔						**✔**
APPENDICES									
A1. Engaging customers	**✔**	✔	✔						
A2. Addressing affordability and vulnerability	✔	**✔**		✔					
A3. Designing performance commitments (plus pro formas)	✔	✔		**✔**					
A4. Designing outcome delivery incentives	✔			**✔**				✔	
A5. Accounting for past performance					**✔**				✔
A6. Embracing markets (plus updated regulatory capital values)			✔			**✔**	✔		
A7. Innovation to deliver better outcomes						**✔**	✔		
A8. Securing cost efficiency		✔					**✔**		
A9. Drainage and wastewater management plan			**✔**						
A10. Long term drinking water plan			**✔**						
A11. Aligning risk and return			✔					**✔**	
A12. Securing trust, confidence and assurance			✔						**✔**
A13. Beyond compliance: WISER response			✔						

5.2 MEETING OUR REGULATORS' AND STAKEHOLDERS' EXPECTATIONS

We've also designed our plan to ensure we can meet our statutory obligations, support the government's strategy for our industry and respond to our wider stakeholders' expectations. While not an exhaustive list, the table below sets out the main areas in our plan where we discuss the requirements, guidance and interests of stakeholders (other than Ofwat and our customers).

Responding to our stakeholders

Stakeholder	Role or interest	Where in our plan
The UK Government and the Department for the Environment, Food and Rural Affairs (Defra)	Defra sets the overall policy context for our industry, within which we and our regulators work. Our plan responds to the government's strategic priorities and objectives for Ofwat, by focusing on resilience, protecting customers and markets. Our plan also works towards the government's 25-year environment plan by improving rivers and habitats, using catchment based approaches and taking opportunities to create new green spaces where we can. In August 2018, Defra, the Environment Agency, the Drinking Water Inspectorate and Ofwat wrote to water companies in a joint letter about building resilience in water resources management. We respond to this letter in Chapter 12.	• Chapter 7 and Appendix A2: Addressing affordability and vulnerability • Chapter 8: Securing long term resilience • Chapter 21: Markets and innovation • Chapter 11: Good to drink • Chapter 12: Water always there • Chapter 13: Wastewater safely taken away • Chapter 14: A service for everyone • Chapter 16: A thriving environment
Water Forum	The Water Forum is our Customer Challenge Group, with a remit to challenge both the quality of our customer engagement and the extent to which our plan responds to the outcome of it. In addition to subject matter experts and regional stakeholders, it includes members from CCWater, the Environment Agency and Natural England (below). We've responded to the Water Forum's constructive challenge as we've built our plan.	• Chapter 6 and Appendix A1: Engaging customers • Chapter 7 and Appendix A2: Addressing affordability and vulnerability • Chapter 9: Delivering outcomes for customers • Appendix A3: Designing performance commitments • Appendix A4: Designing outcome delivery incentives • Appendix A8: Securing cost efficiency
Consumer Council for Water (CCWater)	CCWater speaks on behalf of water consumers in England and Wales. It advises consumers and takes up complaints on their behalf. As well as representing customers throughout the development of our plan (as both a member of the Water Forum and as an organisation itself), we've specifically considered CCWater's guidance on key areas of customer research for our plan, including willingness to pay.	• Chapter 6 and Appendix A1: Engaging customers • Chapter 9: Delivering outcomes for customers • Appendix A4: Designing outcome delivery incentives
Drinking Water Inspectorate (DWI)	The DWI monitors and safeguards drinking water quality. Its work includes assuring water quality, developing new regulations to further improve water quality, and challenging water companies to improve. We've worked closely with the DWI to understand how our plan should respond to its guidance note on long-term planning for drinking water quality.	• Chapter 8: Securing long term resilience • Chapter 11: Good to drink • Chapter 12: Water always there • Appendix A10: Long term drinking water plan
Environment Agency (EA)	Created to safeguard the environment, the EA regulates the water we abstract from reservoirs, rivers and aquifers and the treatment standards which we must reach before we return cleaned wastewater to the environment. Our plan is designed	• Chapter 8: Securing long term resilience • Chapter 11: Good to drink • Chapter 12: Water always there

Stakeholder	Role or interest	Where in our plan
	to meet our obligations as set out in the Water Industry National Environment Programme. In common with Severn Trent and other water and wastewater companies, the EA is also a flooding Risk Management Authority. Our plan is designed to further strengthen our partnership working with the EA and other authorities.	• Chapter 13: Wastewater safely taken away • Chapter 16: A thriving environment • Chapter 17: A positive difference • Appendix A9: Drainage and wastewater management plan • Appendix 13: Beyond compliance: WISER response
Natural England	Natural England advises the Government on the natural environment in England and helps to protect nature and the landscape, especially for plant and animal life in fresh water and the sea. Our plans to improve biodiversity have been created with constructive advice and challenge by Natural England.	• Chapter 11: Good to drink • Chapter 12: Water always there • Chapter 16: A thriving environment • Chapter 17: A positive difference • Appendix 13: Beyond compliance: WISER response
National Infrastructure Commission (NIC)	The NIC provides the government with expert advice on major long-term infrastructure challenges. Its National Infrastructure Assessment considers the UK's infrastructure needs to 2050, including the role of the water sector. Our plan works towards the NIC's recommendations including stretching leakage reductions and taking a coordinated approach to flood risk management.	• Chapter 8: Securing long term resilience • Chapter 9: Delivering outcomes for customers • Chapter 12: Water always there • Chapter 13: Wastewater safely taken away • Appendix A9: Drainage and wastewater management plan
Our regional stakeholders	Local authorities, local resilience forums, environmental NGOs and consumer advisory organisations have all helped to shape what we do. While our plan as a whole is designed to serve our region, the chapters highlighted have a particular focus on regional issues.	• Chapter 8: Securing long term resilience • Chapter 12: Water always there • Chapter 13: Wastewater safely taken away • Chapter 14: A service for everyone • Chapter 16: A thriving environment • Chapter 17: A positive difference • Appendix A9: Drainage and wastewater management plan

5.3 A SHORT GLOSSARY OF TERMS

Because our plan is designed to respond to a series of regulatory tests, it often uses terminology and acronyms that are specific to our industry.

Planning terms

Price review 2019 (PR19). Price reviews are undertaken every five years and usually consider, amongst other issues, the service levels our customers want us to deliver, the investment we need to make, and the impact for bills. The outcome of price reviews, Ofwat's final determination, include revenue and price controls and become a binding obligation for water companies.

Asset Management Plan (AMP). The term 'AMP' is often used to denote the five-year business planning periods that correspond

with price reviews. AMP5 relates to PR09, AMP6 to PR14 and AMP7 relates to the period covered by this plan, PR19 (2020-25).

Water Resources Management Plans (WRMP). Separate but related to price reviews, the WRMP process (under the remit of Defra and the EA) requires companies to set out plans to manage water resources over 25-year periods. Plans are updated every five years.

Water Industry National Environment Programme (WINEP). Developed through extensive engagement with water companies and led by the EA and Natural England, WINEP sets out the actions that companies will need to complete to meet our environmental obligations. Some elements of WINEP are

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contingent on the final approval of the Secretary of State for the Environment in 2021.

Water Industry Strategic Environmental Requirements (WISER). Issued jointly by the EA and Natural England, WISER sets out the environmental, resilience and flood risk obligations all water companies are required to take account of when developing business plans for 2020-2025. Our plan is designed to meet WISER expectations and our statutory obligations.

Regulatory and financing terms

Consumer price index (CPIH). The new measure of inflation used in price reviews which replaces the retail price index (RPI). CPIH, which takes account of housing ownership (the 'H'), is the preferred inflation measure for both the government and Ofwat.

Performance commitments (PCs) and outcome delivery incentives (ODIs). PCs are the targets proposed by water companies to meet the needs of our customers and hold us to account for delivery. ODIs, using a combination of financial penalties and rewards, and reputational scrutiny, are designed to incentivise us to outperform for our customers, and better link the service they receive to the bill they pay.

Regulatory capital value (RCV). The RCV is the capital base used in setting price limits. It's used to represent the value of our regulated business on which our investors can earn a return.

Total expenditure (totex). Comprising both capital and operating expenditure, a proportion of totex (akin to the capital expenditure amount) is added to the RCV annually (and depreciation is deducted).

Gearing. The ratio of net debt to the RCV, gearing is one of a suite of financial metrics used by Ofwat to assess the financial health of water companies. A measure of indebtedness, gearing is commonly used an indicator of whether companies are managing their financing sustainably. Ofwat assumes a 'notional level' of gearing within price reviews which it also uses for the calculation of RoRE.

Weighted average cost of capital (WACC). The WACC is applied to our RCV to determine our financial returns and allows us (much like an interest rate on a loan) to make a return to both our shareholders (equity) and our lenders (debt) for investing in us – commensurate to the risk they have taken on.

Return on Regulated Equity (RoRE). Calculated by reference to the RCV and regulated equity (which is in turn based on a notional level of debt determined by Ofwat), RoRE measures the returns (after tax and interest) that companies have earned. The calculation of RoRE uses income and costs based on regulatory conventions (as opposed to statutory accounting) to take into account performance against ODIs, allowed for totex and financing costs.

Pay as you go (PAYG). The proportion of our totex that is considered as 'fast money' and is treated like operating expenditure in calculating the impact on bills. The balance ('slow money') is treated like capital expenditure and is added to the RCV.

5.4 SYMBOLS AND FRAMEWORKS USED IN THIS PLAN

There are two symbols and frameworks used throughout this plan.

To help with navigation through our plan, this symbol denotes that there's also relevant information in other sections.

Service now – water	Service now – retail	Resilience	Community
5	-	4	1
Service now – wastewater	Asset health	Environment	Responsible, efficient investment
-	2	3	-

We currently use this eight box model in our Annual Performance Report to group our performance commitments into categories (to provide a more accessible view of our performance for customers). It's the same model that Ofwat uses when it reports on the industry's performance.

5.5 REDACTIONS MADE FROM OUR PUBLIC DOMAIN VERSION

We want our plan to be as transparent as possible, but in our public domain version we've made a small number of redactions in order to protect the confidentiality of our people, the security of our infrastructure and the interests of our customers.

They are:

- **Chapter 20 and Appendix A8: Securing cost efficiency.** This chapter and appendix include detailed information about the benchmarking of our costs. Because we're currently running a competitive tender process for our main supply chain partners for the next AMP, we've redacted this information to ensure we don't compromise either the integrity of the process or the value that we can secure for our customers.

- **Other appendices.** In a small number of cases, we've redacted information because it relates either to the security of our sites or, like the cost information noted above, it could prejudice current commercial discussions. Where redactions have been made, it's highlighted in each appendix.

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6 ENGAGING CUSTOMERS

Our plan starts with people. Drawing on our largest, and most in-depth programme of insight to date, we first worked to better understand what's really important to our customers. Then we built our plan around how we can meet those needs. This outside-in approach truly puts customers at the heart of everything we do.

With a step change in the quality, breadth and depth of our engagement - and a Water Forum (customer challenge group) that has challenged us to think differently, use new methods and engage with different types of customers - we now have a much richer understanding of our customers and how we can enhance their lives. We've engaged over 32,000 consumers and analysed over 2.4m customer contacts in the process. Notwithstanding the breadth of our approach, we've focused on quality, not quantity. Our aim is to understand our customers as people first, then build our plan as a direct response to those needs.

In this chapter we explain:

- our customer insight framework, developed with our Water Forum and with its roots in established psychological theory;

- a sampling approach that reflects the diversity of our region;

- our overall insight programme;

- how we're changing our relationship with customers from passive to active participants in our service design; and

- a summary of what we learned.

All the themes in this chapter are discussed and evidenced in more detail in Appendix A1: Engaging customers.

6.1 OUR APPROACH TO CUSTOMER ENGAGEMENT

Traditionally, water companies focus on evidencing customer support for industry-centric issues and investment choices, with a strong reliance on willingness to pay (WTP) and other stated research techniques. We want to be different. For this plan we wanted to gain two things from our insight programme. We wanted to really understand our customers – what motivates them, what's important to them, and what they need from us – and in doing so, we wanted to uncover new areas of value to them.

This means:

- trying new techniques;

- engaging with different types of customers;

- making greater use of data;

- asking about difficult issues;

- building a continual process of engagement; and

- starting with the people we serve, not ourselves.

A framework for customer insight

We set out to build a framework that would help us to uncover meaningful insight rather than simply focusing on the number of customers engaged. We're convinced that this new insight - and critically how we respond to it - will make a real difference for our customers.

An outside-in approach

We started our plan by talking to people as individuals, not just as customers. We asked them what was most important in their daily lives – their family, their time, their money, their future – completely separate to what we do. We then related our service back to those needs - an outside-in approach that looks at the role of our service in our customers' day.

Engaging with customers about water isn't straightforward. It involves issues that they're often not aware of or haven't experienced, or decisions that run across decades and affect future generations. It also risks being a one-way dialogue, rather than a genuine discussion or an opportunity to solve challenges and create new plans together. To reflect this complexity, we've developed a framework in conjunction

with the Water Forum, to make sure our plan benefits from meaningful insight that gets right to the heart of our customers' needs.

Our framework is based on three principles:

- There's a hierarchy of customers' needs where satisfaction and dissatisfaction are experienced differently at each level.

- The tools we use to understand our customers' needs should reflect the underlying characteristics of the issue or service.

- Our sampling strategy needs to reflect the diversity of our consumer base.

These principles helped provide us with a cumulative understanding of the needs of our diverse customer base, explore our role in customers' lives (as opposed to their views on our issues) and allow us to co-create business plan propositions. We've also been mindful of proportionality - each piece of research is justified and the resulting insight builds a complete view of customer needs and priorities. And as research is ultimately funded through customer bills, we've been careful to build on existing knowledge to avoid spending customers' money on things we already know.

Not all customer needs are equal

Our understanding that not all customer needs are equal sits at the heart of our research framework. We must consider the hierarchy of customer needs and avoid asking customers to make trade-offs across different types of needs. For example, we can't expect customers to trade-off clean, safe drinking

water with the range of payment channels they're offered - both are important.

Our categorisation of customer needs has its roots in established psychological theory - Maslow's hierarchy - drawing on three levels: delivering functional needs; meeting psychological needs; and creating opportunities for self-fulfilment.
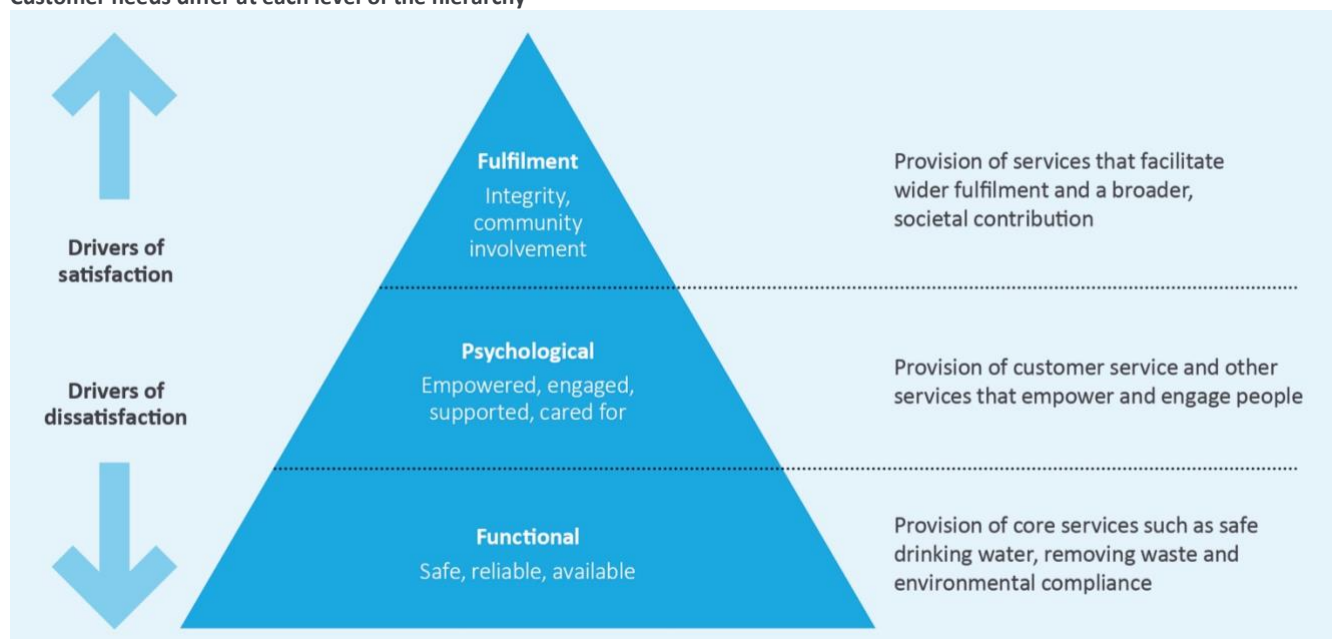
Our view of the hierarchy, as it relates to the water sector, is based on:

- targeted qualitative research in 2016 to uncover the issues that are important in people's lives (separate to the role that water may play);

- validation of the themes through focus groups, social media scraping, a review of our extensive catalogue of historical research, engagement with front line staff and data from customer interactions; and

- seeking ongoing challenge from the Water Forum on our conclusions.

Improving satisfaction is not the same as preventing dissatisfaction

By applying the concept of a hierarchy we've been able to build a more structured, insightful view of what drives customer satisfaction (and dissatisfaction). Fulfilling basic needs at the bottom of the hierarchy may only serve to meet customers' expectations and is very unlikely to improve satisfaction. But failing to meet those needs – falling short of these expectations – is likely to drive dissatisfaction.

Customer needs differ at each level of the hierarchy

Drivers of satisfaction

Drivers of dissatisfaction

Fulfilment
Integrity, community involvement

Provision of services that facilitate wider fulfilment and a broader, societal contribution

Psychological
Empowered, engaged, supported, cared for

Provision of customer service and other services that empower and engage people

Functional
Safe, reliable, available

Provision of core services such as safe drinking water, removing waste and environmental compliance

This simple concept has been transformative for our plan. Traditionally, water companies have focused on understanding customers' needs at the bottom of the hierarchy – preventing sewer flooding or supply interruptions. But it's only by exploring the higher end of the hierarchy that we can uncover new ways to drive satisfaction and trust or create value for our customers.

## Insight tools chosen from our customers' perspective

The hierarchy helped to reveal gaps in our understanding of customers' needs. But we haven't simply asked customers how to fill these gaps – instead, we've used research techniques that take into account how our customers understand issues by considering:

- where the service/issue sits within the hierarchy;

- the extent to which customers are conscious of the service/issue; and

- whether the issue occurs today or could occur in the longer term.

The Water Forum challenged us to consider that the further ahead our research looks, the less customers are conscious of the issues that might affect them, future generations and their service. We've used the four box model below to map some of the key research topics to the four dimensions – the spectrum of consciousness and whether the issue affects customer experience now or in the future. This has guided decisions on our research approach and methodology.

For example, issues such as resilience, which are both unconscious and future facing, are best addressed using deliberative research, which builds awareness and uses active participation to get more informed opinions. Subjects such as complaints handling – a 'now' issue which customers are aware of - can be analysed using social media scraping and day-to-day customer contacts.

Choosing research tools based on our customers' perspectives
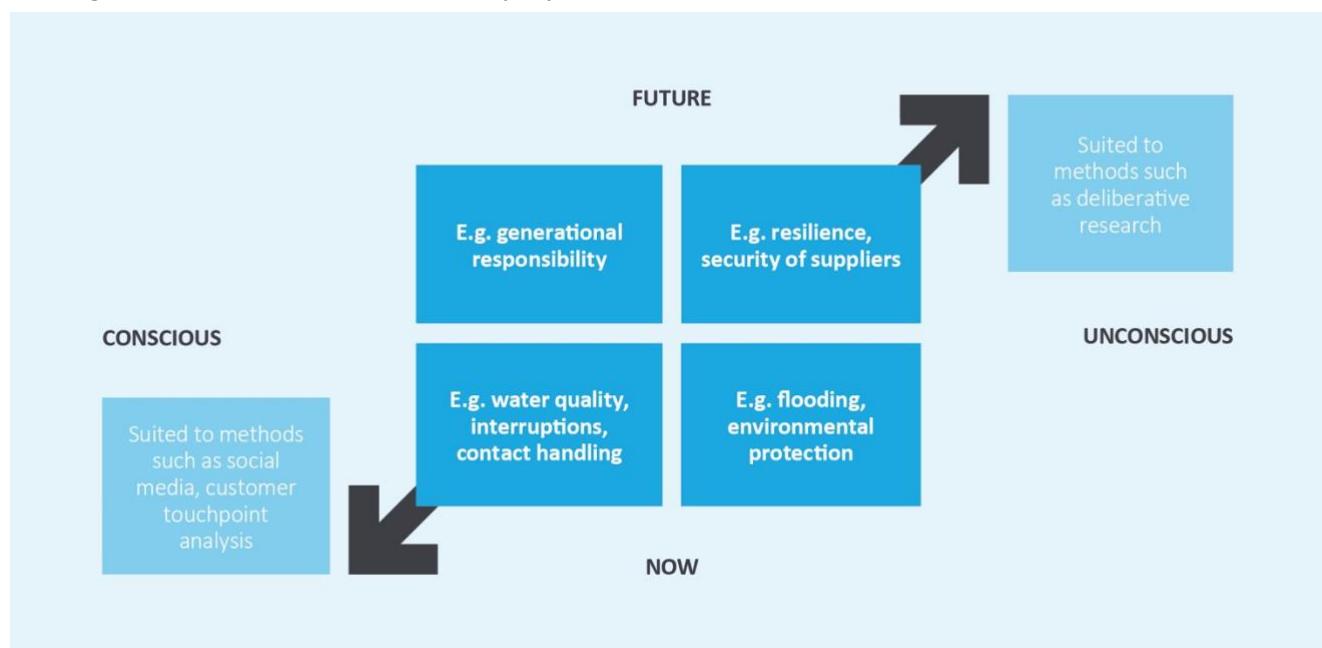
Learning something from our customers every day

As well as talking to our customers, we've looked for opportunities to use revealed insight. Customers continually interact with us, either directly (through multiple touchpoints) or indirectly (through conversations with others on social media). We've gained a much richer understanding by analysing these outputs. For example our social media scraping has revealed that the majority of customer conversations about "pain points" relate to uncertainty. And our analysis of customer complaints has revealed that low

pressure is a bigger issue than we previously thought, having successfully delivered on our regulatory target for a decade.

Using comparative information to empower customers

Customers are often unaware of how their water company compares, in terms of service and performance, to other suppliers in the UK. Appropriate contextual and comparative information can empower customers in their decision making.

We've included comparative information where possible in our research. For example, in our valuation research and budget game, we highlighted for respondents where performance is above, below, or about average, based on consistent definitions and industry data from Discover Water. We also explored the role that comparative information plays when discussing future performance targets, and tested customer views on the importance, and interest in such information, through our online community. While we found that the majority of customers thought that comparative information was important for transparency, particularly in a monopoly industry, in discussions on future service levels their first consideration tended to be their own experience (either direct or anecdotal), or perceptions regarding what Severn Trent should be doing as a water company.

Sampling that reflects the diversity of our region

We serve one of the most diverse regions in the UK – covering urban spaces such as Birmingham (the largest outside London), cities such as Leicester and Derby and also rural areas including the Peak District and parts of the Cotswolds.

In our research we've embraced this diversity and the rich mix of experiences, faiths and cultural backgrounds of our customers. We've worked to understand whether their needs and views differ and how we can use a more bespoke approach to engaging them in the future.

We took into account the demographics of our region and used this to inform recruitment specifications for our research to ensure that the findings are representative. Where relevant, we defined quotas which reflect our customer base (using data from the Office of National Statistics, census and profiles of bill paying customers) and if necessary weighted the results accordingly.

Making research accessible

The Water Forum challenged us to learn the lessons from recent political polls and capture the views of 'initial non-responders' and customers who historically may have been unable to engage in research. We responded to this challenge in three ways:

- by adapting research to reduce cognitive challenges and to reflect the different languages in our region;
- by adopting a preference for direct face-to-face engagement for the key valuation research so we could follow up on initial non-responders; and
- by adapting our techniques to gain views from hard-to-reach customers.

Removing language barriers

The 2011 census shows that of the residents in the East and West Midlands whose main language was not English, only 40-60% reported speaking English at a high level. There are therefore likely to be customers who do not have a high enough level of English to meaningfully participate in some research.

To engage with customers in these communities, we identified the most common foreign languages spoken in our region (Polish, Urdu and Punjabi) and used hall tests and a translated version of the WTP survey. We also took a small sample for our acceptability research using translated research materials and native speaking fieldworkers.

Taking time to engage initial non-responders

Following Water Forum challenge, we sought to capture the views of customers who initially do not reply to surveys, either because they are not at home when the fieldwork takes place, or because they decline to take part. We did this by undertaking some research (e.g. WTP) in person and recording which properties did not choose, or could not take part. We reached out to these customers again through a postal survey and compared their views with those of initial responders.

From over 3,000 addresses of initial non-responders collected, we achieved 432 responses – an innovative and potentially sector leading approach to understanding the views of these previously ignored customers.

Reaching the harder to reach

We adapted our techniques to gain feedback from "hard to research/reach" customers. For example, we used in-depth home interviews for customers in vulnerable circumstances (whether from a financial or health and wellbeing perspective) to give us more insight into potentially sensitive individual circumstances. This also allowed us to observe needs at first hand, in an environment where customers could relax in the comfort of familiar surroundings, rather than rely on reported evidence.

Understanding both customers and consumers

We debated with our Water Forum how we define 'customers' for individual research pieces. For some projects, such as WTP, it's appropriate that we include those household customers solely or jointly responsible for paying the water bill, as well as non-household customers. However, when exploring broader customer needs, we've widened our definition to consumers, including those who consume our services but do not directly pay a bill. We've carried out research with those paying bills indirectly (for example, through landlords or as part of a shared housing arrangement) as well as multi-generational households and future customers.

We've included more diverse customer groups than ever before

Customer types	Description
Household customers	Those with joint or sole responsibility for paying the bill, or who pay through their rent or who contribute in shared households.
Non-household customers	Small, medium and large non-household customers.
Single service customers	The vast majority of our single service customers are waste only customers, with water services provided by South Staffs Water.
Customers who have suffered service failure	Customers who have suffered a service failure (e.g. water supply interruption, flooding, low pressure, water quality notice).
Customers who engage highly with waterways	Customers who live in proximity to watercourses and who are more highly engaged with the environment.
Customers in financially vulnerable circumstances	Those on low income, low disposable income or who are struggling to pay their bills.
Customers in vulnerable circumstances due to health and wellbeing	Those for whom a physical or mental wellbeing issue could make our services less accessible.
Future customers	Younger people who live at home and who are not currently contributing to the bill.
Non – English speaking customers	Those who are not native English speakers and who might struggle to take part in research. The three most spoken foreign languages in our region are Punjabi, Urdu and Polish.
Ethnic / cultural groups	Those from minority ethnic and cultural backgrounds.
Digitally disenfranchised customers	Those who do not have access to the internet and therefore would not take part in online research.
Retailers	Those who provide water and wastewater retail services to non-household customers.
Developers	Larger developers.

6.2   OUR INSIGHT PROGRAMME

Using our framework, we've developed a programme to cumulatively uncover new insight, building on existing knowledge but not repeating what we already know.

Our programme includes:

- bespoke research, including an extensive programme of deliberative research and stated preference - 'WTP' - studies;

- day-to-day analysis, such as customer contact or complaint data and insight from frontline employees;

- wider customer sentiment, such as social media scraping; and

- ongoing dialogue with customers, including through our community panel Tap Chat.

We've used a range of insight to understand our customers' needs

Customer types	Description
Customer needs and priorities research	Improves our understanding of customers' needs, wider priorities and the role that a water company plays in meeting those needs.
Social media scraping	Provides revealed insight about the conversations customers have about the water industry and Severn Trent.
Customer satisfaction quarterly tracker	Monitors the extent to which customers trust their water company and are satisfied with the service.
Operational insight	Expands our understanding of the causes of satisfaction and dissatisfaction using complaints and voice of the customer feedback.
Valuation research	Quantifies the importance of service improvements in the context of other areas of our plan, through both stated preference and revealed preference methods.
Deliberative research	Allows detailed discussion on important topics, moving from the spontaneous customer view to a more informed perspective.
Co-creation	Enables customers to work with our employees on specific topics or to solve specific challenges.
Research on helping customers who struggle	Improves our understanding of how we help customers who are struggling to pay their water bill, and how much customers are willing to cross-subsidise them.
Best in class customer service and experience research	Improves our understanding of current and future service offerings.
Choices research	Provides insight on the performance targets, incentives and support for strategic investments.
Acceptability research	Allows us to understand whether customers find the overall service package and bill levels acceptable and affordable.

Our engagement in numbers

15,000	**32,000**	**24,000**	**1.9m**	**7m**
consumers on our online panel	consumers included in research	complaints reviewed	contacts analysed	social media comments analysed

We've directly engaged with over 32,000 consumers overall. But it's not all about the numbers. We've focused on the breadth, diversity and the depth of the conversations and quality of the resulting insight.

Our leading research and insight projects

We've summarised seven of our headline research and insight projects below, but our programme is much deeper – it's explained in full in Appendix A1: Engaging customers.

1. **Understanding different needs.** We've developed a much richer understanding of how the needs of customer groups might differ, whether that's due to vulnerable

circumstances, cultural background, faith or ways in which they engage with water. Our research programme included diverse research techniques - including online communities, deliberative workshops, in home interviews and co-creation with customers - to explore both the role we play in customers' lives and some of the strategic challenges for the future of their water service. This research has provided a considerable depth of insight, and in particular the areas of service they are interested in hearing more about.

2. **Supporting customers in vulnerable circumstances.** We've spoken in depth with customers in vulnerable circumstances, whether caused by health and wellbeing or financial issues. This engagement has helped us develop a detailed understanding of the support

offerings they would like (for example, support during incidents).

We've also carried out detailed research with customers on our current social tariff, the Big Difference Scheme, and with those struggling to pay, including customers in water debt. Using the Index of Multiple Deprivation, we focused on customers living in areas with a high degree of deprivation who would be likely to qualify for assistance. We wanted to understand the effectiveness of the existing social tariff scheme and also to develop a more detailed understanding of the journey to water debt, including approaches to prevent future arrears and encourage debt repayment. Following quantitative research, we tested a range of ideas which were then developed further with customers using a co-creation approach. Through this research we've identified improvements to our social tariff, such as reducing the average level of discount while still providing meaningful support. These improvements, together with the increased financial support our customers are willing to pay (identified through our cross-subsidy research) will enable almost three times as many struggling customers to receive support via our social tariff.

3. **Gaining a richer understanding of customer valuations.** Customer valuations underpin crucial components of our plan, including our outcome delivery incentives. Obtaining robust valuations of different service attributes – particularly at the lower end of the hierarchy - has been one of our most important objectives. For this plan, we've incorporated improvements over the approach we took for our 2015-20 plan. In particular, we've responded to the Water Forum's challenge to design approaches that are cognitively simpler for our customers, within a multifaceted programme that provides richer insight and multiple data points.

This new approach included targeted samples with those who have suffered service failures (contextualised WTP), a 'design your own plan' budget game and an innovative approach to understand the views of initial non-responders. We also included a sample of customers who had attended our deliberative workshops, and who had been immersed for a half or full day in some of the challenges we face. The design and analysis of the results of our valuation research have been peer reviewed by an expert in the field. We found that experience of sewer flooding, and immersion in the water industry, have a significant impact on customer valuations. We also uncovered differences between the valuations obtained through face to face research, and those of our non-responders group.

We've also used a type of revealed preference research, analysing and costing avertive behaviours, in order to develop an alternative valuation for short-term interruptions to supply, which is one of our key

performance measures. The insight from our valuation research has been triangulated, compared to historic valuation results for Severn Trent and other companies in order to investigate outliers, and used to inform our incentive rates and in cost benefit analysis.

4. **Informing views on complex topics and longer term issues – including resilience.** We supported the valuation research with an extensive programme of deliberative research to build participants' knowledge - which enables them to give informed views about issues they may not have previously considered, and helps us understand what drives their views.

This covers both the basic needs level of the hierarchy (getting views on future challenges to our water system such as resilience, ensuring water is available for future generations and flooding) as well as the self-fulfilment level, covering wider environmental benefits such as biodiversity. Using deliberative approaches means that for complex subjects like resilience we've been able to hold in-depth conversations on issues that drive to the core of how we run our business, including our customers' tolerance of risk.

5. **Exploring intergenerational fairness.** We've used deliberative research as well as quantitative research with a representative sample of our online community, to explore how we ensure a fair balance of charges over time, and between generations. We found that customers want bills which are stable, and charges to be set in a way which means each generation pays its fair share. Our proposed approach to longer-term bill profiles received considerable support from customers, with 88% of those surveyed preferring a smaller bill reduction over the next five years, but a more stable profile over time.

6. **Getting to the heart of renationalisation.** We know that customers are often cynical about private businesses, and might be concerned about water being a privatised industry. Our acceptability research suggests that these views can influence customers' support for our plan as a whole. We've used focus groups and depth interviews with customers in vulnerable circumstances to gain a deep understanding of views on renationalisation, and the role that we should play in society. Nationalisation wasn't found to be a front of mind issue, and, while some showed support, many others were indifferent to the idea or expressed concerns about whether under public ownership, the sector would receive sufficient investment or attention. But we did find that some customers have latent concerns about profits being made from a public good – which can be in part mitigated by community initiatives and support for those less fortunate, including our new community dividend.

7. **Testing acceptability.** It's important that the plan we propose is acceptable and affordable to our customers. We've consulted around 4,000 household and non-household customers, through online and face-to-face research, including a sample of South Staffs Water Midlands customers, on the acceptability and affordability of our plan, including potential ODI impacts. The sample allows us to understand customer views for the bill presented in both real and nominal terms, as well as segmenting different customer groups, such as those in vulnerable circumstances. We conducted our research over two waves, as our proposed bill reduction and plan improved significantly after the initial research. Our final wave of research found that 85% of customers find our proposals acceptable, with over 90% of customers agreeing with our committed levels of performance.

6.3   FROM PASSIVE RESEARCH TO ACTIVE AND ENGAGED

We want active and engaged consumers who are demanding about their service and take part in its design and delivery.

We recognise that we don't have all the answers – to deliver better outcomes for our customers we need to create a culture and mindset that actively encourages customer participation. Over the past three years we've widened and adapted our approach to customer engagement to ensure that it's part of our day-to-day business. And by involving our customers not only in service design, but also delivery, we're confident we can drive greater satisfaction and deliver better outcomes at a lower cost.

Participation goes much further than simply the consumption of water and its disposal. It's an opportunity to co-create future solutions with customers, such as the communications they would like when we're changing water supply to maintain the Elan Valley Aqueduct. Participation is about empowering and actively connecting customers with our retail services, through tools such as 'Track My Job', and giving them control over their experience.

In our approach, we've drawn on Ofwat's March 2017 publication Tapped In and used the four elements referred to as the FACE model – Futures, Action, Community and Experience - to shape customer participation.

Our commitment to customer participation

We've made a step change in how we view and engage with our customers, in part through cultural and organisational improvements. These changes mean that customer participation is not just something we're doing for this plan – we've already established three new teams across our business as part of a longer term commitment.

Three teams to drive customer participation

Innovation team	Customer insight and analytics team	App technology team
To support our aim to be at the forefront of innovation, we analysed best practice outside the sector and created a new innovation model in 2015. Our model includes specialist innovation management roles, including a front-end team that focuses solely on innovation needs and idea generation, which we believe is unique to our sector.	In recent years, the power of modelling and analytics has grown exponentially. We've created an Insight and Analytics team to implement behavioural analysis, modelling and analytics across the business. An improved understanding of customer behaviours, together with demographic data is being used to nudge behaviour change in key areas of the business.	The rapid evolution of the smartphone has allowed people to achieve so much more "on the go" than ever before. To focus and harness the power of this technology, we created an app technology team to devise and develop mobile apps that can enhance customer experience, and help us progress as a business overall.

As we embed this cultural change in our business we're realising the benefits of customer and stakeholder involvement. We've included examples throughout our plan, such as:

- more targeted campaigns that deliver increased engagement and behaviour change, including the award-nominated 2017 water efficiency campaign;

- reduced customer contacts thanks to the new bill format, which was co-designed with our customers;

- engagement with 2,000 farmers (to date) to protect our raw water sources; and

- partnership working to successfully protect properties from sewer flooding.

Futures: customers helping us to shape the future

Participation starts with actively engaging customers and enabling them to have a voice in decisions that affect their lives. We've used co-creation to give customers a real say on specific business issues across our insight programme, working alongside technical experts throughout the business, as well as with Board members and our executive team.

Asking customers for their views isn't new for us - in fact our historic research catalogue is extensive. But the way we've gone about it, raising awareness and informing customers so they can genuinely contribute to the debate and shape the future, is dramatically different. Similarly, while we've always had a strong research and development function, our new innovation model will drive further benefits, as well as actively involving employees across the business in exploring and embedding new ideas.

Action: customers take action to change behaviours

By changing customer behaviours, we can help ensure that the outcomes that matter to customers are delivered in a cost effective and environmentally sustainable manner. Our customer insight and analytics team uses demographic data analysis and behaviour data tools to understand our customers - and then find ways to nudge them to change their behaviours.

Observing real world behaviour is often better than research at telling us about our customers. Behavioural economics can also show us how to use subconscious methods to achieve behavioural change for the benefit of all customers. For example, behavioural analysis has helped change customer behaviour through two specific campaigns.

- **Our direct debit nudge campaign** – using behavioural economics and customer segmentation, we created a behavioural nudge campaign aimed at customers not currently paying by direct debit. We used a range of sources, from ACORN data to customer research, to understand how to target customers with the most relevant communication method. Our campaign this year

has seen an uplift of over 1.7% in customers switching to direct debit.

- **Our water efficiency campaign**, **shortlisted for a Utility Week award** – we used ACORN data, demographics, water consumption data, product purchase data and geospatial mapping to identify customer types with high water usage who weren't actively engaged with us, as well as customer research to understand the messages that would resonate with customers. We then used a range of channels to market our water saving products to these groups, depending on their preferences. Nearly 2,000 customers (from a base of 264,000) ordered water efficiency products as a consequence, a take up above industry norms.

Community: increasing community ownership and participation

Working in partnership with expert groups and communities, together with increasing community ownership of issues, we can deliver the outcomes our customers want while providing wider benefits for the community. We've engaged with communities in many different ways. These include working with stakeholders and expert partners, embedding partnership working such as catchment management in outcome delivery, and establishing a 15,000 member online customer community (Tap Chat) which enables participants to engage with us and shape our business.

Through Tap Chat, we want to create a community where customers can easily share their views, preferences and opinions with us so that they can directly shape our future. This proactive, ongoing and two-way dialogue will enable us to continually identify what matters to our customers in an ever-changing world. Since Tap Chat was launched in March 2018 our members have started over 30 discussions on topics ranging from nationalisation to fracking, water meters and leisure activities at reservoir sites. Our initial discussion topic on what is important to you (in the context of customers' water supply) received very high levels of engagement for communities of this type, with over 1,100 comments from members.

Experience: increasing control of customers' experience

The more customers can control their experience, the more they can become active agents in their own service. We're developing multiple ways in which customers can take greater control in their use of water as a product, as well as their experience of our service. This includes launching apps such as the Leak Locator, which allows customers to validate leaks, and Track My Job which enables customers to monitor progress on reported jobs. Digital contact channels, such as web self-service and web-chat are also becoming increasingly popular.

More about how customer participation is embedded across our business in Appendix A1: Engaging customers.

6.4   COLLABORATION, CHALLENGE AND TRIANGULATION

The Water Forum has worked with us collaboratively to design our research programme. It's challenged how we've interpreted and synthesised the insight, and then challenged how we've used that to build our plan.

Dr Nick Baker, the Water Forum's independent member dedicated to customer research, also sits on the Board of the Market Research Society, a leading research association. Drawing on this depth of experience, he led the Water Forum's market research subgroup, which includes Professor Bernard Crump, Regional Chair CCWater, and has been extensively involved in the development and application of our customer engagement. Alongside our regular Water Forum meetings, the subgroup has met a further 10 times, and dedicated over 42 hours of challenge – across the full spectrum of our programme – design, intent, sampling, execution and interpretation. And to better respond to the rigour of this challenge, we've made changes within our organisation too, bringing in research experts from other industries and other disciplines, notably sciences and product design.

The Water Forum has continually challenged the link between the customer insight and the way in which it has shaped our plan, through the performance commitments, outcome delivery incentives and our enhancement expenditure proposals. All Water Forum members used Appendix A1: Engaging customers as a practical tool to access key customer insight findings and to challenge our proposals.

The Water Forum recorded 379 challenges in total, including over 60 relating to customer insight. We've summarised some of the key insight in the table below.

Key Water Forum challenges

Water Forum challenge	Our response
Develop a strategic framework for market research and customer insight, with a clear rationale for the chosen approach and research tools used.	We've set out an initial hierarchy of customer needs, taking into account the fact that the drivers of satisfaction/dissatisfaction are different at the different levels of the hierarchy, and developed our strategic insight framework.
Make use of operational data as well as the insight from research.	We've analysed contacts and complaints from customers over the past few years. This revealed interesting insight and the findings have then been sense checked against outputs from research.
Provide a clear plan for the approach to triangulation and a rationale where judgement is being used.	Our approach to triangulation is in two parts, which work together. The first part is the 'synthesis and judgement' in Appendix A1: Engaging customers. This is used for developing the performance commitments, informing targets and validating incentive rates and strategic investment proposals. The second part involves the triangulation of valuation data, which is used to set robust incentive rates and in cost benefit analysis.
Incorporate in-depth qualitative research in the process of triangulation.	In Appendix A1: Engaging customers, we've incorporated the insight from both qualitative and quantitative research. Insight from qualitative research has also been used in the validation of valuation outliers.
Expand the choice of research agencies and bring new ideas and expertise from outside the sector.	We've commissioned key projects with agencies from outside the water sector, leading to new perspectives and approaches.
Consider co-creation as an ongoing tool in the delivery of the plan.	We're proposing to engage with customers during the delivery phase of the plan, and in particular when considering scheme feasibility and additional benefit valuation for the cost adjustment proposals.
Consider how the environment is reflected in the hierarchy of needs.	Engaging customers on the environment, and longer term issues, requires a considered approach. We've worked with our environmental stakeholders on the Water Forum to consider how the environment aligns with the hierarchy of needs.
Consider the views of those customers who are unable or unwilling to take	We've used a postal survey to follow-up with this group of customers who were unable to participate in face-to-face interviews. The Water Forum believes that this is an innovative

Water Forum challenge	Our response
part in the core WTP research (a group called the initial non responders).	and sector leading approach to understanding the views of this customer group, which gives us crucial insight on a previously ignored group of customers.
Analyse the views of customers who have suffered service failures (not just the 'average' customer who may have never experienced disruption).	We've targeted a number of niche audiences. These include customers who have experienced a disruption to supply or a leak, as well as those who have recently had a different type of contact compared to the average customer - and could be likely to voice stronger opinions.
Recognise that the more customers understand and are informed, the more decisions they can make.	Our deliberative research used engaging and informative materials to raise customer awareness of key issues. This helped them make more informed decisions about the issues we face and the future decisions we need to take.
Use behavioural research.	We recognise that behavioural research should form part of our customer engagement, and have been using behavioural insight and data analytics to run more targeted campaigns (such as a direct debit nudge campaign and a water efficiency campaign) and to reveal implied valuations.

Triangulating evidence from a wide range of sources

Our insight programme has enabled us to develop a rounded view of our customers, accepting that different research methodologies, perspectives and contextual information can inevitably lead to different results. In appendix A1: Engaging customers, we've brought these together and explained the rationale for the conclusions we've drawn.

This insight has underpinned the development of our outcomes, our plans for the next five years, and our performance commitments. It's also helped us to balance our plan – considering issues like intergenerational fairness and the sharing of risk and reward. And alongside this, we've also triangulated our valuation data in order to inform incentive rates and for use in cost benefit analysis. This is explained in Chapter 9.

Independent assurance

The Water Forum challenged us to have our triangulation and synthesis assured by an independent third party. We welcomed the challenge, as the synthesis of customer insight findings inevitably includes an element of judgement. We subsequently appointed an insight consultancy firm, which had not been involved in the research programme, to carry out an independent, third party review of our findings.

Overall the Water Forum has reported to us that, in its view, we've made a step change in the quality of the customer engagement, which it believes is robust, rigorous and comprehensive in scope.

 The Water Forum's report gives its fuller view on our engagement programme.

6.5   WHAT WE LEARNED

As a result of our programme, we've a much deeper, richer view of our customers than ever before. We've summarised what we've learned in two ways: firstly, how the concept of a hierarchy translates into four important lessons about our customers' needs; and secondly, new areas of value for customers we've uncovered as we've carried out our programme.

From conceptual hierarchy to actionable insight

By exploring the concept of a hierarchy of needs, we've been able to gain a new perspective on our customers' needs.

Across our insight programme we've learned that:

- we should keep improving our delivery of basic needs to prevent problems, from the little irritations to the bigger inconveniences;

- customers want to be treated as individuals – we should listen, understand and respond with an empathetic and human touch, especially if we get something wrong;

- we have an opportunity to do more to meet our customers' self-fulfilment needs, doing more for communities and playing a bigger role in society; and

- ultimately we should be a company that customers can trust.

Four things we heard from our customers

From conceptual hierarchy:

To actionable insight:

Fulfilment
Integrity, community involvement

Psychological
Empowered, engaged, supported, cared for

Functional
Safe, reliable, available

1. Be a company that customers can trust

2. Do more for communities, and play a bigger part in society

3. Treat customers as individuals. Listen, understand and respond – especially if we get something wrong

4. Prevent the problems – from the little irritations to the bigger inconveniences – that disrupt customers' days

Customers clearly told us that they expect the above to be just as true for future generations as customers today – it should not be achieved at the expense of either – and at a price that is affordable for all.

And we've translated this into actionable insight that underpins *what* we'll deliver, how we'll do it, and reminds us to explain to our customers why we want to do it.

Uncovering new areas of value to customers

Our approach to research has also uncovered new areas of value for our customers, as well as revealing a desire for greater emphasis on existing areas.

Better engagement

One common theme emerges across all of our research. Many of our customers have only a cursory understanding of what we do - and they expect us to be more proactive in our efforts to engage and inform them, their children and grandchildren. This includes more effective messaging about water efficiency and sewer use but also improved engagement on topics such as help with paying bills and how they can get the best out of their service. We also know that we cannot expect our customers to trust us if we cannot explain or evidence our intent.

So we'll be doing more to tell our customers how their money is spent, how they're making a contribution to their community through their bill, and how they can get more out of their service. And we've already started - one of the first

examples of this commitment in action is that this summer, for the first time in over a decade, we're using TV advertising to promote how we can all use water wisely. Our 'Wonderful on Tap' campaign helps customers appreciate the 'wonder' of water and how ultimately it is 'on tap' as a result of the role we play. Over 900 members on Tap Chat have been discussing our campaign and engaging with our brand and key messages.

Altruism and supporting the wider community

Although we knew that our customers are altruistic, this is more pronounced than we initially understood. This altruism is most evident in relation to where we choose to invest, with support for targeting investments in socially deprived regions, particularly if our investments can deliver multiple benefits.

In response, we've created a suite of performance commitments that are designed to deliver multiple benefits for our communities, for example our green communities commitment which creates new natural capital while we tackle sewer flooding.

To re-emphasise our community intent, we've committed to creating a community dividend, using 1% of profits, which will help fund community projects to be agreed with an advisory board, including representatives from our customers.

Low pressure

We've discovered that low pressure is a much bigger issue for our customers than we previously thought. Traditionally, our focus has been to address chronic low pressure, which affects a few hundred properties. But our retrospective review of customer contacts and social media sentiment, shows that low pressure is clearly a much more emotive issue - and one which creates dissatisfaction for customers.

In response, we've introduced a new performance commitment which, by focusing on our response to customer complaints rather than whether we're reaching statutory standards, views the issue from their perspective.

Social tariffs

We have an opportunity to help even more customers by making minor changes to our social tariff. Participants in our co-creation sessions told us that our current 90% discount on bills could be reduced for some customers and still be highly impactful. We can also improve awareness of our support and make the process to obtain help easier for customers.

We've taken this on board as we've designed our new package of support options – including reducing our discount to 70% so that we can help more customers in need, without compromising on the impact, and continuing to invest in the Severn Trent Trust Fund.

Metering

To address supply-demand challenges, customers want us to help them reduce their water consumption, with strong support for metering. This includes support for smart metering. Many customers draw on their experiences with energy providers and are expecting similar engagement from us.

In our plan, we're proposing a significant increase in metering but we've also listened carefully to what our customers told us about how we go about it. Through our co-creation sessions we've identified 20 metering myths that we need to tackle. So during 2018-20 we'll be trialling different approaches to engagement and smart meters, to inform our meter roll-out programme post 2020.

Chapters 10 to 18 explain how we've used insight to design our service and make our performance commitments.

Keeping the dialogue going

We've also quickly learned that we can't earn customers' trust if we only engage with them when it suits us. So in addition to our existing feedback mechanisms, including our voice of the customer channels and growing analytics capability, we've launched an online community, Tap Chat, which allows us to have ongoing dialogue with our customers.

Our plan has already been shaped by discussions on a wide range of topics, including what matters to customers (in terms of their future water supply), lead in drinking water, the design of incentives and asset health. We've also used Tap Chat to test design materials for our 2018 water efficiency campaign, and to test how we describe inflation and performance improvements in our acceptability research.

In the future we'll be using Tap Chat to design service changes with our customers, from their views on how we can best present our performance to them, to changes we're proposing to our policies. We've already laid the foundations for a much more collaborative approach to service design and we want to keep building on this momentum.

7   ADDRESSING AFFORDABILITY AND VULNERABILITY

For almost a decade we've kept our average household bills the lowest in the industry. But we recognise this is just one way we can tackle the much wider issue of affordability. In our plan we've developed six levers – with their foundation in customer insight – to take a comprehensive, rounded approach. Our plan also considers the related, but separate, issue of vulnerability – with an approach that starts with understanding our customers' individual needs.

In this chapter we explain the approach we've taken to develop service proposals that respond to these two complex issues. Our proposals are explained in greater detail in Chapter 10: The lowest possible bills, and Chapter 14: A service for everyone.

Our approach to affordability and vulnerability is explained in detail in Appendix A2: Addressing affordability and vulnerability.

7.1   TACKLING AFFORDABILITY

As a provider of an essential public service, we share our customers' belief that water should be affordable for all. We also recognise that some factors that affect affordability are not within our control (e.g. the wider economic environment), some we can seek to influence (e.g. customer attitudes towards payment) and some are within our gift to change (e.g. the accessibility of payment channels). Our plan seeks to identify and employ the levers that we can influence to tackle the affordability challenge.

A systematic approach

We've developed and applied a three-step process to explore and tackle the three aspects of affordability identified by Ofwat: affordability for all customers; long term affordability; and customers with more acute affordability issues who are struggling to pay.

A three-step process to develop our response

Understand our current position → Identify levers to improve overall, long-term and acute affordability → Develop and test propositions to improve affordability for each component and lever

Understanding our current position from our customers' perspective

Measuring affordability is challenging, not least because it is highly dependent on personal perceptions of water bills in the context of other household needs and income. We've explored different definitions of affordability including the 3% and 5% thresholds for household income spent on water bills that are often used to define water poverty. Through econometric analysis we estimate that approximately 226,000 (5%) of our customers are in water poverty - if the 5% threshold is used.

For our proposed performance commitment we've chosen to use the views of our customers themselves to define where the affordability threshold occurs. While we recognise that this measure risks including an element of subjectivity (as it is based on perception), we believe it is the better option to capture the personal, individual nature of affordability. We track our customers' perceptions of affordability on a quarterly basis. In 2017/18, 11% of our customers told us that they found our bills unaffordable.

Identifying levers to improve affordability

Affordability affects households in different ways. To understand how we can improve affordability we've undertaken significant research and analysis to identify its drivers, including the following:

- segmenting all customers - through attitudinal and behavioural segmentation - to give us valuable insight into customers' wants and needs;

- using credit reference agency data to help segment our customers to separate out 'can't pay' from 'won't pay' and understand different groups within these;

- segmenting customers who are struggling to pay – using research and an expert workshop to identify five principal struggling to pay customer groups and creating personas for each to get to the heart of the issues they experience;

- bespoke research to understand the effectiveness of our existing social tariff scheme and to develop a more detailed understanding of how customers move into debt;

- bespoke research to understand willingness within our wider customer base to offer financial support;

- segmentation through our water efficiency campaign trials to test messages with different groups to help customers reduce their usage; and

- engaging with customers with a much more diverse spectrum of needs than our previous plans, including different faiths, service experiences and interests.

As a result, we've identified six levers we can use to tackle the affordability challenge. Because affordability is such a totemic issue, these levers are embedded throughout our plan. We summarise them below, identifying how they contribute to Ofwat's three facets of affordability, and signposting where our plan explains in more detail the action we're taking.

Levers to manage affordability are embedded throughout our plan

Six levers:	Overall affordability	Long term affordability	Customers struggling to pay	Where in our plan
1. Optimise our costs (while delivering what our customers want and need).	✓	✓	✓	Securing cost efficiency
2. Ensure our bills are fair (spread across as many customers as possible).	✓	✓	✓	The lowest possible bills
3. Customers understand what they are paying for and feel they are getting value.	✓	✓	✓	The lowest possible bills
4. We make it easy for customers to pay.	✓		✓	A service for everyone
5. We help customers to reduce their usage.	✓	✓	✓	Water always there
6. We support customers who are struggling to pay.	✓	✓	✓	A service for everyone

In the case of acute affordability, this insight has allowed us to better understand: the accessibility and efficiency of our current approach; the triggers that suggest customers may be at risk of falling into debt; and how to improve in the future.

Reflecting our levers in performance commitments

Across our outcomes, we're using three performance commitments to reflect our affordability levers: per capita consumption (usage); reducing void and gap site properties; and support for customers struggling to pay. This is in addition to cost optimisation and debt management which are incentivised by costs to serve and revenue controls.

Our new performance commitment to help customers struggling to pay builds on our current commitment by seeking to tackle the percentage of customers in need helped, rather than the absolute number supported.

More detail on our performance commitments are included in Chapter 12: Water always there, Chapter 10: The lowest possible bills and Chapter 14: A service for everyone.

A strong understanding of our customers' needs

We believe we have a strong understanding of our customers because:

- We've used our customers' perceptions of affordability to determine the size of the challenge, with 62% of customers stating they find their current bill affordable, 11% of customers finding their bills unaffordable, (and this is in the context of us having the country's fifth highest levels of deprivation in our region).

- We've strong support from our customers for our overall plan, with 85% of household customers finding it acceptable.

- We've looked at the potential bill profile in future AMPs and received considerable support from our customers, with 88% preferring a smaller bill reduction over the next five years, but a more stable profile over time.

An ambitious response to customers' needs

We believe our response to customers' needs is ambitious because.

- We're proposing the largest bill reduction in two decades, which is the equivalent of a £17 reduction in real (CPIH) prices, or £43 when compared to PR14 on a like-for-like basis (which excludes ODIs and deflated prices using RPI).

- By lowering our bills in this way, we're helping to keep bills affordable for all (our modelling suggests that 30% of customers currently in water poverty will move below the 5% threshold). Our proposals will allow us to increase support for those customers struggling to pay from 135,000 customers in 2019/20 (based on our new performance commitment) to 199,000 by the end of 2019/20. This is a 47% increase in the number of customers we're supporting.

- We'll be using innovative techniques including analytics and working with expert third parties to ensure that bills are fair, and that we proactively identify customers who are struggling to pay.
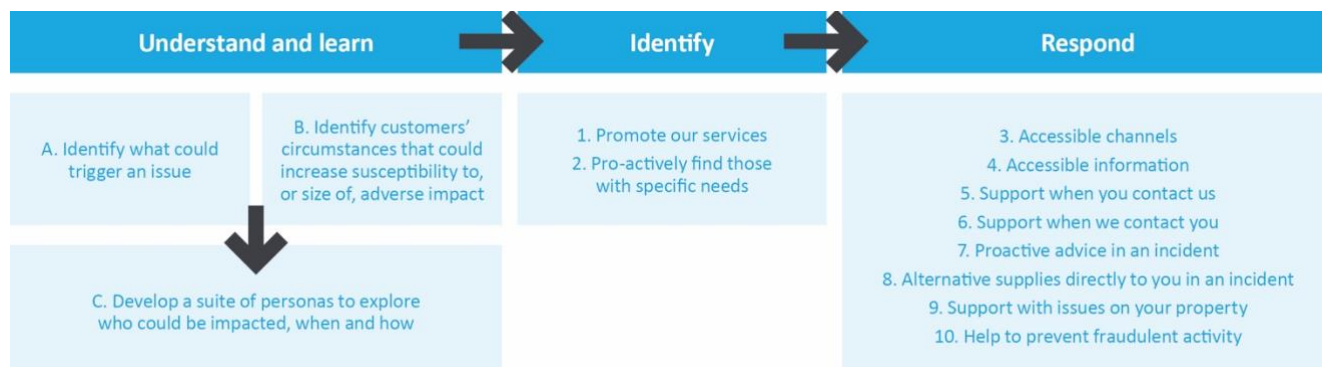
| 7.2 | UNDERSTANDING VULNERABILITY |

Vulnerability is a complex issue. Applying a single definition is difficult because, at its heart, vulnerability is individual to every single customer and, like many aspects of all our lives, rarely remains unchanged over time.

We developed our support proposals by first seeking to gain a better understanding of vulnerability from our customers themselves, as well as from expert stakeholders. We've worked to understand how our service (or difficulties accessing our service) could trigger an issue for customers, and then, following detailed research with our more vulnerable customers in their homes, worked to understand the extent of that impact.

Our approach starts with a better understanding of our customers

Understand and learn

A. Identify what could trigger an issue

B. Identify customers' circumstances that could increase susceptibility to, or size of, adverse impact

C. Develop a suite of personas to explore who could be impacted, when and how

Identify

1. Promote our services
2. Pro-actively find those with specific needs

Respond

3. Accessible channels
4. Accessible information
5. Support when you contact us
6. Support when we contact you
7. Proactive advice in an incident
8. Alternative supplies directly to you in an incident
9. Support with issues on your property
10. Help to prevent fraudulent activity

Understanding vulnerability

Using our customer and stakeholder insight, we've developed seven personas that seek to represent the different types of vulnerable circumstances that our customers experience. They're designed to capture the diversity of these circumstances, so that we can bring our response to life, (and are set out in detail in chapter 14: A service for everyone).

We've developed matrices to map specific propositions against our seven personas, ensuring our responses work in a diverse range of circumstances.

Our new priority service register system is based on our support matrices. It will allow us to establish and update the specific needs of our customers and genuinely tailor our support.

Identifying customers who may be vulnerable

Because of the individual, and sometimes transient nature of vulnerability, understanding how many of our customers may be vulnerable, and in what ways, can be challenging. We've used a twofold approach: assessing the demographics of our region with insight from regional stakeholders (for example, Guide Dogs for the Blind); and working with other utility service providers to undertake an anonymised data share, to better understand the quantum of need.

In response to this insight, we propose to deliver a step change in the number of customers on our priority services register from 39,500 in 2017/18 to an estimated 409,500 in 2024/25 - although we note that the key feature of our performance commitment (explained below) is not the number of customers on our register, but the proportion of people we help.

Providing accessible support

We've used a multi-faceted approach to develop our service proposals including benchmarking with almost 20 organisations with expertise in priority services and hosting an expert workshop, to draw from their experience. This has enabled us to identify eight key proposition areas covering communication accessibility, the capability of our people to provide support at the required level, and the support we provide during an incident or when a customer has an issue on their property.

A new performance commitment

For the first time, we've introduced a performance commitment exclusively focused on vulnerability. We considered a range of options and decided on one performance commitment that focuses on water supply incidents – a priority focus area as it has the potential to cause the most concern amongst our customers in vulnerable circumstances.

Offering a more tailored service

Our approach is founded on strong customer engagement and an excellent understanding of our customers' needs. This has allowed us to:

- tailor support to meet customers' specific needs whereby the right support is provided at the time they need it; and

- ensure that services are easy to access for all customers through a wide range of channels.

Reaching more people than ever before

We'll reach more customers than ever before because:

- our service is based on an expanded range of seven triggers that might make a customer vulnerable (compared to Ofwat's list of five) and informed by our customers and Water Forum challenge;

- we're working to increase the number of customers included on our priority service register from 39,500 in 2017/18 to 409,500 by the end of 2024/25 through partnership working and effective and efficient promotion; and

- using robotics and automation, we'll drive efficiency and improvements in levels of service provided by our care and assistance team, enabling them to support an increased number of customers, while focusing on meaningful engagement.

| **7.3** | **RESPONDING TO WATER FORUM CHALLENGE** |

The Water Forum established a dedicated subgroup, with a specific focus on affordability and vulnerability. Chaired by Karen McArthur, the independent Water Forum member with expertise in social responsibility, and joined by Gemma Domican, a member from CCWater, the subgroup has extensively and constructively challenged the development of our proposal.

Constructive challenge by the Water Forum

Water Forum Challenges	Our response
Affordability	
Are the existing schemes reaching the right customers, those most in need and who might benefit most?	We undertook significant research with those in receipt of support, and those potentially eligible for support but not in receipt to understand its effectiveness. This was supplemented by discussions with expert stakeholders.
Consider developing schemes which help customers take better control of their payments and help customers get into new payment habits /recovery.	To help tackle historic debt we've developed the 'Matching Plus' scheme which deals both with current payment issues and historical debt through a 'partnership' or contract approach.
Offer a broader range of schemes to support customers.	Using the outcome of our research, we've developed additional support schemes (e.g. Matching Plus) to ensure we have better coverage of the wide range of issues that our customers might experience.
Identify the most appropriate ways to communicate with customers and raise awareness of the support available.	We used co-creation sessions with customers to explore the best channels and messages to reach those customers in need, and have embraced their preferred approach of seeking help from organisations embedded within their communities.
Consider funding some of the affordability programme from profits.	We've a track record of reinvesting outperformance, including in the creation of a care and assistance team in this AMP. We believe it's important to look at how we use our outperformance in the round, based on where the customer need may be greatest at any given point in time.
Consider stretching further the proportion of customers supported through the help to pay when you need it performance commitment.	We reviewed the scope of the performance commitment and potential support per scheme. We expanded our offering in scope to include three additional schemes and increased the proportion of struggling to pay customers supported (our target) from 39% to 43%.
Consider whether it is appropriate to include the Severn Trent Trust Fund charitable donation in the scope of the performance commitment.	The performance commitment includes just the water grant element of the donation which the Severn Trent Trust Fund commits to return. Auriga Services who administer the fund support the inclusion.
Vulnerability	
With such a disparity between the numbers of vulnerable people across the UK and the number of customers on the priority register, the company should define its categorisation of "vulnerable" customers.	We conducted dedicated research to better understand the nature and consequences of vulnerability. We created seven personas to represent the diversity of these circumstances. We also mapped out vulnerable needs codes across physical condition, mental health condition, and communication support and life events.
Identify the specific needs of those groups and build a tailored, targeted proposition to meet them.	Following research, we used a series of personas to bring to life the needs of our customers, then built propositions to meet them.
Reflect on whether and how vulnerability changes and is dependent on circumstances.	We used a combination of customer research and the experience of our operational teams to develop an expanded list of potential triggers (expanding Ofwat's list of five triggers to seven).
Look more widely to identify best practice both in identifying priority needs customers and delivering services to them.	We carried out benchmarking with almost 20 organisations and hosted an expert workshop. This insight has allowed us to identify and fill gaps in our propositions and explore the potential for future partnerships.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

Water Forum Challenges	Our response
Consider and identify suitable partners who could support their work and better connect with vulnerable customers either individually or collectively.	Our engagement process has helped us develop better links and relationships with relevant organisations. We plan to build on these further over the course of this AMP and the next.
Consider including a second vulnerability performance commitment focused on supporting transient vulnerable customers.	Transient vulnerable customers are most impacted during water supply incidents. Our proposals both help identify and support these customers during a water supply event. We wil work with the Water Forum to develop specific measurements in this area during AMP7.

The Water Forum has reported to us that it welcomes the effort dedicated to deepening our understanding of customers' needs and developing proposals to meet those needs. It has noted that our response represents a strong service offering with real points of innovation.

The Water Forum's full challenge is set out in its report.

8   SECURING LONG TERM RESILIENCE

Our customers expect us to deliver a reliable service 24/7, 365 days a year, and also to invest and take decisions that ensure we can continue to do so into the future. The recent freeze/thaw event has brought to the fore the frustration customers face when they cannot rely on the service they expect. In an ever more complex and less certain world, we need to view resilience in its broadest sense, and ensure our operational, corporate and financial systems and processes are robust to external shocks and stresses. Resilience underpins how we'll deliver better outcomes in AMP7 and beyond.

In this chapter, we explain:

- the importance of resilience to our customers;

- our traditional approach to risk and resilience;

- our 'resilience in the round' framework; and

- how we're actively managing each of the components in our resilience in the round framework.

> We've made sure that Ofwat's seven resilience planning principles are embedded in our approach to resilience.

Throughout this chapter, we'll demonstrate how:

- Using our resilience framework, we take a systems approach to resilience in the round for the long term across our business e.g. through long term water resource management planning, board horizon scanning and long term financial viability planning.

- We ensure a naturally resilient water sector through our innovative catchment management solutions and our commitment to green communities.

- We've undertaken a comprehensive customer engagement programme, exploring customers' views on resilience directly - and more broadly on metering, water efficiency and sewer misuse, we've assessed risk, and co-created our plans accordingly.

- We've considered a broad range of risk based intervention options to ensure the optimal solution, e.g. using a balance of supply side, demand side and water trading solutions for our long term water resource plan. Our Birmingham resilience and freeze/thaw case studies provide further examples.

- We've sought best value solutions for customers, we've taken a systems approach and tested customers' willingness to pay for solutions, which we deliver through our robust and flexible supply chain.

- We've taken an outcomes led customer focused approach; our outcomes are supported by our Water Forum; our stretching resilience and asset health performance commitments hold us to account.

- Our Board assurance statement and sign off confirms that our business plan will deliver operational, financial and corporate resilience in the long term.

8.1 THE IMPORTANCE OF RESILIENCE TO CUSTOMERS

Customers rightly see the provision of water and wastewater services as a basic need, and our failure to provide it erodes trust and generates dissatisfaction. Customers take this essential public service for granted until it's not there.

And, while our customers tell us they have some tolerance for failures that are beyond our control, such as third party damage and landslips, disruptions to their service due to our own assets failing is unacceptable. When things do go wrong, customers expect us to resolve them quickly and be aware of their personal needs. Our customers also tell us we need to do more to provide alternative supplies in the event of an interruption.

The events following the failure at Mythe water treatment works in 2007 due to flooding and experiencing first-hand the impact of failure on our customers, has been the catalyst for change in our business. Lessons learned from Mythe, have led us to systematically reduce the risk of loss of supply from our critical assets.

Discussing resilience and risk with customers is challenging as the subject is not on their everyday radar. Over the last five years, we've sought to gain a better understanding of their views of risk, their willingness to pay to mitigate risk and the residual risk they will accept to inform how we respond.

At PR14, we conducted extensive qualitative and quantitative research on supply resilience when we proposed the Birmingham resilience programme. And for PR19 we've continued to evolve our approach to customer engagement, building in new tools including greater use of deliberative research to gain much deeper and more meaningful insight into customer views on resilience. We've uncovered customer views on different aspects of resilience through our insight programme. For example, our choices research uncovered themes on asset health and investing for the long term, while our research on the fair balance of charges across generations revealed views on our financial and corporate resilience.

When considering operational resilience, we've found that low levels of service disruption give customers high levels of confidence in our service resilience, and an assumption that we have contingency plans in place for disruptions. It's only by raising their awareness through deliberative research that we've been able to probe their views more deeply. Where we've exposed previously unknown risks – for example in our resilient water supply cost adjustment claim, customers have supported our proposals and expect us to take action.

Our research shows overall, customers are instinctively 'risk averse' - both for our business and themselves. For example, when discussing risk and resilience, customers firstly felt we

should pursue all options as 'prevention is better than cure' by anticipating a disruption (i.e. plan to avoid it) and be prepared for when things go wrong (i.e. be able to recover from it) – a reactive only approach initially didn't suffice. On reflection, customers accept it isn't always possible to prepare for every disruption and some low probability events (e.g. natural disasters) are difficult to prepare for as they can be rare, unpredictable and costly. In these instances, a response and recovery approach is therefore appropriate. When discussing complex topics such as catchment management, customers want certainty that their water supply is protected, and instinctively want us to pursue an 'all options' approach to mitigate the uncertainty of relying on partnerships.

Overall, our research indicates a large majority of customers - almost 80% - trust us to balance short and long term investment decisions and management of the network. A key and consistent theme across multiple research projects show customers prefer us to take a long term view and upgrade infrastructure now – so we can avoid or cope with disruption, rather than wait until there is a problem – and then have to recover from it; this is despite the investment not necessarily leading to visibly immediate benefits.

Chapter 6: Engaging customers and Appendix A1 sets out our approach to customer engagement and research. Appendix A8: Securing cost efficiency sets out how we've proposed solutions driven by customers' views and our assessment of risk.

The importance of resilience to government and regulators

Our approach to resilience also addresses the resilience expectations of government and our regulators.

Ofwat's new resilience duty has quite rightly been the catalyst for greater focus on resilience in the round and the three critical facets of resilience – operational, corporate and financial.

Defra and our other principal regulators have also articulated their expectations for a resilient water sector. In their 'building a resilient water supply' August 2018 joint letter, Defra, the Environment Agency (EA), the Drinking Water Inspectorate (DWI) and Ofwat set out what they are doing – and what we need to do to put us back on track to build resilience in water resource management in England.

In September 2017, Defra set out the strategic priorities it expects to see achieved as a result of the 2019 Price Review.

These priorities were themselves based on an extensive consultation exercise with key stakeholders. The guidance is clear. The sector's first priority should be to secure the long term resilience of water supplies in the face of a wide range of hazards, threats and changing circumstances- and to do so in the most cost-effective way over the long term.

The EA's focus continues to be on improving resilience in water infrastructure and the natural environment through: long term water resource planning (the Water Resource Management Plan process); a greater emphasis on long term wastewater planning; and an increased focus on ecosystems and catchments - to deliver long term sustainable outcomes for the environment. The water industry strategic environmental requirements (WISER) provided strategic direction to water companies on the environment, resilience and flood risk for business planning purposes. Greater resilience will be delivered by considering the risks posed by extreme weather, climate change and population growth - and working in partnership with other agencies to best identify these risks and deliver sustainable solutions.

The DWI's guidance note on long term planning to water companies sets out the expectation that companies take a source to tap approach managing supplies driven by drinking water safety plans. The delivery and approach should be efficient and sustainable along with transparent investment to ensure legitimacy.

We've set out how we're responding to customers' and stakeholders' resilience expectations in section 8.5.4 and 8.5.5 of this chapter, and in more detail in our outcomes.

Chapter 11: Good to drink, Chapter 12: Water always there, Chapter 13: Wastewater safely taken away and Chapter 16: A thriving environment, sets out how we're addressing the resilience expectations of our stakeholders.

Wider resilience considerations

Resilience goes beyond operational resilience and extends to resilience in our corporate and financial activities as well. The need to demonstrate this is more apparent today – particularly at a time when the sector's legitimacy has been called into question. We want our stakeholders to trust us, value the service we deliver and have confidence that we'll

deliver over the long term. In relation to corporate resilience, this not only means displaying the highest corporate governance, accountability and assurance – but also ensuring our leadership, culture and behaviours are appropriate. And financial resilience means having robust financial structures and greater transparency so our long term viability is not questioned.

And beyond this, we've a wider role to play in ensuring our activities contribute to the resilience of wider society. Our ability to sustainably abstract from, harness natural processes and return water to the environment is integral to how we serve our customers and they have a real expectation of us doing even more to protect the environment.

We also play a significant role in our region beyond our core services. As the principal operating subsidiary of a FTSE 100 company, we employ over 5,750 people in a diverse region covering some of the UK's most affluent suburbs and some of the most deprived areas. By strengthening our resilience in the widest sense – the workforce we develop as well as the contribution we make to the regional economy - we can support the resilience of our region as a whole.

We're also committed to creating a more resilient water sector in England. We've been strong advocates of water trading for some time and at the core of our six-part thought leadership series 'Changing course' is a drive for sustainable and resilient outcomes in the water sector. Key elements of this include ensuring that water is traded across water company boundaries and we've been working very closely with United Utilities to make the prospect of an interconnector from the Severn to the Thames a reality.

We've also been strong advocates of a market for bioresources to drive better solutions and greater resilience in this part of the value chain. In April 2018 we split our bioresources activities from wholesale wastewater to create a separate bioresources business. We've tested our new operating model in the Staffordshire region and have already commenced a series of trial trades with Yorkshire Water, improved demand forecasting and are identifying longer term import and export options. This not only offers greater mutual resilience but also minimises the risk of unnecessary construction to create capacity.

8.2 OUR TRADITIONAL APPROACH TO RISK AND RESILIENCE

We've a well-established and thorough process for driving more resilient outcomes for our customers – which starts with a good understanding of the shocks, stresses and risks we could face. We take a holistic, systems level view of the resilience of our business and the environment we operate in. This helps us to understand interdependencies and identify the weaknesses that could impact our ability to deliver core service both day to day and during times of external stress. It's an approach that we firmly believe is consistent with Ofwat's concept of 'resilience in the round'.

Understanding shocks, stresses and risk at an enterprise level

We've a long established, and we believe world class, Enterprise Risk Management (ERM) system for assessing and managing our significant risks – including risks to our corporate objectives, core processes, key dependencies, stakeholder expectations and legal and regulatory obligations.

The high standards and maturity of our ERM approach have been recognised as exemplary by our non-executive directors – and recently we were asked to share our best practice risk management approach and ran a workshop for the Executive Team of football's Premier League.

Our central ERM team, using standardised tools and methodologies, manages the ERM process. Risk, however, is not a centralised function. On a quarterly basis, business unit ERM champions and co-ordinators identify and assess risks, the likelihood and potential consequence of short term shocks disrupting service and longer term stress events weakening our organisation for their areas of responsibility.

A number of risk management systems feed into the ERM process including the Severn Trent operational risk management system (STORM) - our central repository for operational asset risk which identifies the risk of asset failure turning into a service failure, our Drinking Water Safety Plans (DWSP) - the established process to manage water quality risks and compliance to report to the DWI that looks at local level resilience before aggregating up to ERM level, and Safety Net - our portal for reporting all health and safety incidents and hazards.

Developing a broader insight into shocks and stresses

Regular horizon scanning both 'bottom-up' - led by business unit ERM champions, and 'top-down' - by our Board and Executive Committee, helps build a broader picture of shocks and stresses. Mapping emerging risks (including political, economic, social, technological, legal, regulatory, environmental and health and safety risks, builds a fuller picture of the longer term trends that could undermine our organisation. This enables us to look out, in some cases, to potential risks beyond 2045 to build into our strategic planning.

Our greater insight from customer engagement to understand more deeply what's important to customers and our role in delivering it, helps us understand how we may need to change our operations – and the associated risks to meet those needs.
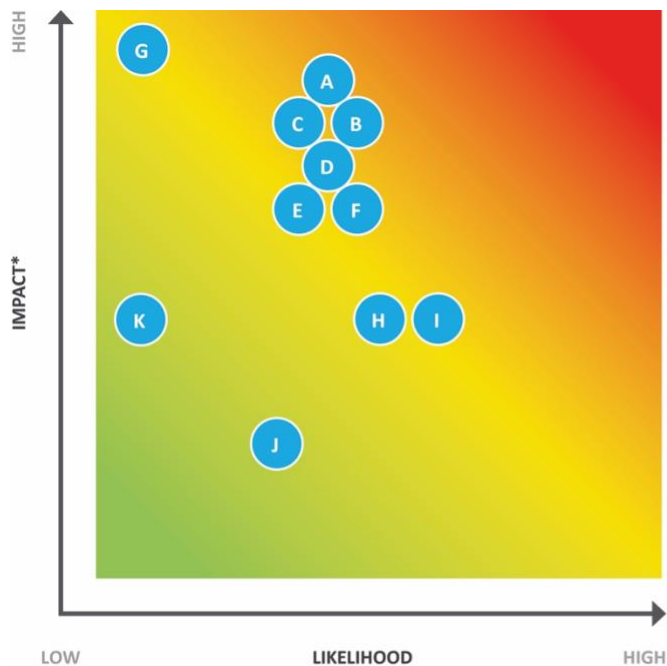
Significant risks feed into our company risk profile and are reported to our Executive Committee, Audit Committee and Board every half year, while specific risk topics are discussed at the Board throughout the year.

Our joined up risk approach enables us to make connections and form a consolidated view of prioritised risk across our business, helping us to make the right decisions 'in the round'.

Our ERM methodology assesses risks at three states, gross (uncontrolled with no mitigation in place), current (the reduction in likelihood and impact resulting from existing controls and their effectiveness) and target (the desired improvement in risk mitigation considering risk appetite and cost effectiveness of control). Our risk assessments estimate the risk event likelihood and its impact if it were to occur. These assessments help us understand where risks are being well managed and prioritise risk mitigation plans for those less so.

Each target risk has a corresponding 'cost to target' and 'date to target' in line with risk appetite and tolerance. Some risks are already at their target position and therefore the focus is on assurance that the mitigating controls continue to operate.

Illustration of ERM risks – from which we action resilience plans

	Resilience risk	Target risk reduction
A	Failure to manage pension scheme	↙
B	Major water treatment works failure	↙
C	Failure of an aqueduct	↙
D	Deliberate catastrophic damage to critical assets	←
E	Major loss of supply to the Strategic Grid	↙
F	Failure to provide the cleanest water to our customers	↙
G	Catastrophic failure of a large reservoir	At target
H	Cyber attack to our corporate/operational IT resulting in supply/health issues	←
I	Not managing large, complex or multiple incidents in an effective manner	↙
J	Inability to attract, train, and retain a skilled workforce necessary to run our business	←
K	Insufficient liquidity available to meet funding requirements	At target

*Impact is the assessment of financial, reputational, service level, health and safety and environment consequence if the risk event were to occur

← Reduced likelihood for target risk position

↙ Reduced impact and likelihood for target risk position

Mitigating shocks and stresses

We need to ensure our services are resilient to the significant and growing risks arising from climate change, population growth, ageing infrastructure, and the need to protect the environment – all against a backdrop of growing customer expectations.

The extreme freeze/thaw in February and March for example, has highlighted the need to look at resilience end-to-end across our systems.

The following table illustrates some of the shocks and stresses that disrupt our business and the different ways we seek to mitigate them.

Examples of how we mitigate shocks and stresses identified in our organisation (avoid / cope / recover)

Note: planned mitigations = (P), current mitigations with planned enhancements = (C & P), innovate mitigations = (I), all other mitigations are current.

Where shocks or stresses may impact	Shocks and stresses	Avoid (Resistance)	Cope (Redundancy and reliability)	Recover (Response and recovery)
Assets	• Major asset failure • Dam / reservoir failure • Flooding • Fire • Water supply contamination • Sewer flooding • Ageing infrastructure • Leakage • Demand outstrips supply	• Asset health monitoring • Strategic grid resilience (C & P) • Local resilience forums • Birmingham resilience programme (P) • Capital investment programme • Asset risk assessments and risk management ->ERM / STORM / DWSP 1st and 2nd line assurance activities • Flood protection programme • Using drones for asset monitoring and 3D modelling (I) • Waterpedia - readily available asset and corporate knowledge managed in one place • Investment in data and analytics (such as AI, robotics and big data to provide insight into our assets) (P) • Reducing pressure transients (through intelligent pump settings) to reduce bursts and leakage (I) • Stretching leakage targets and associated initiatives / investment (P)	• Birmingham resilience programme • Strategic grid resilience (C & P) • Network control • Continuous supply / alternative supply plans • Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard) • Waterpedia - readily available asset and corporate knowledge managed in one place • Stretching leakage targets and associated initiatives / investment • Investment in data and analytics (such as AI, robotics and big data to provide insight into our assets) (P)	• Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard) • Waterpedia – readily available asset and corporate knowledge managed in one place
Utilities, communications and resources	• Power cuts • Severe energy price change • Supply chain failure • Telecommunication failure • Resource scarcity (incl. fuel and chemicals) • State provision of services	• Supply chain risk assessment – prioritisation of suppliers and resources based on criticality • Energy price hedging • Energy self-generation (C & P) • Electricity demand side flexibility capacity (I) • Process enhancements such as 'zeta potential' approach to optimise coagulation process chemistry (using 5% less ferric sulphate) (I) • Development of 'bio-refineries' to turn wastes into products	• Power resilience enhancements (UPS, generators, dual incomers etc.) • Incident management, business continuity and emergency planning • Energy self-generation (C & P) • Development of 'bio-refineries' to turn wastes into products (I) • Being at the forefront of research into recovering valuable materials, energy and clean water from wastewater (I)	• Incident management, business continuity and emergency planning • IT & operational technology disaster recovery

Where shocks or stresses may impact	Shocks and stresses	Avoid (Resistance)	Cope (Redundancy and reliability)	Recover (Response and recovery)
People and society	• Industrial disputes • Civil unrest / strike • Demographic change • Lifestyle change • Skills shortage • Unemployment • Migration • Income disparity • Digital revolution • Increasing customer expectations	• Strong union relations – partnership agreement • High employee engagement levels • Health, safety and wellbeing framework • Training and career development • Apprentice and graduate programmes • Technical training academy (P) • Diversity and social mobility initiatives • Embracing new technologies and engaging with new 'tech savvy' demographics • Multi-channel customer touch points	• Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard)	• Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard)
Environment and climate	• Environmental pollution • Extreme temperatures and weather events • Infectious diseases / pandemic • Failure of climate change mitigation and adaptation • Abstraction licences • Loss of sludge recycling route • Land use change / urban creep • Carbon emissions targets	• Water resources management planning • Catchment management (C & P) • Demand side measures to reduce water consumption (C & P) • Environmental protection e.g. sustainable abstraction (C & P) • Wastewater planning • Strategic Grid resilience (C & P) • Using real time satellite and rainfall data to predict pesticide (metaldehyde) levels in rivers (I) • Energy self-generation (C & P) • Being at the forefront of research into recovering valuable materials, energy and clean water from wastewater (I) • Carbon reduction initiatives / retaining Carbon Trust Standard	• Climate change adaptation plans • Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard) • Strategic Grid resilience • Maintaining access to viable sludge disposal / sludge trading through our bio assurance scheme	• Incident management, business continuity and emergency planning (incl. Exec trained at gold incident management standard) • Wastewater planning
Financial	• Financial crises • Significant funding demand due to major operational failure / event • Persistent low inflation and high interest rates • Increasing bad debt • Gearing	• Robust and vigilant Treasury Committee • Prudent liquidity policies • Low gearing	• Robust and vigilant Treasury Committee and policies • FTSE 100 company with access to equity financing • Access to secure long term funding maturities, diversified debt markets and a broad base of lenders	• Comprehensive insurance programme • FTSE 100 company with access to equity financing • Access to secure long term funding maturities, diversified debt markets and a broad base of lenders

Where shocks or stresses may impact	Shocks and stresses	Avoid (Resistance)	Cope (Redundancy and reliability)	Recover (Response and recovery)
Security	• Terrorist attack (assets and/or water supply) • Extreme vandalism • Cyber-attack • Data theft / fraud • Insider threat • Digital revolution • Further / enhanced security legislation • Evolving threat sophistication	• Security framework, policies, training, standards and employee screening • Physical security (e.g. fencing, access control, gate control, guarding etc.) • Cyber security (e.g. network security, data encryption, firewalls, access management etc.) • Physical and cyber security enhancements (through cost adjustment claim) (P) • Working with regulators / advisors to align our strategy to changing security environment / threat • Development of our in-house security team capability to be able to respond to the changing security environment / threat	• Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard) • Continuous supply / alternative supply plans	• Incident management, business continuity and emergency planning (incl. Exec trained at gold level incident management standard)

Appendix A7: Innovation to deliver better outcomes provides case studies on how we're using innovation to mitigate risks.

Finding the optimal response

To help find the optimal resilience response to risks to our critical infrastructure, processes, systems and networks, we apply the Cabinet Office's 2011 'Keeping the Country Running' '4Rs' four box model (resistance, reliability, redundancy and response and recovery) which has parallels to an 'avoid, cope and recover' model. The model helps us understand what resilience might look like through our customers' eyes.

Components of the four box model

- **Resistance:** protecting or engineering assets and systems to withstand resilience events.

- **Reliability:** ensuring assets and systems have a wide and stable operating range to operate under a resilience scenario.

- **Redundancy:** duplicating capacity so service can be maintained under a resilience scenario.

- **Response and recovery:** ability to effectively recover asset or system capability after a resilience event.

We consider each of the 4Rs against a given risk in turn to ensure we don't assess resilience options too narrowly. Before opting for an asset heavy solution we would first consider other options or blend of options to produce the most cost effective and proportionate strategy. For example, for a short duration interruption and discolouration event, operational and process improvements may be more effective than building additional redundancy.

Using the 4Rs to determine the optimal response for Birmingham resilience

Our Birmingham resilience programme included in our AMP6 plan will deliver a step change in resilience for customers in the Birmingham region. In forming our strategic resilience proposals we applied the Cabinet Office's 4Rs of infrastructure resilience, testing each component's ability to deliver a solution acceptable to customers.

In developing the best option, we used our research to give us much clearer insight into customers' attitudes towards risk and the level of service they expect in the event of a disruption. Risks that had historically been managed and implicitly accepted were no longer acceptable. Customers' views strongly shaped and influenced our plan.

The size, complexity and multiple hazards associated with the Elan Valley Aqueduct (EVA) meant a resistance approach would be too costly and impractical. While our plans embrace the reliability approach, in isolation it cannot ensure a resilient supply. And, relying solely on a response and recovery approach will not adequately meet customers' expectations in the event of failure.

Our optimal – and accepted solution was to build in a prudent amount of redundancy – creating additional network capacity- blended with reliability and response and recovery – in totality enabling us to avoid, cope and recover.

The following chart sets out how we've used the 4Rs to determine the optimum response for Birmingham resilience.

Resistance

Resistance to provide protection

- The size and complexity of the Elan Valley Aqueduct (EVA) means it's exposed to many hazards, including landslides, extreme river scour, and loss of raw water source.

- We looked at the extent a resistance solution could safeguard or form part of an overall solution to safeguard against multiple hazards. (This approach is in-line with Ofwat's resilience principle number 1 and UKWIR best practice).

- Our analysis confirmed that ensuring the EVA is resistant to multiple hazards is extremely costly and impractical – e.g. making an aqueduct resistant to landslides without the very high cost of replacing all conduits with deep tunnels is unlikely.

- A resistance approach is more feasible when there is single significant risk – rather than multiple hazards.

- **A solution based only on resistance is not feasible as it's too costly and impractical to reduce the risks of multiple hazards.**

Reliability

Reliability to ensure infrastructure can operate under a range of conditions

- The day-to-day reliability of the EVA is crucial to providing an uninterrupted water supply; we've been maintaining the EVA over many years to help ensure its ongoing reliability.

- Our proposals to build redundancy also improves reliability - allowing maintenance to be undertaken.

- We can help safeguard the long term viability of the EVA by building in reliability – e.g. ensuring the latest standards are used when renewing or replacing its structures to cope with changes in future environmental and operational conditions.

- **The solution delivers greater reliability by reducing the probability of failure but certain hazards, such as landslides are beyond its coping capacity; reliability is only part of a systems solution.**

Redundancy

Redundancy to ensure design capacity in the network

- The impact of a supply interruption to Birmingham means that a back-up supply is necessary. Our customers have told us they expect a second source of supply.

- We already have partial redundancy in place for Birmingham, through connection to the Strategic Grid. We built on this baseline as the starting point for a significant study into sourcing alternative supplies to deliver the service levels our customers expect.

- **A redundancy solution delivers multiple benefits – firstly it provides a secure second source of supply – which our customers have told us they expect. It also enables the EVA to be maintained, ensuring its reliability in the long term.**

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Response and recovery

Response and recovery at pace from disruption

- The current Birmingham solution relies heavily on response and recovery, meaning many people could receive water from bottles or bowsers during disruption. Flow restoration plans would be invoked but would take time to become active.

- Our experience and customer research highlights our current response and recovery approach in isolation is not practical or acceptable.

  o Events at Mythe in 2007 highlighted that alternative supplies on this scale would be problematic and there would be significant economic impact.

  o Extensive customer and stakeholder engagement unequivocally identified the current approach was unacceptable and customers told us they are willing to pay for an alternative 'redundancy' based solution.

- **A response and recovery solution forms part of an overall systems solution for Birmingham resilience, by retaining flow restoration plans but not relying on bottled water and bowsers.**

## 8.3   OUR 'RESILIENCE IN THE ROUND' FRAMEWORK

We've developed the Cabinet Office's approach that we've historically used into a 'resilience in the round framework' as we move to a 'systems thinking' approach. While our current approach addresses resilience, developing a more systematic approach has been essential to ensure our approach is more rounded and drives greater focus on finding the optimal solution for corporate and financial disruption – as well as operational.

We've worked with leading consultants experienced in resilience best practice and employed a holistic framework of a well-functioning and resilient system. The framework brings together the processes and activities already in place, with the approach set out by Ofwat, into a single framework – our 'resilience wheel'.

At the heart are our customers. Approaching resilience through our resilience wheel ensures we think about the short-term risks and longer term trends that could impact our ability to deliver service – both business as usual and during times of external stress – and what we do to avoid, cope and recover from this disruption.

The resilience in the round framework we've adopted – our resilience wheel
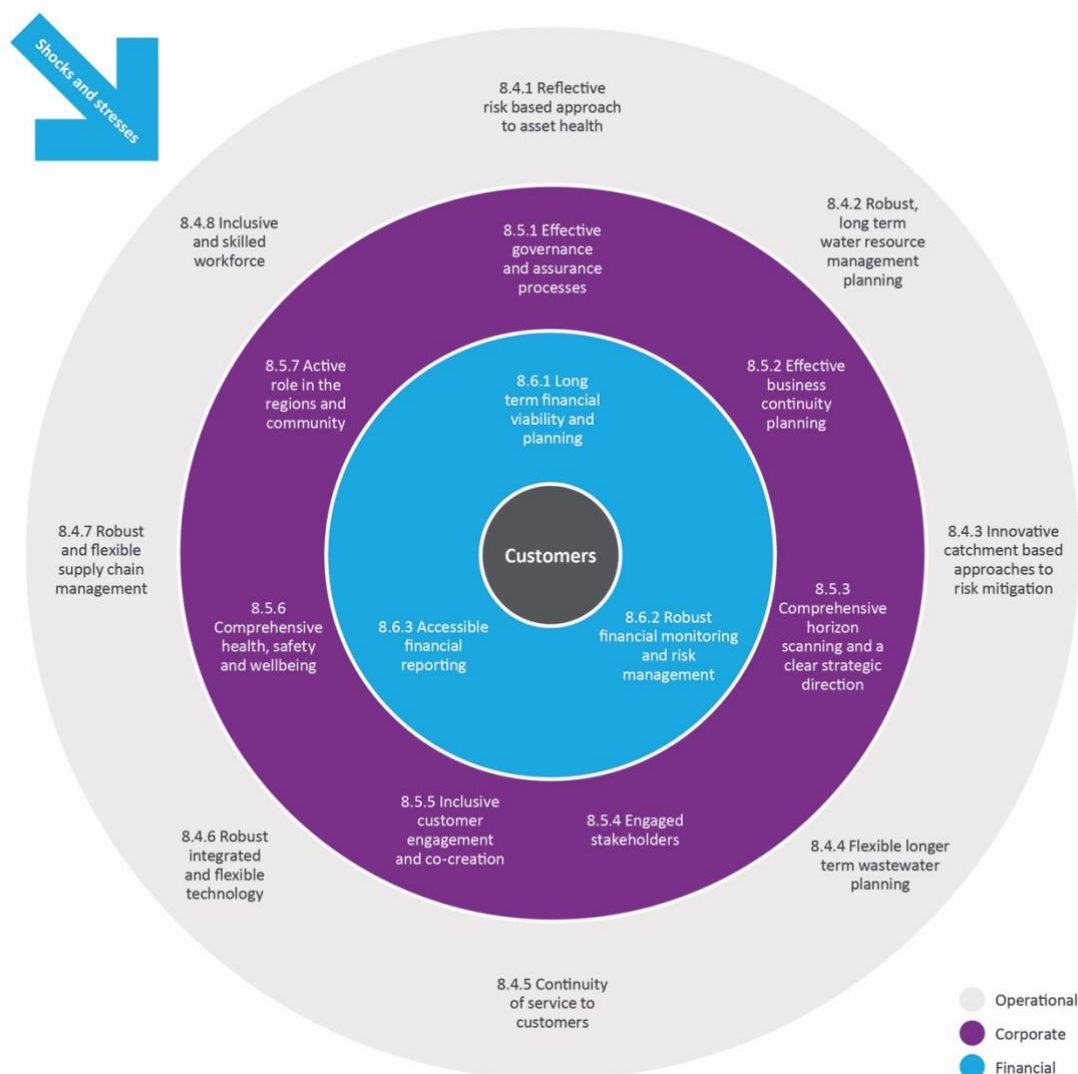
The three key facets of resilience in the round - operational, corporate and financial are shown in practice in sections 8.4 to 8.6.

We decide on the best resilience solution 'in the round'. Avoiding or managing risks in one component, may effectively make us resilient in another, for example, our industry leading innovative catchment management initiatives tackle pollution problems at source, thus minimising costly treatment solutions later. Our grid optimisation project has achieved a £70.5m reduction in our resilient water services cost adjustment claim for a strategic link, because we've been able to engineer a proposed draft WRMP solution to also provide resilience for this strategic link.

Systems thinking also crosses between our operations, financial systems and wider organisation - with risks identified in one area informing our approach in another. For example, our long term financial viability testing, stress tests operational risks (e.g. failure of key assets, failure to deliver what customers want, cyber security) and risks to our organisation (e.g. failure to comply with legislation, health and safety) to inform our approach to long term financial planning.

Adopting this framework ensures we don't look at resilience in isolation – the components work together as a system.

In the following sections (8.4 to 8.6) we take the components of our resilience wheel and demonstrate how we avoid, cope and recover from disruption. In section 8.4 (operational resilience) we've also set out our resilience and asset health performance commitments.

8.4   OPERATIONAL RESILIENCE

Our risk-based approach to building operational resilience puts customers at the centre of our decision making while balancing the needs of the environment and our communities.

Approach to operational resilience

A well-functioning, operationally resilient system should demonstrate the eight components in the outer wheel of our resilience in the round framework (sections 8.4.1 to 8.4.8).

Systems driven operational resilience plans

We've taken a holistic systems approach to understanding the interrelations between the multiple decisions we make to plan and deliver operational resilience. Systems thinking enables us to make better, more informed and sustainable choices because we're able to better understand the wider consequences of decisions in one part of the system and their impact on others.

Resilience metrics build a true picture

To build a true systems view of operational resilience, we've considered resilience across multiple time horizons – i.e. the short, medium and long term (i.e. beyond 2035):

- **Service now metrics** provide important information on the resilience of services currently being delivered, but don't reveal how resilient services are to risks that haven't yet materialised.

- **Asset health metrics** capture resilience issues that occur frequently (e.g. bursts or collapses).

- **Resilience measures** focus on risks that occur far less frequently (e.g. drought), or evolve over a long timescale (e.g. flood risk).

Understanding and measuring resilience

Over time, we've learned from major events, including for example:

- weaknesses in our understanding of flooding and asset redundancy following the failure at Mythe in 2007;

- the supply/demand impact in one area when water is moved to another – as experienced during the two year Midlands winter drought that started in 2009/10; and

- our ability to respond, for example, following a landslip in 2012 which caused a trunk main failure and widespread loss of supplies.

Lessons learned have enabled us to improve resilience and systematically reduce the risk of loss of supply from our critical assets, for example after Mythe we invested in a flood protection programme and a new 17km water main to provide redundancy to improve security of supply for Gloucestershire.

8.4.1 Reflective, risk based approach to asset health

It's vital that we've a detailed understanding of our assets' health, and take a reflective and risk based approach to ensure good operational resilience – so we can avoid disruption in the first instance – or cope when faced with it.

We use 'asset health' to describe the general state, performance or condition of an asset. Asset health, failure history and age are used to assess the likelihood of failure, and combined with consequence of failure, we get an understanding of asset risk. Our understanding has markedly improved over recent AMPs, enabling us to:

- predict and avoid future service failures;

- better target investment and resources;

- improve robustness and efficiency in our long term plan; and

- deliver cost efficiency.

Our performance framework provides rigour and consistency in our approach to identifying, selecting and defining measures to help us understand asset health and the overall systems needed to deliver services. We also use 'driver trees' to drill down on performance drivers so we can identify and track the most appropriate measure for each asset group.

Chapter 9: Delivering outcomes for customers explains how we've used driver trees to create a new suite of performance commitments.

We also use longer term trend analysis to understand relationships between:

- asset health and outcomes (service, cost, environmental impact or a combination of all three) as monitored through our in AMP performance framework; and
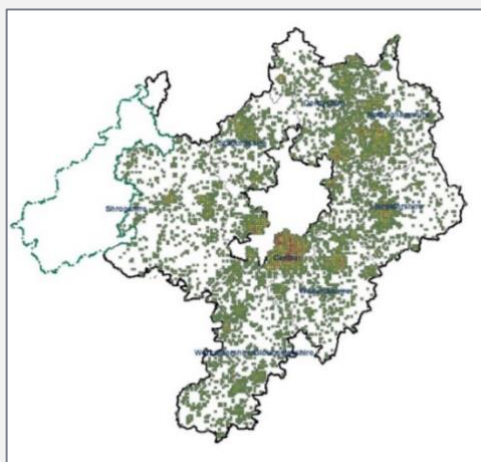
- asset health and investment, helping us to predict future preferences and plan capital investment where it has the most benefit.

Intelligently managing and improving asset health

Data on asset health is used to proactively manage and improve asset health. For instance we utilise burst data to deploy high speed pressure loggers on our network to understand pressure transients. Our subsequent interventions focus on mitigating transient pressure waves, this reduces the risk of service failure and also extends asset life, therefore providing a more cost effective totex solution. We're using this approach to also manage water quality complaints. Our asset health measures and broader systems thinking has led to a focus on manganese control at our water treatment works, combined with conventional flushing and cleansing programmes to improve the overall performance of our end-to-end asset base.

Using asset data to reduce water quality complaints

This map of our region details 1km grid squares and overlays areas where we've received water quality complaints. Where we've had a higher propensity of complaints we've targeted the water treatment works in the area to investigate manganese control. For example, at our water treatment works that feeds Birmingham, work undertaken has significantly reduced the manganese content of water leaving the works and driven a 47% reduction in water quality complaints in the associated areas of the network.

A holistic systems approach to resilience

We've also become more responsive to changing risk and driving asset health and resilience. For example, through increased sampling, we identified higher cryptosporidium concentrations at a lowland river raw water source, which challenged our water treatment works. Our analysis suggests the issue could be an ongoing seasonal risk, particularly given the recent weather extremes. We've therefore invested in ultraviolet treatment technology at the works to protect drinking water quality longer term – despite the initial challenge being a short duration issue that we were able to deal with through conventional water treatment.

Innovation to drive asset health improvements

Innovation is becoming more prevalent in our approach to asset health and risk management. We've already invested in drone technology to assist in monitoring asset condition and

to gauge the changing risk profile of the local environment surrounding the asset. We've also reflected on the findings in Ofwat's 'Targeted Review of Asset Health and Resilience in the Water Industry' report and acknowledge there is more we can do. While Drinking Water Safety Plans (DWSP) reflect new and changing risk profiles across our asset estate, we will be looking for stronger assurance from our other deterioration and consequence modelling for the rest of our asset base, to better inform our modelling and business planning of asset health, service provision, risk and resilience.

Chapter 11: Good to drink and Chapter 12: Water always there, explain how we're working to make our water network and treatment works more resilient.

8.4.2 Robust, long term water resource management planning

Systems driven long term solutions

We recognise that a robust long term Water Resource Management Plan (WRMP) is essential to safeguard long term resilient supplies for our customers. Taking a systems approach and informed by extensive customer research and co-creation, we've sought to develop the right long term solutions to avoid disruption to services – balancing supply and demand to provide drought resilient supplies and manage climate change uncertainty, while avoiding deterioration of the water environment. Customers have some key principles they expect us to consider in defining solutions, ranging from sustainability and best value to the responsible use of resources and avoiding environmental harm. Our WRMP is built on our customers' views, and mapped out over a 25 year plus time horizon, and our asset deterioration is modelled over a 25 to 40 year horizon to drive our maintenance programme.

We've made significant investment to improve our asset modelling. We've continued to link our maintenance needs with supply/demand modelling, and have extended our approach to reflect the adaptive pathways approach as recommended by UKWIR as best practice. We've adopted an adaptive pathways approach as no single option is sufficient to close the supply/demand gap on its own – a single option solution would be undesirable in any case compared to a balanced approach combining demand side, supply side and water trading options. Using an adaptive pathways approach has enabled us to model the sequence of options which deliver optimum performance and resilience against an uncertain future. It allows us to test a wide range of possible futures using combinations of forecasts (high, medium and low) on major risks and uncertainties such as climate change and population growth. We've generated 60 different future scenarios which we've tested to create an optimum portfolio of water resource options and identify the points where we may need to make future decisions. This approach gives us a high degree of confidence that we're prioritising demand side and supply side (including leakage management and behavioural change) solutions – while taking account of our interactions with the water environment – and in a way which allows us to adjust our strategy as we become more certain about needs and solutions.

Our approach – including the use of adaptive pathways is set out in more detail in our WRMP, Appendix A8: Securing cost efficiency - supply demand cost adjustment claim and Appendix A10: long term drinking water plans.

Leading the sector promoting water trading

Over the last decade we've strived to lead the sector's thinking on water trading as an option to provide a lower cost and more sustainable solution to meet water resource demand, increase resilience and deliver better value for customers.

We support more collaboration between water companies' resource planning to drive a more resilient sector nationally. As active members of all regional water resources workgroups we're focused on how to make sustainable and resilient water trading between the usually wetter north-west and the drier south-east a reality. We've commissioned joint research with United Utilities and Thames Water to understand customers' views on trading and found customers see water scarcity as a national issue, to be coordinated by water companies, regulators and government. The majority of customers support water trading as part of the solution, although they want reassurance on the security of supply, environmental impacts and cost.

As part of our WRMP we've taken a progressive view on imports and exports and have proactively investigated third party bilateral opportunities which could have led to three times the volume of imports since WRMP14. We assessed these potential imports alongside our own supply and demand options. And while our active discussions have not generated a new trade within our final WRMP, we've built a strong platform for developing future solutions.

Drought planning to safeguard supplies

Our drought planning framework identifies the triggers and our responses to drought in real time enabling us to put in place measures to safeguard our supplies, minimising the need for customer usage restrictions, while minimising our impact on the environment. Our drought plan sets out the mitigation measures required, helping the water environment recover quickly when conditions return to normal.

We're in the process of exploring a number of mutual resilience drought trades with neighbouring water companies and third parties. For example, we're developing a trade with South Staffs Water to enable a bidirectional transfer of potable water, providing drought and operational resilience to thousands of customers in the north Birmingham area.

Chapter 12: Water always there, our WRMP and our statement of response to Defra set out in more detail our long term plans for water resource management.

8.4.3 Innovative catchment based approaches to risk mitigation

Developing innovative catchment based approaches is a critical component of operational resilience, allowing greater flexibility and optioneering of solutions to emerging risks. As one of the sector leaders in catchment based approaches, during AMP6 we proposed and are delivering an ambitious and innovative leading catchment management programme – driving for a naturally resilient sector. Working in partnership

with landowners and other stakeholders, catchment management helps tackle pollution problems at source, thereby minimising – and where possible, avoiding the need to treat symptoms later. This approach enables us to sustainably and cost beneficially manage risks to our raw water sources, leading to improved drinking water quality, reduced additional water treatment and wider environmental benefits in our catchments.

Aligned to our risk-based drinking water safety plans, catchment management is now our preferred solution to manage raw water pollution risk from agriculture and other sources. Customers support this approach, especially when they're made aware of potential cost reductions and wider environmental benefits.

Our catchment management team run Farming for Water, our catchment management programme which drives a number of initiatives to deliver natural resilience. The Severn Trent Environmental Protection Scheme (STEPS), provides grants to famers to protect and improve watercourses and the wider environment, and 'Farm to Tap' focuses on managing pesticides, including metaldehyde and the impact of diffuse pollution from farms through pesticide training amnesties, and specialist visits to advise on alternative pest control measures.

Pioneering innovation benefiting the water sector

Through the Farm to Tap scheme, we play a critical role in developing innovations and leading initiatives to reduce metaldehyde concentration that compromises the resilience of our assets and water sources. We've created a water industry liaison group working with farmers and metaldehyde manufacturers to develop and ensure best practice. We've also pioneered the use of satellite imagery to help guide our catchment management teams to high risk areas within our 19,000km^2 catchment, leading to significant reductions in metaldehyde concentration; this technology has been successful and has been adopted by a number of other water companies. And we've created a metaldehyde prediction model that enables smart water abstraction by predicting metaldehyde concentrations in rivers 48 hours in advance of abstraction. This enables us to suspend abstraction during metaldehyde peaks, thus reducing cost and investment in treatment solutions.

Our approach in AMP7 builds on our AMP6 work by directly measuring the impact of catchment management on the risk controls in our drinking water safety plans.

Appendix A7: Innovation to deliver better outcomes includes case studies on how we're using innovation to further our catchment management initiatives.

8.4.4 Flexible, long term wastewater planning

Taking a flexible and forward looking approach to planning and risk mitigation is critical to the resilient operation of our wastewater system. We've a well-developed approach to our long term wastewater planning that we believe is at the forefront of the sector.

For our wastewater business, we've limited control over system inputs and limited capacity to isolate or store flows in the event of a disruption. Our approach to long term wastewater planning is therefore focused on minimising risk and ensuring our systems can cope with external disruption. It covers the six guiding principles of the Drainage Strategy Framework, published by Ofwat and the EA in May 2013.

During AMP5 and AMP6 we significantly improved our modelling capability, enabling us to predict potential risks before they occur. For example, our integrated drainage models and 2D flood mapping predict locations with flood risk enabling us to plan investments and accordingly. We take an holistic, catchment based approach to our wastewater treatment works, factoring in increases in external stresses, environmental obligations and asset maintenance programmes. Forecasting future treatment needs this way allows us to choose the optimum time to invest, ensuring long-term demands are accommodated.

In AMP7 we'll continue to shift from a largely reactive 'fix on fail' approach to a preventative operation and maintenance plan for our most critical assets making our assets more reliable in the short term while reducing costs in the long term by extending useable asset life. For example, we've started to roll out a plan to identify and remove pressure transients in our sewage rising mains. If left unresolved, these very short duration pressure spikes weaken pipe structure, risking bursts.

We're also designing our assets with improved resilience in mind. We've assessed single points of failure on our treatment works and are eliminating them where possible through a bypass or dual process streams. It's often too costly or impractical to protect an entire wastewater treatment works, however we take a risk based approach and for example raise sensitive electrical components above flood level so treatment works can recover quickly in the event of flooding. Loss of power is a key risk so we've taken a twin-track approach to self-generation and supply, and ultra-low energy treatment processes – 64 of our largest sites are already self-supplied, and we've developed innovative treatment processes, such as vertical flow reed-beds, that can easily be operated by small generators or small scale off-grid renewables.

In order to better cope with disruption, we're managing upstream catchments to reduce stress on our network

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and minimise the consequence of failure. By working collaboratively with local authorities and developers, we can manage surface water sustainably and integrate drainage planning at a catchment level.

Our customers also have a role to play to help us cope. In AMP6 we've increased our education and awareness activity to promote behavioural change, encouraging customers not to put wet wipes and fats, oils and greases (FOG) down the drain. We're planning another educational step change for AMP7, as we inspire our future generation to behave differently and have used co-creation with customers to design campaign measures around sewer misuse.

We also recognise that a healthy environment and resilient local communities can help us recover more quickly from shocks and stresses. We've therefore committed to incentivising the creation of natural and social capital through our proposed 'green communities' performance commitment – which drives for a naturally resilient sector.

Chapter 13: Wastewater safely taken away and Appendix A9: Drainage and wastewater management plan evidence our long term approach to drainage and wastewater management.

8.4.5 Continuity of service to customers

Delivering a continuous service to our customers requires us to have a detailed understanding of our network and treatment works and the risks that threaten our service. By understanding the end-to-end system risk, we can develop the right resilience option or mix so service levels increase in a proportionate, sustainable and efficient way. We've invested in a newly developed network analysis platform built using a combination of hydraulic modelling results, network deterioration data, external risk factors and historic performance to give an overall systems view.

We're undertaking a number of initiatives to actively avoid stresses on the network which can lead to asset failure, for example, we're increasingly recognising the role of pressure management in reducing asset stress in our water network. In collaboration with Imperial College London we've improved our understanding of the distribution and prevalence of high frequency transient pressure waves across our network, and developed techniques to significantly reduce them. We're extending this approach across our assets during AMP7.

And while we continue to work hard to avoid disruptions that threaten continuity of service, certain shocks and stresses cannot be avoided.

We've historically designed in a level of asset redundancy to give our network flexibility, however we've moved away from our old isolated communities' investment which involved duplicating single route trunk mains to population centres as we seek to address high risk areas in a more cost effective way. Our improved understanding has enabled us to develop more efficient interventions based on our ability to cope during a trunk main failure. Analysis across the network has helped us better understand which network failures can be dealt with using a combination of network storage time and trunk mains repair capability.

Where incidents are of strategic level importance – as in the long duration incidents of 2018, we've quickly mobilised a 'gold level' incident team lead by our Executive Team. Continuity of service is ensured through increased production, tankering and flexing resources to deliver the best response. We also work closely with local resilience forums and our logistics partners to provide alternative supplies, and focus on our vulnerable customers to ensure they receive the level of support they expect, including hand delivering alternative supplies where necessary. And throughout, we've kept customers informed, answering queries directly through text messaging and social media 24 hours a day 7 days a week.

The extreme freeze and rapid thaw of February and March 2018

The rapid thaw following 11 consecutive days of freezing temperatures led to an increase in leakage of over 70%, mainly driven by an increase in burst pipes resulting in customers experiencing interruptions to supply.

We know the impact of this has been significant for many of our customers and during this time they didn't receive the service they expect. The event has been the catalyst for a comprehensive review of our operational resilience supported and monitored by our Board, and we're focusing hard on improvements, learning from what went wrong – and building on what went well. Our CEO and senior executives have met directly affected customers to hear their experiences first hand – and we've used qualitative and quantitative research and continued to actively engage with customers to understand their views better and test and refine our thinking as we've developed our plans. We've also collaborated with the rest of the sector to learn best practice and develop industry-wide solutions in areas where we can do better.

We've learned and we're doing more

- We're making our network more resistant to extreme weather shocks and we're reviewing our approach to seasonal weather campaigns - making them more effective at driving customer action such as lagging pipes. We're also collaborating with Water UK and other water companies to consider new protocols to help customers fix their leaks when network integrity is at risk.

- We're improving the reliability of our network and assets - ensuring they operate at or close to their design maximum, even during extreme weather conditions. We're focusing on improving process, mechanical and electrical reliability.

- We're building additional network redundancy - increasing headroom between average demands and peak week demand. We'll do this by putting more water into our system, increase storage capacity, establish greater interconnectivity between assets, and free up pinch points to unlock network flexibility.

- We're improving our extreme weather response and recovery - updating our emergency response plans and triggers to ensure events are escalated early, improve network visibility by installing additional data loggers, improve our provision of alternative supplies (more proactive and more tailored to specific customers' needs), and improve our identification of customers experiencing transient vulnerability. We're already putting these plans into practice.

Going forward, we believe this will help minimise the risk of extreme weather events triggering operational incidents and help ensure we're better able to cope with and recover from service disruption to our customers.

Chapter 11: Good to drink and Chapter 12: Water always there explain how we're working to make our water network and treatment works more resilient.

8.4.6 Robust, integrated and flexible technology

While we need to ensure our technology is resilient to performance issues and cyber-attack, technology also enhances the resilience of our business.

Keeping our technology resilient to cyber-attacks

The increased risk of cyber-attacks, and the new General Data Protection Regulation (GDPR) and Network and Information Security Directive (NISD) have been the catalyst to review and improve our capability. Our cyber security programme's focus extends beyond information technology (IT) to operational technology (OT) and new threats emerging daily. To cover these additional threats, we've extended our security operation centre.

The Board is taking the increasing threat of cyber-attacks seriously and has contributed significant time to understand the risks to our business, the protection of our systems and

how we achieve compliance. We've commissioned an independent review of our conformance against the NIS regulations based on the Cyber Assessment Framework produced by the National Cyber Security Centre and have developed a roadmap which will continue into AMP7 to help ensure our longer term resilience. We're also undertaking a number of enhancements across application security, data security, network and cloud security, identity and access management, monitoring and analysis, governance and compliance. In addition, we're establishing a cyber security competency centre to ensure resilience against cyber threats.

Technology to enhance business resilience

We continually seek out, explore and invest in innovative technology to transform our service performance and improve operational resilience. We're enhancing a number of areas and exploring others to ensure our long term operational resilience.

We're expanding the amount of real time logging we have on our water and wastewater networks by increasing the density of existing traditional logging such as water pressure, expanding newer technologies such as acoustics, and by high frequency pressure logging. This increase – combined with analytics that pinpoint locations and fix issues before they impact customers – minimise supply interruptions and water quality issues. And for waste, an increase in loggers on our Combined Sewer Overflows (CSOs) and pumping stations, combined with weather data, will help predict and prevent pollutions and flooding.

And we're building on analytics with more sophisticated predictive analytics and a situational awareness platform. Predictive analysis can drive better investment decisions prioritised by risk with enhanced trend and risk data for modelling, while also proactively identifying maintenance and responses to potential asset failures before they occur. Our situational awareness platform will ensure operational employees have a clear consolidated view of factors impacting operations. The platform will be part of business as usual and a critical component during an incident providing oversight on data such as asset status, alarms, customer complaints, tanker location and weather on a single map – and will provide dashboards and reports to aid decision making enabling us to effectively prioritise and respond quicker, while minimising impacts on customers.

Appendix A8: Securing cost efficiency sets out in more detail how we're responding to the increasing risk of cyber-attacks.

8.4.7 Robust and flexible supply chain management

We've established processes to ensure our supply chain is robust, flexible and resilient. Developing good relationships with our suppliers, with regular engagement is central to ensuring we're able to quickly understand emerging issues that may impact our business.

From the start of our procurement process, our approach seeks to avoid or minimise supply chain risks. Potential suppliers are subject to a thorough pre-qualification assessment that evaluates a range of measures including financial stability, health and safety, approach to risk, and their environmental and societal impact.

Once part of our 'one-supply chain', we continually assess and monitor the likelihood and impact of key risks that could affect a supplier's performance. Our commercial team regularly audit suppliers and more recently, we've rolled out an improved supply chain risk assessment model which we've used to evaluate our supply chain. Over the next six months we'll have contingency plans in place for any highest risk suppliers identified to add to those plans already in place. These plans (new and existing) will be supplemented with regular monitoring. We use the industry standard NEC3 contract to manage risk and use the early warning mechanism to highlight emerging issues, while regular risk review and mitigation meetings address known issues. For critical business needs, we ensure we can recover through dual sourcing or contingency suppliers, e.g. for chemical treatment and tankering. When a risk materialises, a cross-functional team is quickly mobilised to work with the supplier (or the alternative), to manage the issue until resolution.

Working in collaboration with our suppliers, we help improve their sustainability and resilience credentials. Through our 'sustainable supply chain charter,' we encourage our most critical suppliers to set ambitious targets, e.g. to reduce their water footprint or improve their community presence. We uphold a strict zero tolerance view to modern slavery and human trafficking, and are working closely with the charity Hope for Justice to take all reasonable steps to reduce this risk throughout our supply chain.

For project delivery we work across our business with our supply chain, involving them as early as possible to de-risk projects and increase efficiency. We use a gated decision process and associated decision approval for key stages of construction projects to ensure they're delivering to time and plan. For example, we're working closely with our two framework contractors on the £75m scheme to replace three sections of the Elan Valley. Each month, risks, opportunities and a full programme review take place, and a monthly board meeting reviews progress and assists the delivery team to overcome scheme blockers. These collaborative meetings have strengthened relationships between ourselves and our

contractors and we've been able to innovate and learn as the scheme has progressed – including adopting green approaches to some of our engineering challenges.

And for AMP7 we've a new approach to our one-supply chain management. Reflecting changes in external markets and our operating environment, we're de-risking our supply chain by bringing more design activity in-house to improve control, secure scarce talent and improve efficiency and innovation.

Chapter 20: Securing cost efficiency explains how we're changing our approach to manage risks and drive efficiency and innovation.

8.4.8 Inclusive and skilled workforce

Our people are key to the success of our business – to ensure our business delivers for the long term, we need a resilient, technically skilled and highly engaged workforce.

Investment in training builds resilience – competent, well skilled people manage our assets better, avoiding disruption and help keep the network stable. We already deliver over 16,000 days a year of formal training – equivalent to nearly three days per employee – focusing on both soft skills and technical development. And we're investing around £10m of outperformance to create a new Severn Trent Training Academy which aims to make our workforce the most technically skilled in the sector. This will include developing innovative new learning technologies, such as augmented and virtual reality, to simulate different operational environments, enabling our people to practice safely, learn how to avoid a range of problems and keep our operations running smoothly. And to help support our wider resilience objectives by building a more resilient sector overall, we're offering smaller water companies the use of our academy facilities.

Chapter 11: Good to drink explains how skills development is a critical part of our strategy for improving drinking water quality performance.

We're also ensuring we invest in the skills for tomorrow including data analytics, artificial intelligence and security (cyber and people). Our engineering teams are building their in-house design and build capability as we change the way we deliver capital projects in AMP7, and our operators increasingly use new 3D asset modelling technology to enable their day to day planning. Similarly, our front line teams will need new technological innovations, for example robots in leakage detection. We've therefore refreshed our technical skills curriculum to support these and expect to have our fully revised academy syllabus ready by the end of 2019. Our highly sought after graduate and apprenticeship programmes attract strong external candidates and exceptional internal talent, helping ensure we've the right people for tomorrow's needs.

We enhanced our talent and succession planning activities in 2017 through our new business wide talent forums, which provide a more systematic, enterprise-wide approach to building our talent pipeline for critical or vulnerable roles, and focus on single points of failure.

Lessons learnt following recent operational incidents identified the need to increase the technical competence and confidence of our water treatment workforce helping them recover good working practices after disruption, so we've created our 'skilled by choice' programme to address this. Our innovative approach to technical development has been core to building a resilient workforce and we're proud it's been recognised at the Utility Industry Awards.

A highly engaged workforce means we're better able to cope with challenges to our day to day operations e.g. during operational incidents – our people are flexible, adaptable and willing when we need them most. In 2017, our employee engagement scores rose by six percentage points, giving us an upper quartile position relative to our peers and confirming our people appreciate the initiatives we're driving to make our business an even better place to work. And with high employee retention – our employee turnover is around half the national average this year – we've greater retained skills and thus an inherently more resilient business. Furthermore, the majority of our employees are customers and over half are shareholders, meaning our people have an all-round interest in the long term success of our business.

We're proud of our work to build an inclusive workforce. Our senior leaders strive for the most diverse and inclusive business including a focus on BAME (black, Asian, and minority ethnic) talent, and our recruitment partners are committed to a diversity charter supporting our values. This drive has, for example, increased BAME employees on our graduate programmes by 13%. Our diverse workforce more closely mirrors the communities we serve, helping us build closer links and be more connected to it - and avoiding the risk of being seen as out of touch with our customers' needs.

We're also encouraging people from less socially mobile backgrounds to join us – we want everyone to have an opportunity regardless of background. We've removed artificial barriers to entry and we're working with schools in disadvantaged areas to search for untapped talent and unused labour markets. This has led to us being named as one of the country's top social mobility employers.

Chapter 10: A positive difference explains more about our inclusive and diverse workforce and also how we're working to make a broader contribution to our region by supporting social mobility.

Designing resilience and asset health performance commitments

To ensure we've focused our approach to long term resilience and asset health to deliver what's important to customers and our stakeholders, we've developed a comprehensive set of stretching and ambitious resilience and asset health performance commitments that extend out to 2045. They're designed to hold us to account for the improvements we've promised to our customers, and track progress towards our outcomes. For AMP7, we've selected six resilience and six asset health performance commitments.

Measuring resilience and asset health in our plan

Resilience	Asset Health
Risk of sewer flooding in a storm	Treatment works compliance
Collaborative flood resilience	Sewer collapses
Risk of severe restrictions in a drought	Sewer blockages
Resilient supplies	Mains bursts
Increasing water supply capacity	Unplanned outage
Security – reducing the risks to our sites	Water quality complaints

Our targets on these metrics are guided by our objective to develop a robust and resilient network for the long term and take account of ambitions outlined by regulatory or other stakeholders. Overall on resilience metrics we're offering significant long term improvements across all metrics. For example, we'll be working towards a long term objective over two AMPs to reduce the risk of severe restrictions on drought to a 1:200 year event from 63.7% to 0% by 2030/31 as outlined within the WRMP. Similarly on resilient supplies on our water network we'll be aiming to ensure 99% of our customers are resilient by 2040. We recognise this will require further innovation, both on cost and delivery for the future and will be contingent on future business plan submissions.

Overall on asset health, our proposals continue to ensure we maintain stable service and ensure that for metrics which have a direct service impact, we target an improving performance. We're therefore proposing further improvements on metrics such as sewer blockages, water quality complaints and low pressure as supported by our customers.

Chapter 9: Delivering outcomes for customers and Appendix A3: Designing performance commitments, sets out our approach to selecting commitments and frameworks for setting targets. Appendix A1 sets out how we've engaged with our customers on our asset health commitment.

8.5 CORPORATE RESILIENCE

As the principal operating subsidiary of a FTSE 100 company providing essential to life services, we recognise that we, and our shareholders, have a long term social purpose to fulfil. We not only uphold the highest standards of corporate governance but also foster a culture and values that constantly asks each of us to 'do the right thing' every day.

Overall approach to corporate resilience

As well as displaying the highest governance, accountability and assurance standards, we want our leadership, culture and behaviours to go beyond this.

We demonstrate our corporate resilience through the seven middle wheel components of our resilience framework. These are set out in sections 8.5.1 to 8.5.7. In their totality, they help us anticipate trends and variability in business operations and avoid, cope and recover from disruption.

8.5.1 Effective governance and assurance processes

As the principal operating subsidiary of a FTSE 100 company we adhere to the same 'best in class' governance standards as our parent company, defined by the UK Corporate Governance Code. This includes, for example, having a majority of independent non-executive directors on the Board, with Board committees of Severn Trent Plc providing oversight of critical aspects of our business, underpinned by our governance 'foundations' and the Corporate Governance Code. More information on our corporate governance framework can be found in our Annual Report and Accounts.

Given the size and importance of Severn Trent Water to the Severn Trent Group, the Boards of Severn Trent Water and Severn Trent Plc have the same directors. This structure was implemented in 2007 to ensure the highest standards of corporate governance were applied at the regulated subsidiary level and to promulgate greater visibility and supervision of Severn Trent Water Limited by the Plc Board.

Chapter 18: A company you can trust provides more information on how our governance structure meets Ofwat's leadership, transparency and governance principles.

Independent decision making

With the exception of our executive level Disclosure Committee, all of Severn Trent Plc's Board committees are led by our independent non-executive directors who comprise the majority membership of each committee. These committees consider issues and make recommendations to the Board of Severn Trent Water Limited on matters relating to the appointment, remuneration and succession of executive directors and senior management, as well as overseeing its risk management and internal control systems and ensuring the integrity of its financial and regulatory reporting.

The process by which the independence of non-executive directors is assessed is included in Chapter 18: A company you can trust, and a summary of the outcomes of the last Board effectiveness review is set out on page 79 of our Annual Report and Accounts. And our charter of expectations and role profiles detail the roles and responsibilities of all directors.

Sound information

The Board's Audit Committee assists the Board in discharging its responsibilities for the integrity of our financial statements, and the assessment of the effectiveness of our internal control and risk management systems. This includes scrutinising the work of internal and external auditors, including providers of technical and regulatory assurance.

The Audit Committee's role in assessing internal controls and assurance, including the work of internal audit, is detailed in our Annual Report and Accounts on pages 78 to 79.

Internal Audit is an independent assurance function available to the Board, Audit Committee and all levels of management and is supported by PwC to give us greater access to specific expertise, increased ability to scale up operations, and the ability to challenge management independently.

The Audit Committee is confident that, where any failings or weaknesses are identified during its review of internal control systems, management puts in place robust actions to address them on a timely basis. An internal control system, however, can provide only reasonable and not absolute assurance against material misstatement or loss, as it's designed to manage rather than eliminate the risk of failure.

Our established assurance framework, based on a three lines of assurance model, is explained in Chapter 23: Securing trust, confidence and assurance.

The framework is targeted at areas of greatest risk, with clear lines of ownership for the delivery of performance and the accuracy of data provided. Governance of the framework is provided by the Board, the Audit Committee, the executive Disclosure Committee, and Executive Committee – with additional challenge provided by the Water Forum.

Chapter 23: Securing trust, confidence and assurance provides more detail on our assurance processes.

We also recognise that assurance, no matter how good, isn't infallible. Our Board actively fosters a culture that encourages our people to raise issues when they find them, and importantly, rectify them. The Board also recognises that in certain circumstances employees may find raising concerns directly to line management or senior management difficult. Where this is the case, employees are encouraged to use our confidential and independent whistleblowing helpline or email service, operated by Safecall. All investigations are carried out independently of direct line management and findings are reported directly through to the Audit and Corporate Responsibility Committees. During 2017/18, the effectiveness of our whistleblowing procedures was reviewed to ensure they offer suitable support to both the whistleblowers and also the investigating managers.

8.5.2 Effective business continuity planning

When things don't go to plan and we're faced with disruption, our business continuity plans come into effect to ensure we seamlessly deliver service as close to business as usual for our customers.

We take a customer focused risk-based approach to business continuity aligned to the National Risk Register. Our organisational framework 'Being Prepared' and our 'Business Continuity Standard' follow ISO 22301 best practice (though we are not formally accredited) and the Business Continuity Institute Good Practice Guideline 2018. The framework sets out our risk based response plans to prepare for, respond to and recover from potential impacts:

- Emergency response plans comprehensively cover all our critical assets – water supply, wastewater and alternative supply. We also have emergency plans in place covering critical areas e.g. mass absence, national level threats and cyber security, GDPR and information security, to ensure we can continue to operate in an emergency.

- Business continuity plans ensure we can operate in a crisis and recover with minimal impact on service. Many employees can work remotely; our workplace recovery plan covers our three main offices and we've access to an externally managed 'second office site' to ensure critical business functions can continue, should our Coventry office be compromised.

- Incident management – operational level incidents are managed day to day by our network control team. Strategic 'gold level' incidents such as the freeze/thaw event are led by our Executive Team with support from business and strategic leaders. Incident plans are regularly updated and tested and include an annual strategic level exercise – an example being a company level cyber exercise we've recently undertaken with Coventry University. We're also undertaking an accredited incident management training programme for our senior leaders further building our incident capabilities.

We also actively participate in exercises with external stakeholders, including local resilience forums, emergency services, local authorities and the EA. Our high standards have seen us recently contribute to the development of Water UK standards.

The increased risk of terrorism is the most significant new factor in investment planning for security. In 2016 we developed a pioneering security risk-based approach, and at the 2017 CIR Risk Management Awards won an award for Risk Management Programme of the Year. Our approach has been shared and endorsed by Defra and Centre for the Protection of National Infrastructure (CPNI).

Appendix A8: Securing cost efficiency, includes our security cost adjustment claim which sets out more information on how we're improving our physical security.

8.5.3 Comprehensive horizon scanning and a clear strategic direction

Section 8.2 explains how our ERM process uses horizon scanning to give us a broader insight into shocks and stresses.

A critical part of horizon scanning takes place at our annual Board Strategy Day. Topics are filtered based on risk and value at quarterly strategy meetings and executive meetings before being brought to the Board. Board Strategy Day meetings comprehensively discuss future value creation, asset strategy, potential future disruptors, regulatory strategy and growth strategies. Our Board was very well engaged on our 2018 topics which covered opportunities and risks of emerging technologies such as artificial intelligence and robotics, and our people strategy. We stress tested these topics and other external trends to ensure we understand and can plan for the impact of future risks to the longer term resilience of our workforce.

We also undertake other significant long term horizon scanning projects enabling us to better understand the future and plan for it. For example, in 2015, supported by leading consultants, we undertook a large project to look at future world scenarios over a 35 year plus time horizon (beyond 2050). We created four sharply contrasting and extreme visions of the future, constructed by considering a range of factors relevant to our sector, which we used to stress test investment strategies. The output identified new risks and helped inform our long term asset strategy plans. These plans will form a key component of our refreshed strategic direction statement for AMP7 (our first strategic direction statement published for the start of the 2010-15 period set out our 25-year aspirations to 2035. The key components of our strategy remain true and we've not sought to reset the clock on our 25-year aspirations).

8.5.4 Engaged stakeholders

Our established network of stakeholders provides us with a detailed stakeholder framework to help anticipate and understand developing trends and provide support to address issues as they arise.

In developing our PR19 plan, we've used our stakeholder framework to engage with our regional stakeholders through workshops and shape our emerging plan. We've explored a range of topics to share the challenges we face and understand the challenges our stakeholders face over the next 25 years. This identified common areas (e.g. the provision and capacity of infrastructure, flooding, climate change and resilient, sustainable and green urban areas) and helped

inform where we target resources to improve resilience and seek to make a wider contribution to our region. This engagement has driven an additional outcome of a more resilient and supportive stakeholder network.

Chapter 17: A positive difference sets out where we're making a wider resilience contribution.

During the current AMP we've worked with our stakeholders from both inside and outside the water sector to understand how our operations can deliver more resilient solutions. For example, we've shared modelling approaches and proposed schemes to maximise benefits to our catchments with the EA and worked with the DWI to develop our transformation plans and skills development for drinking water quality; and to deliver our current partnership working performance commitment, we've forged stronger relationships with local authorities and other flood risk management agencies to address complex flooding issues in our communities. We also work with other sectors to understand their approach supporting vulnerable customers, for example with Cadent, and through the Rural England network on how to better work with rural communities.

In the event of an incident, we work closely with the 18 local resilience forums that cover our region – this also ensures support for our vulnerable customers, and we work with other agencies, for example to provide tankers or pumps to help support fire and rescue services. During an incident we'll update Defra teams, government ministers and other senior stakeholders to ensure they remain fully briefed. And following an incident, we'll hold a de-brief session to obtain feedback and learn lessons.

Our regional members of parliament share their constituents' views with us through our annual MP dinner and our senior manager MP programme working on a one to one basis to build local understanding on resilience needs. During disruptions, our MPs provide support by updating their constituents and local contacts. For example during a recent supply interruption in Nottingham, in addition to our increased social media presence, the MP, chief executive and deputy leader of the local council used their social media networks to share updates.

And to ensure the voice of our employees is heard, we have an active company employee forum which meets every quarter to discuss business challenges and opportunities. During 2017/18, our CEO discussed the business performance, key financial information and ideas for efficiencies. We've already taken steps to utilise the forum further in line with the Financial Reporting Council's updated 2018 UK Corporate Governance Code. The Chairman attends an annual meeting to share views and seek feedback, and this ensures the Board takes on board employees' views in decision making.

8.5.5 Inclusive customer engagement and co-creation

Our approach is based on understanding our customers as individuals, not just as customers, and using the right tools that reflect the underlying characteristics of the issue or service. We've adopted a range of new approaches from detailed exploration using a deliberative approach to gauge customers' views on risk and resilience, to co-creation on specific challenges such as metering, engagement on water efficiency and sewer misuse and education. And we use the outcome of customer engagement to assess risk – so we better understand the impact on customers' lives – and drive optimal solutions. For example, driven by customers' views of the service they now expect, we thoroughly assessed risk and developed risk based solutions for our resilient water supplies cost adjustment claim.

We've taken steps to ensure our research is both accessible and inclusive, including removing language barriers by translating surveys into the main foreign languages spoken in our region, targeting initial non-responders (those unable or unwilling to take part in face-to-face fieldwork), and adapting techniques to gain the views from hard to reach customers, and those in more vulnerable circumstances.

Our engagement builds on our continuous dialogue with customers using established insight channels including our quarterly customer tracker survey and 'voice of the customer' instant feedback. We've increased our customer insight and analytics team's capability and implemented behavioural analysis, modelling and analytics across our business. We've used this improved understanding of customer behaviours, together with demographic data to nudge behaviour change in areas critical to resilience including water efficiency and responsible sewer use.

Chapter 6 and Appendix A1: Engaging customers provides more detail on our customer insight. Appendix A8: Securing cost efficiency – resilient water supply sets out in more detail how we've assessed risk and developed optimum solutions.

8.5.6 Comprehensive health, safety and wellbeing

A resilient workforce is one that is healthy, safe and well in the work environment.

We take health, safety and wellbeing very seriously in our business – it is core to how we work and is strongly embedded in our culture. Our vision that no-one gets hurt or is made unwell by what we do is pivotal to our 'Goal Zero' initiative and is a key metric in our reward framework. Our health, safety and wellbeing (HSW) policy covers our whole workforce – permanent, contractors and temporary employees, ensuring

a broader resilient workforce and our management systems are based on best practice ISO18001.

We make sure all employees are given the training and resources needed to safely follow our rules. In 2017 we ran a full day health safety and wellbeing event for 900 business and strategic leaders and we work closely with a number of organisations including Water UK and the Health and Safety Executive to share lessons learned. Our rigorous approach to safety has improved our lost time injury rate from 0.21 per 100,000 hours worked in 2015 to 0.17 in 2018 – one of the industry's lowest rates. But we're not complacent; we continue to promote safe working practices through regular training initiatives and communications.

We're also fully committed to ensuring our people's wellbeing is taken seriously. We have a health and wellbeing programme in place and an internal occupational health team. Driven by our senior leaders, we've undertaken a significant initiative to remove the stigma of mental health and over 400 employees are now trained in mental health first aid. We've also broken the taboo subjects of menopause – for which we were recognised in a nomination at the Water Industry Awards – and death where we're proud to sign up to the TUC's Dying to Work charter to protect employees facing terminal diagnosis.

8.5.7 Active role in the regions and community

The scale of our operations and the nature of our assets mean we've a great opportunity to be a positive influence on the environment and communities in which we operate, playing an essential role in the health and wellbeing of our customers and inspiring them to demonstrate the right behaviours to improve our resilience.

We continue to take an active role to make a wider contribution to the communities we serve. We're continuing to implement initiatives – and working with local businesses including farmers to improve habitats such as rivers – by 2020

we'll have invested £21m to help farmers improve water quality – and improve sites of special scientific interest – we are targeting improved biodiversity on 75 hectares by 2020.

Beyond our core service, our 17 visitor sites offer our customers facilities to improve their own health and wellbeing. We host around four million visits a year and provide access to water for a range of leisure and education facilities. And more of our people than ever are joining in volunteering and fundraising – each year our people can take up to two days paid leave to contribute to a better local community. Our 'community champions' enables our people to volunteer with partner organisations like the Canal & River Trust and Severn Rivers Trust.

Positive engagement with our customers on key issues such as water efficiency and sewer issues are an essential way of ensuring our resilience – we estimate around 75% of our sewer blockages result from people disposing of the wrong things in their toilets and drains. Last year our community relationship team spoke to over 200,000 customers – both current and future – in schools and community establishments to encourage behavioural changes including water efficiency and how to be 'sewer savvy'. In AMP7 we'll continue the good work, engaging, educating and supporting the wider community including through our 'inspiring the next generation' school education programme. We aim to instil positive life-long behaviours early on; the impact of customer education is long term.

And we're leading the UK water industry in energy generation – we're on track to meeting our ambitious target of generating 50% of our energy needs by 2020, and we're proud to be re-credited with the Carbon Trust Standard, which we've held since 2009; and uphold our carbon management processes that are reducing emissions year on year.

Chapter 17: A positive difference explains more about the role we'll play in our region, tackling the wider issues that affect us and other stakeholders.

8.6 FINANCIAL RESILIENCE

In a sector that's investing in long term infrastructure to provide essential services to customers and society, the need to ensure financial resilience is of paramount importance.

Overall approach to financial resilience

Operating in a sector where trust and legitimacy has been called into question, we believe there's a need for more robust balance sheets and greater transparency to demonstrate financial resilience. We've been concerned by the need for this for some time and set out much of our

thinking in our 2012 thought leadership publication 'Changing course through sustainable financing' developed alongside National Grid. We've also confirmed our support on the direction of travel Ofwat is seeking in response to a letter to water company chairmen in March 2018. However, we are not complacent – there are improvements we can make as a listed company.

We can substantiate our financial resilience through the four components of the inner wheel of our resilience framework. These are set out in section 8.6.1 to 8.6.3. By demonstrating

these, together they help us avoid, cope and recover from disruption to our finances. And doing so highlights the intrinsic link between financial resilience and our corporate resilience processes. For example, the Treasury Committee is one of our key governance processes that sets our funding strategy to ensure the company can remain financially resilient over the long term.

8.6.1 Long term financial viability and planning

Having a robust, transparent and regular process for reviewing our financial resilience is an important component in building trust and confidence in the sector. As a material part of a listed group, we're required to perform an annual review of our financial resilience and viability which is published in our group annual report and accounts. This involves stress-testing our forward looking plans by modelling plausible and severe scenarios – including combined scenarios which reflect the risks we face. The Board reviews and approves the medium term plan the statement is based on, and the statement is subject to review by Deloitte, our external auditor.

We've modelled the scenarios set out in Ofwat's April 2018 consultation paper ('Putting the sector back in balance: consultation on proposals for PR19 business plans') as part of our financial viability statement testing for the 2017/18 financial year, along with further scenarios developed from principal risks included in our ERM process. The assessment period for stress testing was seven years through to the end of 2025.

We identified actions, including reducing discretionary outflows of funds and working with providers of finance, that would mitigate the effects of adverse outcomes. None of the scenarios tested resulted in an impact to the Group's expected liquidity, solvency or credit metrics that could not be addressed by mitigating action and therefore were not considered threats to the Group or Severn Trent Water's viability.

Appendix A11: Aligning risk and return provides more details of the stress testing performed and our mitigating actions.

8.6.2 Robust financial monitoring and risk management

The key to financial resilience is not only having effective measures and counter-measures in place when reacting to market shocks, but also an effective monitoring framework to ensure risks are pro-actively identified in advance. We've embedded a number of KPIs into our regular reporting processes to ensure any indicators suggesting future uncertainty are flagged early. For example, we compile a weekly report for the CFO assessing our financing position

using a 'RAG' status on 11 different components such as liquidity, adherence to treasury policy, credit ratings, debt mix and financial covenant headroom. This is consolidated on a monthly basis with financial metrics including profit, cash flow and analysis of equity markets to create a holistic view of our overall financial health and presented at executive and Board level. This monitoring activity combined with broader risk horizon scanning allows us to make effective decisions on our future financing strategy and is designed to help avoid significant financial risk, ensure we can cope should the risk crystallise, and have the right tools to enable us to recover quickly from that risk.

Monitoring our exposure and avoiding risk

Treasury Committee – underpinning our approach to resilience within the financial markets is the presence of a high functioning Treasury Committee made up of non-executive directors with recent and relevant financial experience, executives with accountability for finance and treasury matters within the company, and supported by expert external advisors. The committee meets at least once a quarter, allowing for a flexible and responsive treasury policy designed to maximise financing opportunities and mitigate emerging risks. The committee sets our long-term treasury strategy and is well briefed on the short-term liquidity needs of the operational business with thorough collaborative information sharing and forecasting rigour. The committee reports directly to the Plc Board on significant matters arising from its findings.

Balanced debt portfolio – since 2015 our debt mix has evolved from a blend of 70% at fixed interest rates and 30% index-linked to inflation, to a blend of around half fixed-rate debt, and the rest a mix of index-linked and floating rate debt. This more balanced portfolio strikes the right balance between flexibility, cost and certainty. Having half of our debt at fixed rates allows us a degree of stability over our financing costs and provides a certainty on which to build a more flexible approach to financing for the other half of our debt. Index-linked debt allows us to balance the risk we face in revenue and RCV with a relative hedge on financing costs. In readiness for the change from RPI to CPIH in AMP7, we've already started to source finance linked to CPIH to mitigate inflation rate volatility. Deploying a portion of floating rate debt allows us to take advantage of low interest rates while retaining the flexibility to change tack should the interest rates adversely move. This balanced approach affords us resilience to withstand significant movements in either inflation or interest rates by not being over exposed to any one variable.

Multiple sources of finance – we employ the same approach to managing the sources of our finance through bank lending, the bond markets and private placements. By utilising multiple sources of finance, we're able to sufficiently diversify our lending risk by not being over reliant on any one source. This has been particularly relevant during periods of political

uncertainty and policy change. Historically the European Investment Bank has been a significant source of finance, where it was possible to source up to 15% of our financing needs at attractive rates in a flexible way. Our current view is that post-Brexit this will no longer be the case, which has made our policy all the more relevant. Equally, recent political uncertainty elsewhere in Europe has made the financial markets more volatile, so over the last few years we've successfully built a presence in non-European markets. In terms of stability of lenders, we undergo a due diligence process on all of our lenders to ensure they have strong credit ratings and can withstand adverse conditions themselves. Finally, we ensure the terms of our lending are sufficiently flexible to avoid small changes in company structure, or our performance, leading to a recall of any debt.

Maintaining a healthy investment grade rating – it's our policy to ensure we maintain a buffer of at least two investment grades between our current position and where raising finance for our business would become more challenging. Employing this strategy allows us to source the most efficient financing, while affording us a degree of flexibility to manage the short-term shocks that would adversely affect our financing ability.

Coping with and managing finance risk

Managing liquidity – in the event a shock causes our sources of financing through the usual debt markets to be unavailable, we're able to deploy up to £1bn through the revolving credit facility (RCF) we've in place with a number of banks. This facility was increased from £500m in 2015 as we sought greater resilience against potential lending market volatility, and gives us a buffer of between 18 months and two years of business-as-usual operations before we would have to take corrective action. The RCF can be deployed to cover short term lending needs while we secure more structured finance agreements.

Managing our debt exposure phasing – our strategy for securing significant levels of financing is to consciously spread the maturity of our lending arrangements over a number of years to avoid being overly exposed to any one time period. Our active treasury policy allows us to secure financing more frequently for smaller amounts rather than relying on large placements. This in part allows us to manage changes in inflation, interest rates or broader economic turbulence that may occur in any one year.

Gearing – we're one of the lowest geared companies in the sector at circa 60%, which is in line with notional guidance set out by Ofwat for AMP 7. This low level acts as a buffer and decreases our exposure to shocks in the financing market that could adversely affect the cost of servicing our debt or the rate at which we're able to borrow.

Recovering from financial risk – should an adverse event occur that materially impacts our ability to finance the

ongoing needs of our business, we've a number of options we can draw on to ensure we're able to continue as a going concern.

Adjusting our dividend policy – we support the drive to bring greater transparency to the financial flows in the sector. Our own financing structure is simple – our published accounts provide a fair view of the level of debt that is supported by the group and the profit that accrues to the ultimate owners. As a listed company we're not reliant on dividend payments to service any parent company finance. We therefore have the flexibility to reduce dividend payments for a period in order to continue to invest in the business should other sources of finance become unavailable.

Sale of non-regulatory assets – our ability to finance the operations of the regulated water and wastewater business remains a key priority. In extreme circumstances, and in the event other options are exhausted, we could seek disposal of non-regulated business interests; and the funds generated could be deployed to service the regulated business need.

Continuing our record of accomplishment on efficiency – in AMP6 we were able to deliver significant efficiencies through a mixture of commercial and technological advances. We understand our cost base in detail so should the need arise to prioritise more savings to reduce our financing demands further, we're confident we could take such mitigating actions.

Altering our investment phasing – a significant portion of our financing needs are driven by capex which, in the event of a financing shock could be re-phased and re-prioritised to further reduce the financing burden in any given period.

8.6.3 Accessible financial reporting

Our Annual Report and Accounts are publicly available on our website, along with summaries and key facts to aid interpretation, ensuring we're both transparent and accessible. As the principle operating subsidiary of a FTSE 100 company, our results are announced to the City and independent market analysts scrutinise and evaluate our accounts before issuing their own independent reports. We routinely update markets on a quarterly basis on our ability to deliver on the financial guidance that we've given at the start of each financial year. Our listing obligations require us to make additional announcements e.g. through the regulatory news service (RNS) during the financial year to news that may influence our share price. This is closely monitored and discussed with a group of external expert advisors on a monthly basis. Our Investor Relations team is on hand at all times to give additional clarity on non-market sensitive queries arising from stakeholders.

You can read more in Chapter 18: A company you can trust.

9   DELIVERING OUTCOMES FOR CUSTOMERS

We've developed a framework that sets bold performance commitments driven by our customers' needs and priorities, with targets that we can demonstrate are stretching. Our commitments push benchmarks for our sector and introduce innovation in their design and measurement. They're complemented by a suite of outcome delivery incentives (ODIs) that embrace the potential of incentives to drive better performance for our customers, our investors and society.

Our plan contains nine outcomes and 41 performance commitments (including 14 industry common performance commitments, and five performance commitments relating to significant enhancement expenditure), against which we will hold ourselves to account over the next five years. 33 of these have financial ODIs attached.

In this chapter we explain how we've:

- embraced outcomes based regulation in this AMP, and want to do more in the next;

- refined our long-term outcomes to make sure they remain relevant;

- designed performance commitments to measure our progress towards those outcomes;

- set stretching targets against those measures for 2025 and forecasts for 2045; and

- created balanced incentives that strengthen the link between customer bills and our performance.

We provide more detailed information on our approach in Appendix A3: Designing performance commitments and Appendix A4: Designing outcome delivery incentives.

9.1   EMBRACING OUTCOMES BASED REGULATION

Throughout 2015-2020, we've embraced performance commitments and ODIs, and have challenged ourselves to deliver stretching performance. This has ensured that our customers have benefitted from significant improvements in the areas of service they told us are most important to them. For example, customers have experienced 6,000 fewer sewer flooding incidents since 2015.

In our 2015-20 plan, we created a strong portfolio of performance commitments and made more of our revenue dependent on the performance we deliver for customers than any other company. This means we've taken risks with ODIs – in the second quarter of 2015/16, we were facing into a £45m penalty. We had to drive a significant cultural change in our organisation to transform our performance for customers and commit considerable improvement in order to close the year with a £23m reward (2012/13 prices, before tax). And where we have incurred penalties, it's because we know we haven't delivered what we've promised and so we've worked hard to learn from this.

For this plan, we want to do to even more with ODIs because we believe they work for customers, and in our research our

customers told us they were supportive too. So we're proposing ODIs that amount to a RoRE range of -3% to 2.6%, compared with -2.0% to 0.9% at PR14.

And, as our current RoRE performance is heavily driven by service outperformance (not financial like most other out performing companies in the sector), our proposal for 2020-2025 will need us to stretch ourselves significantly beyond current levels to deliver an outperformance on RoRE.

To deliver against Ofwat's final methodology for performance commitments and ODIs, we developed clear, logical and robust frameworks. We've worked collaboratively with our Water Forum which has commended us on the frameworks proposed, indicating that it will drive the benchmark for the industry. We've also sought independent review from leading consultants who have endorsed the robustness of our work, covering both the rationale used to set stretching targets and ODIs and alignment with Ofwat's methodology. This gives us the confidence that we have set challenging performance commitment targets that are accompanied by meaningful, fair and balanced incentive arrangements.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

The framework is underpinned by our customer research approach, whereby we have chosen to talk to customers in a way that is meaningful (simple) with context (comparative data) so they understand the choices that they're making. This has included conversations on difficult topics, such as asset health and resilience, where the outcome of our conversations with customers has shaped our asset health ambition.

We've expanded the suite of performance commitments that we pledge, covering not only the areas that cause customers dissatisfaction, for example, sewer flooding and supply interruptions, but also areas that improve customers' experience such as, green communities and service vulnerability and affordability. They reflect the breadth of customers' needs now and into the future.

The targets we've pledged for 2025, and the longer term, take account of challenges from our Water Forum to stretch us to:

- drive the upper quartile benchmark in key customer service areas such as flooding, pollutions and low pressure;

- improve customer experience and stretch ourselves to deliver a 47% increase in the number of customers struggling to pay that we help;

- improve underlying asset health of our network through stretching improvements on sewer blockages, external flooding and compliance risk index (CRI);

- ensure we're investing in the resilience of our network both on water and waste; and

- deliver an ambitious suite of environmental performance commitments covering pollutions, biodiversity, improving raw water sources (farming for water) and building natural capital (green communities).

To deliver the above package we recognise that we'll need to innovate both in terms of activity and cost, without which we are unable to succeed in delivering our ambitions.

Potential for uncapping our AMP6 wastewater ODIs

Customers have told us that sewer flooding remains the highest valued service improvement area in all forms of customer research. We've focused strongly on this important area during AMP6, turning around our performance through a set of significant investments in order to respond to this customer priority area. As a consequence of this strong performance, we're now close to our cap on rewards for wastewater that was set at PR14.

We've asked Ofwat to consider uncapping our waste ODIs in the remaining years of AMP6. If Ofwat agrees to this uncapping, we would have the capacity to invest substantially more in this area over the next two years to deliver an additional step change in the service we provide to customers and further reduce sewer flooding.

Any additional improvements we make from today would also shift the sector upper quartile performance. This means that, in addition to the benefit to our own customers directly, we would also create a much stronger benchmark from which Ofwat could set comparative targets for the future – benefitting all customers in our sector. This is something our customers resoundingly support too, with 72% favouring the removal of ODI caps to incentivise better services.

9.2 REFINING OUTCOMES

We originally worked with customers to design our outcomes in 2013, and we've now refreshed them to ensure they remain relevant.

The outcomes we included in our 2015-20 business plan were developed through an iterative process of engagement and challenge with our customers, stakeholders and the Water Forum.

For this plan, we reviewed these outcomes again with the Water Forum to make sure that they remain relevant, reflect our customers' needs, and respond to changes in our operating environment.

Following the review, we've now reduced the number of outcomes from 10 to nine by merging our existing (AMP6) outcomes relating to the 'local' and 'wider' environment to

'a thriving environment' outcome – removing a distinction that our customers didn't recognise.

We've also created a new outcome to better reflect our purpose and commitment to becoming the benchmark for a private company providing an essential public service. The outcome, 'a company you can trust', encompasses our AMP6 outcome relating to sustainable financing, but also considers more broadly the issues that our research into discontent in the sector revealed are important to earning the trust of our customers – including fair rewards (for customers, employees and shareholders), and balanced decisions (taking everyone's interests into account).

Our nine PR19 outcomes

- The lowest possible bills
- Good to drink
- Water always there
- Wastewater safely taken away
- A service for everyone

- An outstanding experience
- A thriving environment
- A positive difference
- A company you can trust.

9.3   DESIGNING PERFORMANCE COMMITMENTS

Performance commitments are the measures we use to gauge progress against delivering our outcomes. We're proposing 41 performance commitments to hold us to account to our customers and other stakeholders.

An iterative, transparent process

We've used an iterative process to develop a new portfolio of performance commitments for 2020-25. We've refined these commitments through successive pieces of customer research, and in the light of our ongoing experience of delivering our current commitments. This is illustrated below.

A four-step process to develop performance commitments
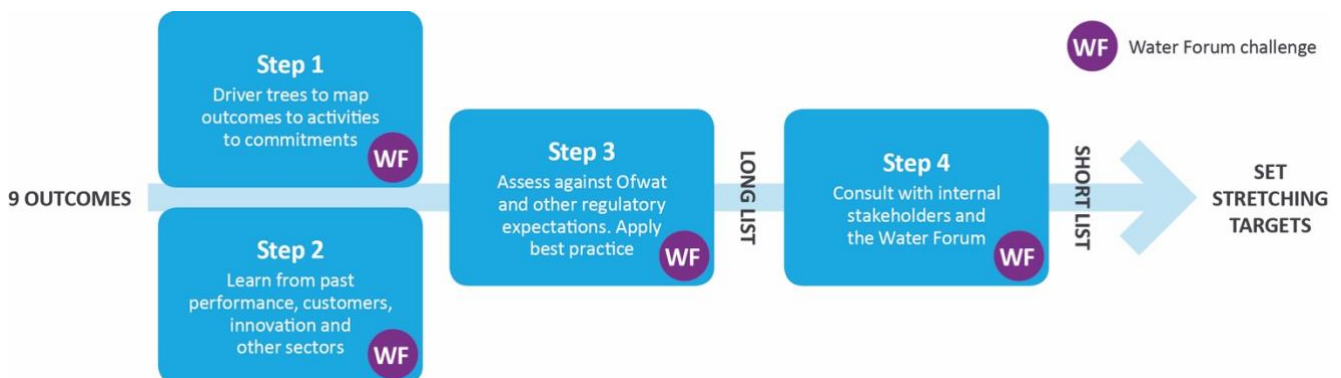
Our approach sought Water Forum challenge and collaboration at every step. The Water Forum benefits from a wide range of expertise, including customer research, investment appraisal, climate change, regulation and insight from the water sector, which has ensured in-depth challenge on our plan. We haven't shied away from embracing their challenge to first create a transparent framework, and second make our performance commitments and ODIs better for all stakeholders.

Putting our customers first

We've used four principles to underpin the selection of our performance commitments and associated targets. These principles, which seek to put our customers at the forefront of our decision making, reflect Ofwat guidance and include further refinements from discussions with the Water Forum.

Customer focused principles

Principle	Example
1. We'll embrace customer insight - even if it means changing how we think and operate.	We've incorporated a customer driven measure for low pressure complaints – even though this will mean changing our operations because pressure is a tool used to manage leakage.
2. We should deliver the best possible service at the lowest possible price.	All customer facing commitments will feature a higher level of service and there'll be no deterioration in any measure, while also delivering more than double the bill reduction from PR14 (on a like-for-like basis).
3. We should welcome comparative assessments and not use differentiating factors to support weaker targets, unless supported by robust evidence.	We won't make adjustments to reflect the characteristics of our operating area – such as weather for flooding.
4. We should use a multi-AMP journey to deliver our customers' needs.	Our approach allows us to learn and tackle all forms of sewer flooding over time. Our approach to resilience continuously improves over time and is aimed at targeting the Cabinet Office's four R's – resilience, reliability, redundancy, and response and recover.

We summarise each step of our process, and how we've applied these principles, below, but more detail is included in Appendix A3.

Our process started by creating a long-list of potential commitments which we iteratively reduced to reach a final short list.

Step 1: from outcomes – to activities – to performance commitments

As performance commitments are designed to measure progress against outcomes, this was our starting point. For our nine outcomes, we've developed 'driver trees' which map the activities required to deliver each outcome and the potential measures of success that could be used against each. By ensuring that there is a clear line of sight between outcome, activity and measure we can demonstrate that our performance commitments offer customers an appropriate breadth and depth of protection. This approach enabled us to identify gaps and develop bespoke performance commitments where needed.

Where measures are not a clear driver of success or a priority for customers, we've not included them within our long list of proposed performance commitments – although they will remain part of the wider information we collect to monitor and drive performance centrally through our 'comm cell' set-up.

Step 2: reviewing our 2015-20 performance commitments

We built on this outcomes-driven long-list with additions and changes based on:

- our experience of delivering our current commitments;
- our ever growing understanding of customers;
- new opportunities to innovate;
- our investment programme; and
- learning from other sectors.

Learning from past performance

Over the last three years we've gained valuable experience of how our current suite of performance commitments works in practice. With concurrent challenge by the Water Forum, we've assessed each measure's effectiveness on the basis of whether they:

- drive the right behaviours;
- drive performance improvements in the areas intended;
- are consistent with Ofwat's methodology for 2020-25; and
- will remain relevant in the longer term.

For our 2020-25 portfolio of performance commitments, we've proposed a number of changes and improvements to our current measures. These changes have been discussed and agreed with the Water Forum. For example, in 2020-25 we are retiring our 2015-20 performance commitment relating to protecting eels, as our programme for the coming five years is much smaller in scope, but to compensate we've expanded the scope of the Water Framework Directive (WFD) performance commitment to ensure customers will still be protected. A full list of retired, retained, replaced or evolved performance commitments, and the Water Forum's challenge, is included in Appendix A3.

Reflecting a better understanding of our customers

We built our insight programme with the aim of gaining a better understanding of our customers than ever before, and uncovering new areas of value to them. As not all of their needs from us are equal, we used the concept of a hierarchy of needs to underpin our research.

Our performance commitments also reflect this hierarchy and the new areas of value to our customers that we found. They range from those commitments that target the causes of dissatisfaction for our customers, such as sewer flooding or supply interruptions, to those that reflect how we make them feel as customers – for example, how we support our vulnerable customers in an incident – to those that are designed to make a bigger contribution to our communities, for example our collaborative flood resilience commitment. As a complete suite, they will help us to ensure that we are a company our customers can trust.

Driving innovation and continuous improvement

Our proposed performance commitments incentivise innovation over the next five years. For example, our green communities commitment requires us to develop greater natural capital accounting capabilities. Similarly, our persistent low pressure and lead for schools performance commitments will ensure that we work with our suppliers to develop innovative and cost effective solutions to dealing with complex issues on our water network.

Protecting customers where significant new expenditure is proposed

We're proposing four areas of significant enhancement expenditure (covered in separate business cases in Appendix A8). Through discussion with the Water Forum, we've developed new performance commitments such as the Water Framework Directive, increasing water supply capacity, metering, resilient supplies, and security (reducing risk to our sites) to ensure our customers are protected in the event of this expenditure not delivering intended benefits. The inclusion of these measures is contingent on a successful cost adjustment claim.

Working in partnership

Our customers support us working collaboratively with other organisations – either to share the benefit of our expertise, or to learn from them. So we've built a range of performance commitments that will be delivered through collaborative working, like our biodiversity commitment that will be delivered with communities and experts like the Wildlife Trusts, or our farming for water commitment that directly measures the impact of our engagement with farmers on risks to raw water quality.

Our experience during 2015-20 has shown that these commitments can be tougher to deliver than others as partners generally tend to have varying priorities, funding and delivery timescales, and it means that our performance is not always within our direct control. However, given the outcomes provided by these commitments are valued by customers and provide environmental and resilience benefits, we've chosen to challenge ourselves in these areas.

On our residential gap sites commitment we will be seeking to get better insight from electricity suppliers to improve our performance. This is a novel approach where we hope to learn from the energy sector.

Step 3: Water Forum discussion and challenge

Our Water Forum has played a key role in shaping, challenging and testing our performance commitments and target setting. Given our AMP6 success, the Water Forum heavily focused on challenging us on the robustness of our process and the targets we pledged, to ensure they were stretching and continued to give customers a better service.

Given the importance of performance commitments to customers' service, we set up a dedicated sub-group comprising five members from the Water Forum to enable time for detailed, meaningful challenge. We also organised focused sessions with key subject matter experts from the Water Forum covering bespoke and compliance measures. Overall, this has involved seven sub-group meetings, two environmental sessions, four triage sessions, a review of our rationale for targets (Appendix A3) and response to around 40 challenges.

The Water Forum's challenge on our long-listing and subsequent short-listing of commitments is summarised in the following table.

Responding to the Water Forum challenge

Challenge	Our response
The company should develop a framework and principles for selecting commitments and setting targets.	This chapter summarises the framework we developed with the Forum. It is explained in full in Appendix A3.
Any proposed changes to PR14 performance commitments should be discussed, and in the context of current performance.	We discussed and agreed all changes with the Water Forum. The outcome, including details of current performance, is explained in full in Appendix A3.
The company should demonstrate the link between investment, activity and the outcomes that customers value.	We developed driver trees to show the link between investment, activities and the outcomes that customers value.
The company should ensure that all controls are covered by performance commitments.	All controls have performance commitments, but we've sought to be proportionate where markets will also help to protect customers.
The company should consider including commitments relating to: flooding on roads, sludge compliance, pressure issues, natural capital, biodiversity and vulnerable customers.	All Water Forum suggestions have been included as performance commitments.

The Water Forum has reported to us that we have proposed an appropriate range of performance commitments – founded on driver trees - that reflect customers' views and retain focus on areas of challenge for us.

Step 4: shortlisting performance commitments

Our final step involved creating a shortlist of performance commitments through testing and subject matter expert review.

Testing against industry best practice

We've tested our performance commitments using the UKWIR framework that was developed for the 2014 price review and Ofwat methodology guidance. The framework features a number of checks including the extent to which performance is within our control, how well the measure covers the outcomes, ensuring there are no aggregations of sub-measures or unreasonable exemptions in the measure and above all, whether the measure is reflective of customers' views and easy for customers and stakeholders to understand. For example, we've not taken forward our carbon performance and environmental compliance commitment given they involved aggregation of sub-measures and are not easy for customers to understand.

Meeting regulatory and stakeholder expectations

In addition to the expectations of Ofwat, we've made sure the measures we've chosen capture or complement our wider regulatory obligations for example, the Water Industry National Environment Programme (WINEP), and respond to wider stakeholder expectations wherever possible. This includes the scope of our commitments, the means of measurement and the degree of stretch (explained in section 9.4 later).
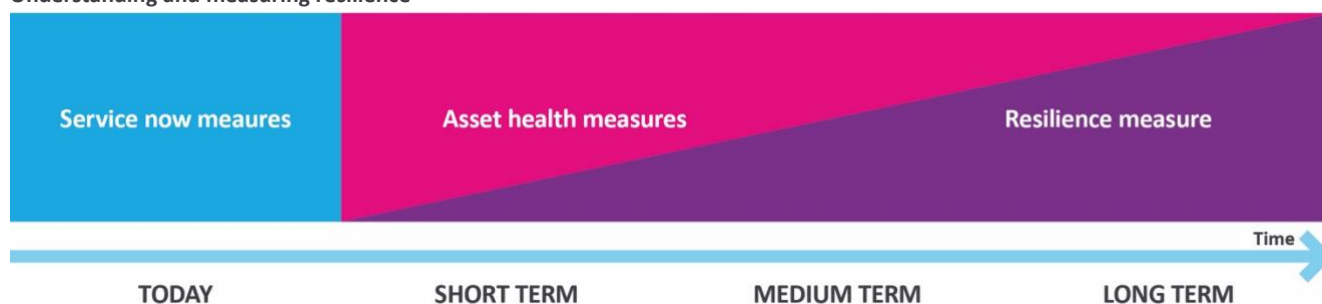
Working towards our regulators' expectations

Regulator/stakeholder	Requirement or expectation	Response
National Infrastructure Commission (NIC)	Recommendation that the water industry should halve leakage by 2050.	Our long term ambition for leakage reflects the NIC's recommendations. Our commitments on public sewer flooding, green communities and collaborative flood resilience also reflect the direction of travel signalled by the NIC's National Infrastructure Assessment.
Environment Agency (EA)	WINEP – range of expectations on WFD and environmental improvements. WISER (Water Industry Strategic Environment Requirements) – range of compliance expectations across water and waste.	We've included three commitments to cover WINEP obligations – WFD, farming for water and biodiversity. It is our ambition to deliver all WISER expectations.
Natural England	Expectation for company to produce Biodiversity Action Plans and deliver all actions within the target.	Our biodiversity commitment reflects a significant increase in ambition – more than 14 times our AMP6 commitment.
DWI	Expectation for company to target 0 on CRI. Expectation for company to do more to address lead.	We're proposing a target of 0 on CRI and are introducing a new commitment on lead – focusing on future generations first.

Protecting customers today and tomorrow

Our performance commitments are designed to not only protect customers today, but also customers in the future by ensuring we're making the right investment now. We've tested our performance against different time horizons, in line with our asset health and resilience framework, to ensure we have an appropriate balance.

Understanding and measuring resilience

| Service now meaures | Asset health measures | Resilience measure |

Time →

| TODAY | SHORT TERM | MEDIUM TERM | LONG TERM |

Our portfolio of 41 performance commitments includes six resilience commitments and six relating to asset health. This framework is part of the 'service areas and time horizons' approach described in the third point below.

A balanced portfolio
We've tested our new suite of performance commitments against three different drivers to ensure we are providing our customers with a balanced level of protection against all of them:

- **Outcomes**. The primary driver, we've built our performance commitments to ensure that they measure our progress towards the outcomes that are important to customers – as evidenced by our driver trees.

- **Controls.** We've ensured that every price or revenue control includes performance commitments. Each commitment by control is summarised in the table later in this chapter.

- **Service categories and time horizons.** We use this framework in our current Annual Performance Reports.

It reflects the categories used in Ofwat's own annual reporting on the industry. We've also tested which performance measures customers are most interested in, from a reporting perspective, with our online panel. Within the service categories we have ensured that service areas such as asset health, resilience, environment, vulnerability and AIM are covered by performance commitments that challenge us to further stretch performance in these areas. We recognise we need to do more to improve on water and have created more measures to stretch ourselves in this area.

Number of performance commitments in each of the service categories used in annual reporting

Service now - Water	Service now - Retail	Resilience	Community
6	5	6	5
Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
3	6	10	-

We use this framework throughout Part 3 of our plan to show the balance of performance commitments by outcome.

Responding to Ofwat feedback

We welcome the feedback from Ofwat on our detailed performance commitment definitions which covered 12 of our performance commitments. Our overall aim on all commitments has been to ensure that they:

- comply with standard consistent reporting guidance;

- provide clarity ensuring there are no inconsistencies across commitments;

- comply with PR19 final methodology guidance and ensure that definitions are complete with no inappropriate exemptions or aggregation of sub measures;

- present technical language in a way that is easy for customers to understand; and

- in response to Ofwat's feedback, we've enhanced our performance commitment definitions – including clarification of a number of areas. For example, with speed of response to visible leaks we've clarified how customer impact will be taken into account.

Further detail is included in Appendix A3: Designing performance commitments.

Outcome: a comprehensive and innovative portfolio

We've created performance commitments which:

- offer a wide breadth of **protection** for customers, covering each price or revenue control, with specific commitments developed where we are proposing significant enhancement expenditure or an unmodelled cost adjustment;

- are **innovative**, either in their scope or method of measurement (for example, our new farming for water commitment pushes our sector forward by seeking to measure the impact of behavioural change on raw water quality);

- reflect **new customer insight** and areas of priority (for example, our pressure complaints commitment responds to new insight that our existing measure wasn't getting to the root of our customers' concerns);

- **make a broader contribution to our communities** (for example, our green communities commitment creates new natural capital while tackling flood risks); and

- incorporate our **regulatory obligations and stakeholders' expectations** (for example, the EA's expectations within WINEP and the direction signalled by the NIC for creating drainage plans with local authorities by introducing a community resilience partnership commitment).

Our 41 proposed commitments

| Outcome	Performance commitment	Status	Control
The lowest possible bills	Reducing residential void properties	New	Residential Retail
	Reducing residential gap sites	New	Residential Retail
	Reducing business void and gap site supply points	New	Business Retail
Good to drink	Water quality compliance (CRI)	New	Water Resources/Water Network Plus
	Water quality complaints	Continuation	Water Resources/Water Network Plus
	Farming for water	Revision	Water Network Plus
	Protecting our schools from lead	New	Water Network Plus
Water always there	Water supply interruptions	Revision	Water Network Plus
	Leakage	Revision	Water Network Plus
	Per Capita Consumption (PCC)	New	Water Resources
	Mains bursts	Continuation	Water Network Plus
	Unplanned outage	New	Water Resources/Water Network Plus
	Risk of severe restrictions in a drought	New	Water Resources
	Speed of response to visible leaks	Revision	Water Network Plus
	Persistent low pressure	Revision	Water Network Plus
	Abstraction incentive mechanism (AIM)	New	Water Resources
	Resilient supplies	Revision	Water Network Plus
	Resolution of low pressure complaints	New	Water Network Plus/Residential retail
	Increasing water supply capacity	New	Water Resources
	Number of water meters installed	New	Water Resources
	Security – reducing the risks to our sites	New	Water Network Plus/Wastewater Network Plus
	Water trading – interconnector	New	Water Resources
Wastewater safely taken away	Internal sewer flooding	Revision	Wastewater Network Plus
	Pollution incidents (Category 1-3)	Revision	Wastewater Network Plus
	Sewer collapses	New	Wastewater Network Plus
	Risk of sewer flooding in a storm	New	Wastewater Network Plus
	External sewer flooding	Revision	Wastewater Network Plus
	Sewer blockages	Continuation	Wastewater Network Plus
	Public sewer flooding	New	Wastewater Network Plus
	Green communities	New	Wastewater Network Plus
	Collaborative flood resilience	Revision	Wastewater Network Plus
A service for everyone	Help to pay when you need it	Revision	Residential Retail
	Supporting our Priority Service customers during an incident	New	Residential Retail
An outstanding experience	Customer measure of experience (C-MeX)	New	Residential Retail
	Developer services measure of experience (D-MeX)	New	Water Network Plus/Wastewater Network Plus
A thriving environment	Treatment works compliance	New	Water Network Plus/Wastewater Network Plus
	Improvements in WFD criteria	Revision	Water Resources/ Wastewater Network Plus
	Biodiversity (water)	Revision	Water Resources
	Biodiversity (waste)	Revision	Wastewater Network Plus
	Satisfactory sludge use and disposal	New	Bioresources
A positive difference	Inspiring our customers to use water wisely	Revision	Water Network Plus/Wastewater Network Plus

9.4   SETTING STRETCHING TARGETS

We're ambitious about what we can achieve for our customers in the future and we want our targets to reflect this. We've worked with our Water Forum to develop a framework to make sure that we not only set targets that are stretching, but also that the rationale for them is transparent to our customers and stakeholders.

Using a transparent framework

The framework we've developed with the Water Forum includes the six approaches Ofwat suggests companies should consider for target setting (comparative upper quartile (UQ) performance, customer evidence, cost-benefit levels (CBA), maximum and minimum performance, and expert judgement). The framework allows these approaches to be systematically applied, and makes sure that wherever possible our customers have a direct impact on the targets set. For example, either through the degree to which customers view the area of service a priority for improvement, or by using the value they place on improvements in cost-benefit assessments. Our framework is summarised below.

A framework for target setting
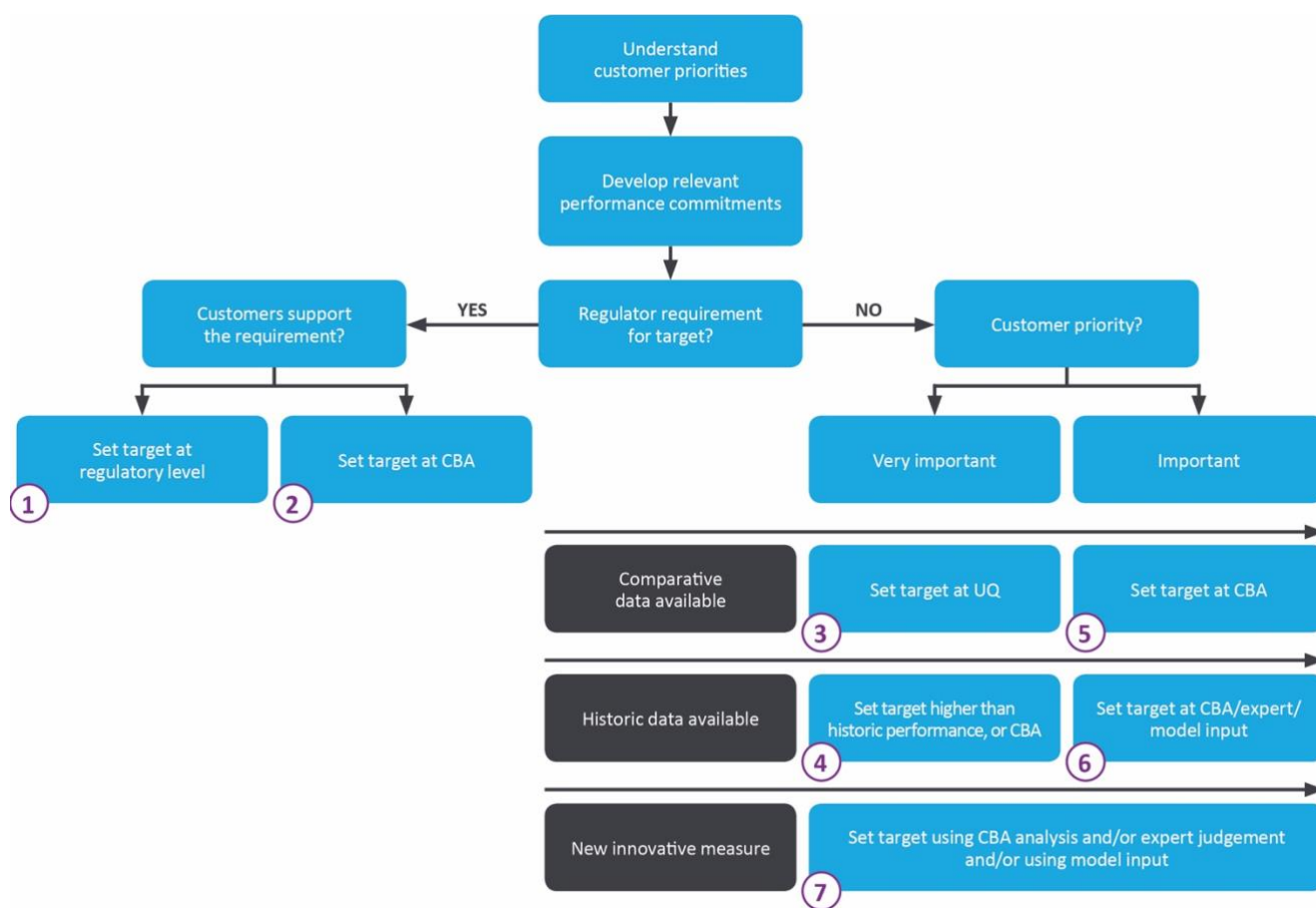
One of the key advantages of this approach is that we have been able to use a range of different methods to calculate our targets which can be compared. We summarise the range of methods used in the next table.

A range of methods used

Method	Performance commitments	Target	Comparative	Historical	Min	Max	CBA	Expert
1 (regulatory, customers support)	PCC, AIM, risk of severe restrictions in a drought	Defra Advisory		✓	✓			✓
	Treatment works compliance, CRI, satisfactory sludge use and disposal	Compliance	✓			✓		
	Leakage, WFD improvements	Guided	✓	✓	✓	✓	✓	✓
2 (regulatory, not supported)	None	n/a						
3 (v important with comparator)	Supply interruptions, C-MeX, external sewer flooding, Internal sewer flooding, Pollution incidents	UQ	✓	✓	✓	✓	✓	
4 (v important with historical)	Speed of response to visible leaks, persistent low pressure, help to pay when you need it, resilient supplies	CBA / Historical		✓	✓	✓	✓	
5 (important with comparator)	Sewer blockages, water quality complaints	Median / CBA	✓		✓	✓	✓	✓
6 (important with historical)	Sewer collapses, reducing residential void properties, reducing business voids and gap site supply points, unplanned outage, mains bursts	Various		✓	✓	✓	✓	✓
7 (new/innovative)	Reducing residential gap sites, supporting our priority services customers during an incident, biodiversity, farming for water, protecting our schools from lead, resolution of low pressure complaints, collaborative food resilience, green communities, D-MeX, inspiring our customers to use our water wisely, public sewer flooding, risk of sewer flooding in a storm, increasing water supply capacity, number of water meters installed, security – reducing the risks to our sites	Expert with CBA where appropriate			✓	✓	✓	✓

Meeting our obligations and regulatory expectations

For a number of measures either Ofwat, DWI or the EA have set stretching expectations of the target that companies should deliver. This will stretch us to deliver performance levels significantly above historic improvements, for example a target of zero on CRI and 15% target on leakage. Where there is also customer support for the requirement, we've set the target at the higher of either the regulatory expectation or the cost-beneficial level.

Using customer insight

We've used customer insight for two purposes in our framework. First, we've used willingness to pay and other valuation data to inform our cost-benefit analysis. Second, the extent to which customers regard the service area as a priority for improvement informs the level of stretch we are proposing wherever possible. Typically the higher the priority the greater the level of stretch. Our view of whether an area of service is 'important' or 'very important' is based on a synthesis of a range of different insight sources, as illustrated in the next table for two examples.

Triangulating different sources of insight

	Implications for target	Customer tracker	Willingness to pay	Budget game	Deliberative/ other research	Choices research
Leakage	Very important	High priority	High priority	High priority	High level of support	Top priority
Water supply interruptions	Important	High priority	Low priority	High priority	Shorter duration interruptions less important	Medium priority

Calculating upper quartile

For three performance commitments, internal sewer flooding, total pollutions and supply interruptions, we've proposed a target based on our forecast of what upper quartile will be for the industry in 2025. To do so, we've used comparative industry data to undertake trend analysis using different approaches. Further detail is included in Appendix A3.

Understanding marginal costs

We considered our proposed targets in the context of past performance and a cost benefit assessment – are we proposing targets where the benefits exceed the cost? If so, we've either increased stretch or reprioritised targets.

To calculate marginal cost we've used the data from our optimisation process that helped derive the PR19 investment plan. A variety of methods were used, dependent on their appropriateness to the specific performance commitment:

- if a performance commitment is delivered through specific investments with a defined delivery, we've directly calculated the incremental £/unit improvement; and

- if a specific investment or group of investments delivers multiple performance benefits, we've identified the common costs and apportioned the investment to give a marginal cost for each individual performance commitment.

We've also benchmarked our data against actual historic data, the expected AMP7 efficiency and other company data, where available.

Applying expert judgement

We considered our targets in light of expert judgement and information, where available, on other companies' proposals. In some cases, where our commitments are new and innovative, and there is limited comparative or historical data, we've given expert judgement more weighting. For example, for our new performance commitment relating to collaborative flood risk, we've based our target on flood risk assessments.

Forecasting to 2045

We used the same framework to define our long term ambition taking account of wider regulatory and stakeholder expectations.

Water Forum challenge

We worked with the Water Forum to develop the framework in response to its initial challenge that we must have a robust justification for the level of stretch proposed. The Forum has also challenged our application of the framework, including the following.

Responding to Water Forum challenge

Challenge	Response
The company should ensure that comparative data is used when testing performance commitments with customers.	We included comparative data in our initial willingness to pay, and subsequent choices research.
The company should ensure comparative data is used wherever possible in target setting.	Our target setting framework has ensured that where comparative data is available, it is used to inform our level of ambition. Where directly comparative data is not available, we've used alternatives proportionately for context.

Challenge	Response
Given there is no prescribed approach in Ofwat's methodology to forecast upper quartile data, and in some instances (where the definition of the measure has changed) there is one data point, the company should consider how it will ensure its forecasts are robust.	We have explored a range of approaches and methodologies with the Water Forum. Our agreed approach is explained in Appendix A3.

The Water Forum has reported to us that it welcomes our acceptance of its challenge to adopt a more challenging target (for example, leakage in the longer term) and make sure the level of ambition was significant in areas that customers identify as most important to them.

Outcome: commitments with demonstrably stretching targets

We've created a balanced portfolio of targets that are stretching because:

- in areas where we've consistently achieved the best or amongst the best in our sector, we're driving further improvements that **push the sector forward** (for example, external sewer flooding);

- in areas where we haven't achieved performance that is amongst the best, we're committing to doing so, in some

cases this will be a **substantial change** (for example, drinking water complaints);

- for the vast majority of measures we are proposing targets **beyond the cost beneficial level**, reflecting challenges from regulators and other sources of insight (for example, on supply interruptions);

- our targets reflect our **customers' ambitions**, which is why we have developed a range of bespoke performance commitments, including persistent low pressure issues, speed of response to visible leaks and sewer flooding in public spaces; and

- for measures that are critical to securing the future of our service, we're **accelerating our ambition** (for example, our proposed 15% reduction in leakage by 2025 was originally our long term target).

Our full suite of commitments is set out in full in the table below.

Stretching targets, forecast to 2045

Outcome	Performance commitment	Unit	2020	2025	2045
The lowest possible bills	Reducing residential void properties	Nr	168,221	167,380	164,020
	Reducing residential gap sites	Nr	-	3,440*	-
	Reducing business void and gap site supply points	Nr	-	250*	250
Good to drink	Water quality compliance (CRI)	Index	7.00	0	0
	Water quality complaints	Nr	10,011	9,500	8,600
	Farming for water	Nr catchments	0	16	Based on WINEP
	Protecting our schools from lead	Nr schools	0	500	6000[4]
Water always there	Water supply interruptions	Time (mins:secs)	08:50	08:41	UQ
	Leakage	Megalitres/day	387.63	-15%	-50%
	Per Capita Consumption (PCC)	Litres/head/day	133.27	-3.5%	118.00
	Mains bursts	Nr/1,000 km of mains	113.69	147.66	Stable
	Unplanned outage	%	Stable	Stable	Stable
	Risk of severe restrictions in a drought	%	63.7	58.2	0.0
	Speed of response to visible leaks	Time (days)	7.68	-50%	-75%
	Persistent low pressure	Nr property days	20,073	-15%	-

Outcome	Performance commitment	Unit	2020	2025	2045
	Abstraction incentive mechanism	Megalitres	-	0	Based on WINEP
	Resilient supplies	%	87.0	96.0	99.0
	Resolution of low pressure complaints	%	90	95	99
	Increasing water supply capacity	Megalitres/day	0	68.5[2]	Based on WRMP
	Number of water meters installed	Nr	166,764*	324,999*	-
	Security – reducing the risks to our sites	Nr	0	20.25	Based on Defra
	Water trading – interconnector[3]	Feasibility study £m	-	0	-
Wastewater safely taken away	Internal sewer flooding[1]	Nr incidents/10,000 connections	1.70	1.51	UQ
	Pollution incidents (Category 1-3)	Nr incidents/10,000 km of sewer	27.41	22.49	UQ
	Sewer collapses[1]	Nr/1000 km of sewer	Stable	Stable	Stable
	Risk of sewer flooding in a storm	%	4.11	3.95	0.80
	External sewer flooding	Nr incidents	3,692	3,397	UQ
	Sewer blockages	Nr incidents	43,215	41,000	41,000
	Public sewer flooding	Nr incidents	2,035	-7.4%	UQ
	Green communities	£millions	0	0.6*	Ongoing
	Collaborative flood resilience	Nr properties/areas	0	360	-
A service for everyone	Help to pay when you need it	%	30	43	-
	Supporting our priority service customers during an incident	%	-	100	100
An outstanding experience	Customer measure of experience (C-Mex)	score	-	UQ	UQ
	Developer Services measure of experience (D-Mex)	score	-	UQ	UQ
A thriving environment	Treatment works compliance	%	99.61	100	100
	Improvements in WFD criteria	Points	0	211	Based on future WINEP
	Biodiversity (water)	Hectares	0	952.6	Based on future WINEP
	Biodiversity (waste)	Hectares	0	138	Based on future WINEP
	Satisfactory sludge use and disposal	%	100	100	100
A positive difference	Inspiring our customers to use water wisely	Nr	0	155,250*	Ongoing

*Cumulative.

[1]For internal and external sewer flooding we are proposing % improvements of 9% and 8% respectively from AMP6 actual exit rates. Our uncapping AMP6 ODI application is in process and the scale of the investment and therefore the outcomes we are able to drive over the coming two years is unknown. This approach ensures our target is extremely stretching under every scenario. For more details please see Appendix: A3, Part 1 (section 2.10).

[2]2025/26 delivery

[3] The water trading interconnector is a real option mechanism, the PC target is therefore set to zero. Further details are in Appendix A8.

[4] 2034/35 delivery

In chapters 10-17 we explain each commitment in more detail, in the context of the outcome they are helping to deliver.

9.5 DESIGNING OUTCOME DELIVERY INCENTIVES

We were ambitious with our ODIs in our last plan. Not only did we commit to amongst the biggest potential range of penalties and rewards in the industry (worth -2.0% to +0.9% of RoRE and taking one of the largest downside risks in the sector) – but we've also since fully embraced their potential, taken risks to deliver improved performance for our customers, and accepted penalties alongside rewards.

In the light of this experience, and given our customers' support for the concept of penalties and rewards, in this plan we've worked to:

- make ODIs work even more effectively;

- make more revenue depend on them; and

- ensure they remain rooted in robust customer valuations.

Making incentives more effective

We've long been supporters of applying financial and reputational incentives to heighten the companies' focus on delivering performance commitments. This is because we believe they work for customers. We took a risk with ODIs in our 2015-20 plan and we've worked hard to demonstrate their potential – they've made a real difference to sewer flooding, for example, where we're now driving the sector benchmark.

For this plan, we developed a clear, logical and robust framework to align with Ofwat's final ODI methodology, which our Water Forum members noted as setting the benchmark in the sector. Our approach has also been reviewed by independent consultants who have verified its reasonableness, alignment with Ofwat's expectations and valid rationale for bespoke elements. Overall, our stretching performance commitments for AMP7 will be accompanied by a clear set of fair, balanced and meaningful incentives arrangements worth -3% to 2.6% of RoRE.

The vast majority of our 41 measures have financial incentives and only eight use reputational incentives. The majority of our financial incentives will apply to revenue – only those relating to significant enhancement expenditure will apply on an RCV basis. Furthermore, the financial incentives are focused on recognising performance in 'real time', such that the majority will apply in-period, with performance on only seven commitments being recognised at the end of AMP7.

Backed by customers

For this plan we wanted to learn from our current experience and make ODIs more effective, but we also wanted to do so with the support of our customers.

We've tested the principle of ODIs with our customers. In our uncapping research 82% of customers supported bills being linked to performance. We also tested specific bill impacts and our research found that around 61% of customers agree with an ODI impact of ±£15 on bills and 56% agree that a bill impact of £25 is appropriate for frontier shifting performance, while 29% express no view either way. Overall we found that those who oppose tend to oppose the ODI mechanism itself, rather than the bill amount. Encouraged by this customer support, we've made increasing the effectiveness of incentives for all stakeholders our overarching objective for our ODI framework.

Unless there are specific justifications and supporting evidence otherwise, this means our default position has been to make our ODIs financial. We see this as critical to their effectiveness, not just because of the financial impact on us, but also because such financial impact raises the profile of the incentive and thereby increases the reputational effect at the same time.

Backed by the Water Forum

We've consistently sought independent challenge and scrutiny via our Water Forum and its dedicated subgroup, which has brought together traditional water industry experts alongside those from other sectors. By opening ourselves to challenges from such a diverse, independent group and then responding to their challenges, we've been able to develop a robust set of ODIs that has their full support.

Retaining symmetry

In our 2015-20 plan, we generally adopted symmetry between upside and downside incentive rates – an approach accepted by Ofwat. We're retained the same approach for this plan because:

- symmetrical incentives are likely to be more effective in encouraging innovation and a shift from risk-averse behaviour than asymmetrical incentives;

- where stretching targets are set, there is an equal balance between risk of underperformance and potential for outperformance;

- a symmetrical approach has greater simplicity, and therefore transparency for customers; and

- customers (and the Water Forum) supported the approach when we tested it in research.

The exception being where the ODI is required to be penalty only (such as for performance commitments targeting 0% or 100%) or reward only (for example, green communities).

Embracing enhanced ODI rates

We're proposing to apply enhanced ODI rates for two common performance commitments – internal sewer flooding and total pollution – where we are targeting upper quartile for the industry. In this situation, both penalty and reward rates will become enhanced beyond specific thresholds. Enhanced rewards will apply incrementally from the point where actual performance is double the improvement between the expected end of AMP6 performance and the relevant stretch performance commitments during AMP7. For the penalty, the enhanced rate would apply at the point performance falls below our lowest performance level achieved in the current AMP.

In consultation with the Water Forum, we've developed a framework and accompanying method for setting enhanced ODI rates that will further motivate performance. Importantly, we've made sure we keep the proposed rates grounded in the customer valuations used to set the standard ODI rates. The difference here is that – rather than the rate reflecting 50% of the customers' valuation of changes in service levels that was used to set the standard rate – the enhanced rate is based on 75% of the customers' valuation.

This means that in the event of poor performance, we would bear a significantly higher proportion of the consequences for customers. On the upside, the increased rate would allow us to pursue the most challenging improvements to achieve while still delivering benefits that are of value to customers.

Where we're setting enhanced rates, we intend to share knowledge about our successes with companies by the end of, or soon after, the 2020-25 price review period. And we will demonstrate our focus on improvement and commitment to transparency by submitting an action plan to our Water Forum, which will set out the reasons for any under performance and explain how we will improve.

A strong drive to perform is in place for commitments with reputational incentives

We do not believe that reputational incentives need to be any less effective for customers than financial ones. This is for two key reasons. First, because many of our performance commitments embed the most important aspect of what we do – our purpose to serve – and so they receive just as much management time, energy and focus as any other commitment. And second, because of that, we report our performance against reputational performance commitments just as transparently and prominently as we would a financial incentive. For example, in the first year of this AMP, we didn't reach our reputational performance commitment to help customers who are struggling to pay their bills. We were clear about this in our reporting to the City, our customers and our Water Forum, and we made a commitment to get back on track – which we did in the following year and we're now forecasting to outperform our target by 2020.

Making more revenue depend on performance

To heighten the impact of our incentives, and drive further improvements for customers, we're ready to put more revenue at stake. Our overall package of ODIs equates to a RoRE range of -3% to 2.6%.

Determining the case for reputational or financial incentives

The framework we've created with the Water Forum seeks to make sure that we're only using reputational incentives in instances where:

- a financial incentive would duplicate existing regulatory enforcement action (for example, CRI);

- there is such uncertainty in measurement that linking performance to revenue would not be in customers' interests (for example, sewer flooding in a storm); or

- there is a clear case that a financial incentive would create perverse incentives (for example, incentives to help financially vulnerable customers).

Well-timed incentives

Our ODIs will be applied in-period wherever possible, in line with those performance commitments that are set to report annually. By creating a clearer and more immediate link with the service experienced by customers each year, this reinforces the ODIs' effectiveness in both financial and reputational terms. Where we've selected end of period ODIs, this has only been where there's sufficient justification that it is in the interest of our customers (for example, increasing water supply capacity). And we intend that all our ODIs should be revenue-linked, unless they relate to enhancement expenditure.

Focusing on asset health

We've a responsibility to safeguard our assets for future generations. We've therefore given a specific focus to asset health metrics in developing ODIs. This includes using deliberative research, which gives participants a greater understanding of asset health challenges and past performance, as an additional source of insight into how our customers value changes in asset health.

Consistent with Ofwat's guidance, we've discussed the size of asset health underperformance penalties and outperformance payments as a percentage of RoRE with the Water Forum. And we've incorporated the modelling of asset health scenarios in our approach as follows:

- engaged an external modelling company to model the interdependencies between some of our asset health metrics – for example, if we underperform on bursts, what other asset health metrics are affected and to what extent;

- modelled the ODI impact of the above interdependencies – to establish the level of reward or penalty we would receive if we out or under performance on the asset health metrics; and

- translated the monetary rewards or penalties into a percentage of RoRE.

Proportionate use of caps and collars

It's important that companies don't use caps and collars to avoid the consequences of extremely poor performance. We've made sure that caps and collars are only to be used in exceptional circumstances, in order to ensure that we can remain financeable. We're therefore only using caps and collars where exclusions for extreme weather will no longer be made in our performance reporting for internal sewer flooding; external sewer flooding; and water supply interruptions. This is consistent with our 2015-20 plan, where we only used these for three out of 31 financial incentives.

Deadbands applied only where there is a strong case

We recognise the potential for deadbands to weaken both incentives and transparency. We've therefore only used deadbands in exceptional circumstances:

- for penalty-only measures where delivering 100% or a very stretching performance changes the risk profile (for example, the treatment works compliance which targets 100%); and

- for new and demanding measures which are susceptible to significant variations due to exogenous factors beyond our control (for example, CRI if the incentive is chosen to be financial rather than reputational).

A better understanding of customer value

By using a range of customer valuations to identify ODI rates - including stated preference WTP studies, our choices research (in which we tested rates with customers) and, in one instance, revealed preference - we've set a strong ODI package on a bottom up basis and founded on customer value.

Improving our approach

The wide variations in company valuations used for 2015-20 business plans suggested some weakness in approaches to deriving valuations. For this plan, we've carefully considered and responded to the views of our stakeholders and regulators, including the Water Forum, CCWater and Ofwat, to develop a more robust approach.

Described in Chapter 6, our research framework ensures that each project contributes explicitly to our understanding of our customers and the hierarchy of needs. It also means we've more accurate and contextualised values in our WTP research,

and it enhances our ability to triangulate the research outputs effectively. We've made five further improvements to the approach we followed for our 2015-20 plan:

- undertaken more robust customer engagement with a particular focus on reducing the cognitive burden of the research;

- used a wider data set, including reaching out to a wider range of customers;

- triangulated different values;

- investigated outliers; and

- validated results with customers.

We believe that the way we've conducted our valuation studies has taken full account of both Ofwat's final methodology and CCWater's recommendations. Where the results are consistent, and where there is not robust contrary evidence, we've used these in setting the ODI rates.

Establishing customer valuations

Over the past 18 months, we've undertaken a number of projects that allow us to meet these requirements. We've improved on existing techniques for stated preference WTP; and sought to test specific hypotheses which might reveal weaknesses with core WTP valuations – many of which reflect challenges from our Water Forum. Our specific valuation studies have involved:

- improved core WTP values;

- contextualised WTP for customers with experience of specific service failures;

- WTP values for customers that initially do not participate in surveys – which was motivated by a valuable challenge from the Water Forum and which was a primary weaknesses with previous surveys; and

- WTP valuations where customers had participated in a deliberative workshop and been immersed in the challenges faced by water companies.

In particular, we took time to engage initial non-responders to capture the views of customers who initially did not participate in our survey, either because they were not at home when the fieldwork took place, or they declined to take part. We reached out to these customers through a postal survey and compared their views with those of initial responders. From over 3,000 addresses of initial non-responders collected, we achieved 432 responses – an innovative and potentially sector leading approach to understanding the views of these previously ignored customers.

Triangulating and testing valuations

Through this programme of work, we've developed a much wider valuation data set. This has allowed us to triangulate the different results into a single value by:

- combining the results of our 2017 WTP studies into a single metric;

- sense-checking the 2017 combined results against our PR14 results and those of other companies;

- establishing whether there were reasonable explanations for any differences between WTP metrics; and

- agreeing potential solutions to any differences that could not be explained with the Water Forum.

Dealing with outliers

To eliminate outliers, we cross-checked our results – including those from each round of the surveys and our selected triangulated results – with our own historic WTP values and sector WTPs, and used broader evidence, agreed with the Water Forum, where necessary.

Using customer choices on investment priorities

We conducted our innovative 'choices' research to gain customer views on the service areas of choice in our plan, including the performance commitments and incentives. We designed an interactive exercise to present customers with our proposed incentive rates, based on a scaled-score derived from the triangulated WTP results for each service area. We asked customers to feedback on these, including reducing the rate to zero if they felt an incentive was not appropriate. We used the changed priority rankings in the choices results to infer new scaled-scores for the WTP results. We believe this approach has allowed us to innovatively test incentive rates with customers in a transparent way, in the full context of the incentive framework and potential impact on bills.

Bringing revealed preference into the mix

To give a richer picture of valuations, we explored the potential to use revealed preference valuations to complement our stated preference values. While we considered a wide range of options, we found that supply interruptions was the service attribute with the greatest potential.

As supply interruptions can be mitigated with the purchase of alternative market goods and services, such as bottled water, the observed market behaviour of customers who have been affected can be used to derive avertive values. The revealed preference results for short-term water supply interruptions were triangulated into the overall valuation of this area of service.

Setting ODIs where customer valuations could not be established

There are service attributes where identifying customer valuations is not straightforward. This is because some attributes do not have a direct interface with the customer, such as sludge compliance. In other cases, such as protecting schools from lead, the service area is difficult to express to customers in a sufficiently meaningful and tangible manner for drawing out coherent valuations. In these circumstances, we considered four different options for identifying values:

- marginal cost valuations – used as a proxy for the benefit valuation;

- enhancement ODIs – to provide ODIs for the performance commitments designed to payback costs where delivery of investment may fall short of commitments;

- real options mechanisms – to provide a means of managing uncertainty that avoids pushing up customer bills unduly. This involves including payments for some enhancement related activities. The potential to earn these payments is subject to defined trigger mechanisms which allow the case for the enhancements to be tracked as new information becomes available; and

- PR14 valuations – for certain measures, such as compliance, neither customer valuations nor marginal cost information is readily available; and investment cost is not a relevant point of reference. Given we already have PR14 valuations that are successfully driving desired performance outcomes, we have brought these up-to-date by adjusting for the effects of inflation.

Water Forum challenge

Throughout the process of developing ODIs and the associated framework, the Water Forum and its sub-group have played a vital role in scrutinising our plans and proposal and challenging areas requiring either improvement or clarification. The following table summarises the depth and breadth of the challenge and the actions that we have taken.

The outcome of this process has been to create a suite of performance commitments and ODIs that, the Water Forum has reported to us, has its full support.

Key Water Forum challenges

Challenge	Response
Incorporate wider customer insight to understand the valuation for low water pressure, as triangulated results showed that this was considered an outlier.	We revised our approach to set the ODI on the basis of days-per-property per-year, rather than per property. We recalculated the WTP valuations on the same basis, dividing the per-property valuation by the number of days in the year.
Test the cognitive validity of the WTP research – include an assessment of distribution of results.	The WTP results were demonstrated as having a log-normal distribution; providing evidence of cognitive validity.
Consider whether absolute WTP can be used to infer priorities.	We used our 'choices' research to assess priorities.
For supply interruptions, consider the values from contextualised research and the revealed preference research results.	We incorporated the results from the revealed preference study into the final triangulated WTP value, with the approach to triangulation agreed with Water Forum.
On river water flow, bring more qualitative evidence on customer views.	We set a consolidated ODI for river water quality that drew on customer WTP valuations for both river water flow and river water quality.
On using the 'choices' results to update the valuations, make sure to exclude outliers from this process.	Triangulated WTPs, if not excluded as an outlier, were revised in proportion to the 'choices' results.
Define how extreme weather events are used to set penalty collars.	Extreme weather penalty collar for supply interruptions is set at the limit of 17/18 performance (a very challenging year). Internal and external sewer flooding collars are set at 1% of RoRE. The limits still expose the company to sufficient downside to risk to provide a strong and robust incentive to perform, without placing the financeability of the company at undue risk. Combined, the two sewer flooding incentives alone could result in a penalty worth 2% of RoRE.
Should caps and collars be symmetrical unless it is possible to justify why not?	Justification for not having reward caps for extreme weather was agreed with the sub-group. Not only does extreme weather always fail to have a positive effect on performance, but both interruption duration and internal/external sewer flooding are bounded by zero.
Demonstrate that enhanced rewards for super-stretch incentive rates are extremely challenging to achieve.	Super stretch rates shown to be asymmetric, in that a larger performance change is needed to achieve enhanced rewards than would see enhanced penalty.

Outcome: strengthened ODIs based on robust customer valuations

We've created a package of ODIs that:

- will be even more effective at driving improvements for customers by retaining symmetry to encourage innovation and embracing the potential of enhanced ODIs, while also ensuring appropriate penalties for poor performance;

- strengthen the link between service to customers and bills by only using caps and collars in exceptional circumstances, thereby increasing the proportion of revenue reliant on ODIs – our suite amounts to a RoRE range of -3% to 2.6%, compared with -2.0% to 0.9% at PR14; and

- are founded on customer value, with strengthened research approaches, more data points and an approach to triangulation agreed with and scrutinised by the Water Forum.

Our full suite of financial ODIs, including the method used to determine them

PC	Unit	ODI	Timing	Type
ODIs where we intervened to resolve outliers				
Persistent low pressure	per property per day	£464	In period	Revenue
Water supply interruptions	per minute	£1,081,045	In period	Revenue
Improvements in WFD criteria	ODI per point	£815,234	End of AMP	Revenue
Biodiversity (water & waste)	Per hectare	£3,627	In period	Revenue
ODIs incorporating the triangulate WTP results and findings of the choices research				
Pollution incidents (Cat 1-3)	per 10,000 km of waste network	£596,530	In period	Revenue
Internal sewer flooding	per 10,000 sewer connections	£22,602,484	In period	Revenue
Leakage	1 Ml/day	£324,853	In period	Revenue
External sewer flooding	1 incident	£24,222	In period	Revenue
Public sewer flooding	1 incident	£24,528	In period	Revenue
Water quality complaints	1 complaint	£2,731	In period	Revenue
ODI valuations identified directly through the choices research				
Sewer collapses	per 1,000 km of sewers	£982,785	In period	Revenue
Inspiring our customers to use water wisely	per customer	£7.41	In period	Revenue
Sewer blockages	1 blockage	£11,166	In period	Revenue
Mains bursts	per 1000 km of mains	£561,861	In period	Revenue
ODIs set directly from triangulated WTPs				
Resilient supplies	% customers whose service can be restored in 24 hrs	£3,501,952	End of AMP	RCV
ODIs set with reference to established ODI valuations				
Resolution of low pressure complaints	per 1%	£75,122	In period	Revenue
Speed of response to visible leaks	per 1 day	£1,073,171	In period	Revenue
ODIs based on marginal cost valuations				
Reducing residential void properties	per void property brought into charge	£159	In period	Revenue
AIM – North Staffs sites	per megalitre	£1,204	In period	Revenue
AIM – Strategic Grid sites	per megalitre	£136	In period	Revenue

| PC	Unit	ODI	Timing	Type
Protecting our schools from lead	per school	£4,491	End of AMP	Revenue
ODIs utilising uprated PR14 values				
Farming for water	number of schemes	£1,157,119	End of AMP	Revenue
Treatment works compliance	per 1% non-compliance	£1,572,783	In period	Revenue
Collaborative flood resilience	per property or area	£34,361	End of AMP	Revenue
Satisfactory sludge use and disposal	per 1% non-compliance	£157,279	In period	Revenue
ODIs with alternative valuation sources				
Green communities	per £1m increase calculated in BEST evaluation tool	£500,000	In period	Revenue
Reducing business void and gap site supply points	per gap/void property brought into charge	£210	In period	Revenue
Enhanced ODIs rates that will apply for incremental super-stretch performance for PCs where we are UQ				
Pollution incidents (Cat 1-3)	per 10,000 km of waste network	£894,795	In period	Revenue
Internal sewer flooding	per 10,000 sewer connections	£33,903,727	In period	Revenue
ODIs for enhancement expenditure and/or uncertain expenditure requirements				
Metering	per meter	£103	In period	Revenue
Security – reducing the risks to our sites	per surface water treatment works equivalent	£1,013,175	End of AMP	RCV
Increasing water supply capacity - penalty	per Ml/day	£659,854	End of AMP	RCV
Increasing water supply capacity – reward 1	per Ml/day	£1,400,000	End of AMP	RCV
Increasing water supply capacity – reward 2	per Ml/day	£750,000	End of AMP	RCV
Increasing water supply capacity – reward 3	per Ml/day	£1,000,000	End of AMP	RCV
Water trading - interconnector	delivery of detailed feasibility studies	£ 0- £40,000000	End of AMP	RCV

Incentive rates for D-MeX and C-MeX will be determined by Ofwat.

Understanding the potential impact for customers' bills

The next figure shows the potential impact of our wholesale ODIs on customers' bills under P10 and P90 scenarios (consistent with the approach at PR14 this analysis excludes ODIs related to investments and enhancement related ODIs). Based on the expected RoRE ranges the potential overall bill impact in AMP7 from our ODIs could range from £18 to £14 (this is based on P10 and P90 performance in years 1 - 3 of AMP7).

Potential impact for customers' bills of individual ODIs
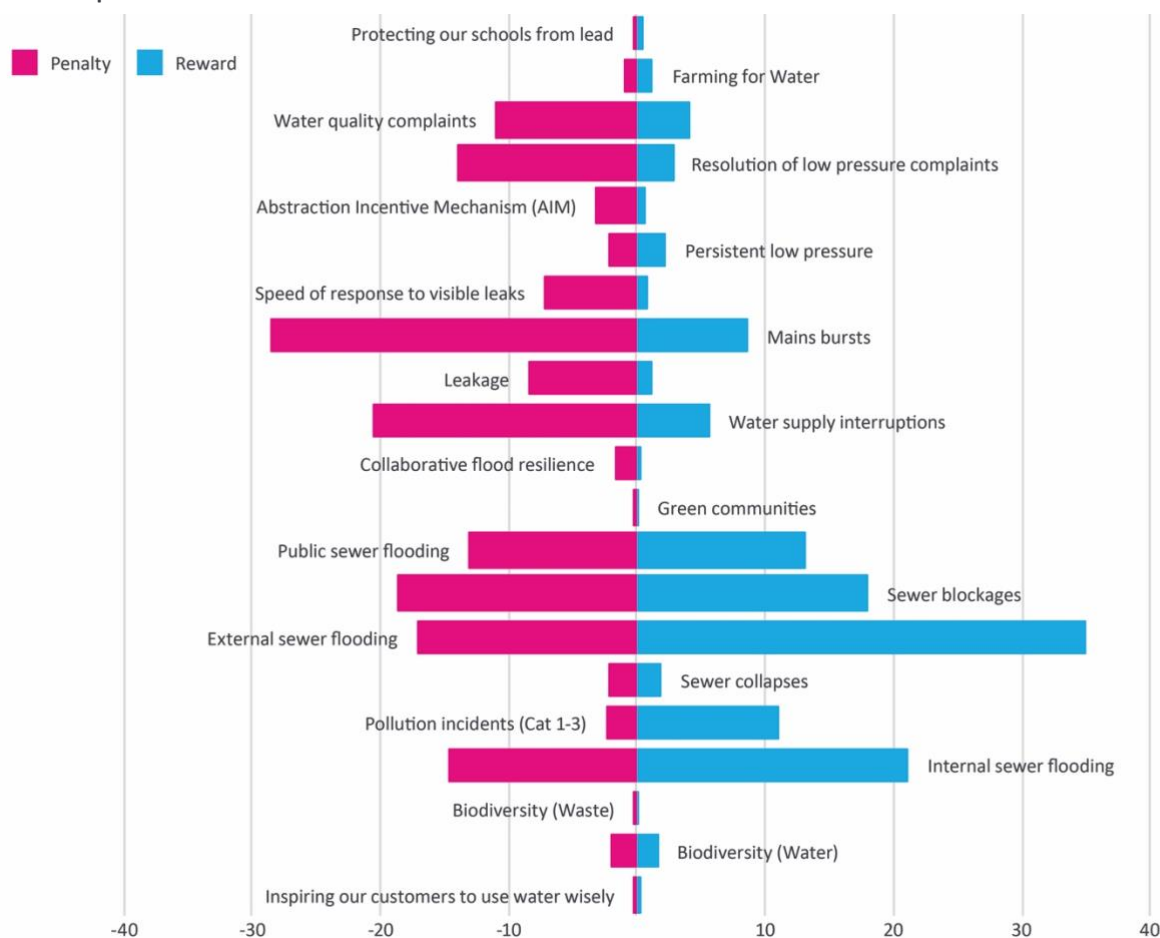
We're mindful that, because we've chosen to take most of our ODIs through revenue, they have a direct impact on the bills our customers pay. In the current AMP, we're already working to ensure that we find the right balance between not compromising our incentives by deferring their impact but also not causing sudden fluctuations in our customers' bills. For example, after considering the combined impact of both ODIs and inflation on 2018/19 bills, we took the decision to defer some of our ODI outperformance payments to future years. We believe that the ability to manage ODI payments in this way is important as it helps to smooth the profile of bills for our customers, and it's something we will continue to consider in the next AMP.

Appendix A4 explains our framework in more detail, its application and the rationale for the incentives applied.

PART 3:
DELIVERING BETTER OUTCOMES

10 THE LOWEST POSSIBLE BILLS

Water should be affordable for all.

10.1 SUMMARY

We believe water should be affordable for all. At a time when the economic outlook for many of our customers is uncertain, we need to do everything we can to keep our bills as low as possible. We'll do this without compromising on standards of service or the investment in infrastructure needed to continue to meet customer needs tomorrow and beyond.

We've thought about affordability in three ways in our plan:

- overall affordability – making our bills more affordable for all customers;

- affordability in the long term – keeping bills affordable for future generations; and

- affordability for those struggling, or at risk of struggling to pay.

We work hard to keep our bills as low as possible for all our customers, and are proud to have had the lowest average water and wastewater bills in England and Wales in 2015-20. In our 2020-25 plan, we're stretching ourselves further to keep bills lowest for longer, targeting a further reduction of 5% (13% on a like-for-like basis with our last plan), our biggest bill reduction for two decades.

Average household bills in today's prices (2017/18)

| | 2020 £345 | 2021 £330 | 2022 £334 | 2023 £335 | 2024 £333 | 2025 £327 |
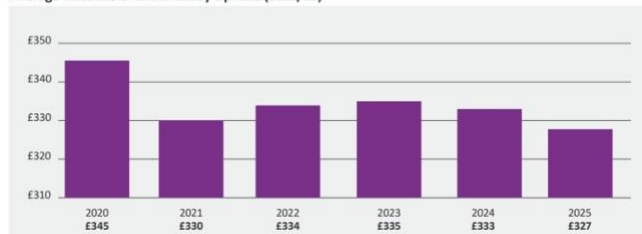
However, although our bills are currently 14% lower than the average for England and Wales, our quarterly research on affordability tells us that 11% of our customers still find our bills unaffordable, while only 62% of customers explicitly state that they believe that our bills are affordable. This compares with CCWater research (Water Matters, 2016) in which 74% of customers in England said they found their bills affordable.

This plan gives us a real opportunity to tackle the issue of affordability. So, in addition to our extensive customer engagement and constructive discussions with the Water Forum, we've consulted with other experts to really understand customer perceptions. For example, we: held a workshop with over 30 financial vulnerability experts; worked with our partner organisations such as the Citizens Advice Bureau and Auriga Services; collaborated with companies in other sectors such as First Utility; and also listened to consumer experts to understand the rapidly evolving retail and consumer trends that our customers experience in other services they receive.

Through this process, we've identified six levers which will underpin our approach to affordability in our AMP7 business plan:

1. **We optimise our costs (while delivering what our customers want and need).** Delivering our services cost efficiently over the long term is fundamental to keeping our bills low. Our track record of delivering £870m of totex savings in AMP6, and the efficiency challenge we've set ourselves for AMP7, reflect the lasting impact of this lever on our customers' bills.

   More detail is included in Chapter 20: Securing cost efficiency.

2. **We ensure our bills are fair (spread across as many customers as possible).** We believe, and our customers tell us, that we should do more to bring into charge those customers who are using our service but not paying for it, to reduce average bills for all of our customers. We've a good track record on the level of bad debt relative to other water companies - and believe we can do more, with the right incentives, in AMP7 to improve this and

lower the level of properties incorrectly classified as void. To achieve this, we've developed new performance commitments to target void properties and gap sites, and have set ourselves challenging targets for improving our already strong performance on bad debts in AMP7.

More detail on our bad debt performance is included in Chapter 20: Securing cost efficiency.

3. **Customers understand what they are paying for and feel they are getting value.** For customers to feel confident that they're receiving affordable, value for money services, it is important that we help them understand what their bills are paying for. In AMP6, we substantially redesigned our bills to make it much easier for our customers to see the costs of the various services we provide them with, as a proportion of their overall bill. In addition, since 2016 our customer-friendly summary of our Annual Performance Report includes an easy-to-read representation of the activities and costs that are funded by the average customer bill. In AMP7, we plan to go further to improve the level of customer knowledge, through an ambitious education programme, our Wonderful on Tap marketing campaign and an enhanced visitor centre experience.

4. **We make it easy for customers to pay**. In AMP6, we've successfully launched different payment channels, with various frequencies, to make it easy for customers to pay. In AMP7, we're committed to keeping pace with changing customer expectations and technology to maintain our high customer satisfaction scores in this area.

More detail is included in Chapter 14: A service for everyone.

5. **We help customers to reduce their usage.** In AMP7, we plan to triple our current rate of metering and we're undertaking a range of activities to reduce demand - including our first TV campaign in many years.

More detail on water efficiency is included in Chapter 12: Water always there.

6. **We support customers who are struggling to pay**. We know that, for some of our customers, the issue of affordability is more acute, with 11% of our customers finding bills unaffordable. We'll build on our good progress in AMP6 with a range of measures, including a co-designed social tariff, payment matching and use of the Severn Trent Trust Fund, to support customers at times of greatest need.

More detail is included in Chapter 14: A service for everyone.

This outcome is accommodated within our base plan and covers three performance commitments.

Service now - Water	Service now - Retail	Resilience	Community
-	3	-	-
Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
-	-	-	-

This framework is introduced in Chapter 5 and Chapter 9 and is used throughout this section. It's the form of categorisation we currently use in our Annual Performance Reports to help provide customers with an overview of our performance.

10.2   OUR CURRENT POSITION AND TRACK RECORD

We've a strong track record of helping affordability for all our customers, with the lowest bills in the sector for nine years. But we recognise that this only tells part of a much more complex story.

The lowest bills in the land

Severn Trent's customers have enjoyed the lowest average combined bills in England for the last nine years. Our bills are on average 14% lower than the average for England and Wales, equivalent to putting £57 back in the pockets of our average household. In addition, our approach to driving innovation in our cost base and our financing strategy have also reduced customers' bills by £13 - £23 across both AMP5 and AMP6, at a time when other utility bills, particularly for energy, have been rising rapidly.

The foundation for ensuring affordability for all has to be the cost efficient delivery of services over the long term. For AMP6, the efficiencies we made in service delivery and our investment programmes should result in us spending 3% less than our final determination. These savings will be shared with our customers through lower future bills.

Despite our region having the fifth highest levels of overall deprivation in our industry, our bad debt performance was the best of all the water and sewerage companies, helping keep our costs at close to the frontier for the industry. This has helped to spread the cost of water and waste services across a wider base of paying customers, again making bills more affordable for all.

Affordability is complex, often transient and always individual

We know that affordability cannot always be measured and effectively addressed in simple, broad-brush terms. Our region is incredibly diverse, including everything from affluent suburbs to some of the UK's most deprived areas. The Office of National Statistics' most recent report (ONS Statistical bulletin: Regional gross disposable household income, UK: 1997 to 2016) revealed that six of the ten poorest local areas, as measured by gross disposable household income per head, are areas that we serve - including the lowest (Nottingham).

It is therefore no surprise that despite having the lowest bills, for many customers bills are unaffordable. We've analysed our customer base, focusing on wages and other variables. We estimate that approximately 226,000 of our customers are in water poverty (spending more than 5% of their income on the water bill). But, as we discuss later, around 11% of our customers tell us they find their bill unaffordable. So because this is a complex issue, we know there isn't always a single, definitive measure we can use.

We also know that financial vulnerability, and with it the affordability or otherwise of our bills, can change for customers over time. While this is a long standing issue for some, for others it can be sudden and severe - for example, after experiencing a serious life event such as a major injury, or a sudden loss of or severe drop in income.

That's why we use segmentation. It helps us to better understand the nature of affordability and how we target help for customers who struggle to pay their water bills.

More detail on our segmentation approach and the support we provide is included in Chapter 14: A service for everyone.

AMP6 introduced outcome delivery incentives (ODIs) - and, perhaps more than any other company, we've embraced the incentive based opportunities to improve the service we provide to our customers. During the first three years of AMP6, our net outperformance payments totalled around £150m nominal prices. Our Water Forum is supportive of our approach to ODIs, and also agrees with our view that removing the AMP6 cap on ODI payments to incentivise further service improvements would be in customers' interests. We've also researched this issue directly with customers - and they too are supportive.

However, we're mindful that because we've chosen to take most of our ODIs through revenue, they have a direct impact on the bills our customers pay. So after considering the combined impact of both ODIs and inflation on 2018/19 bills, we took the responsible decision to defer some of our ODI outperformance payments to future years. We believe that the ability to manage ODI payments in this way will help to smooth the profile of bills for our customers.

10.3 OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

Over the next five years our proposed bill decreases have the potential to move 30% of customers out of water poverty (based on our modelling). We'll also do more to ensure all customers pay their fair share by bringing gap and void sites back into charge, and for every customer, we'll work hard to better explain the value of the service they receive.

What our research tells us about our customers' attitudes to bills

Overall affordability

Since AMP5, we've regularly tracked our customers' views on a range of issues including affordability, value for money and customer satisfaction. Our latest full year of survey data shows:

- 11% of our customers find our bills unaffordable;

- 62% of our customers explicitly state our bill is affordable; but

- 81% of our customers are satisfied with us overall.

Affordability of our bills has increased over time
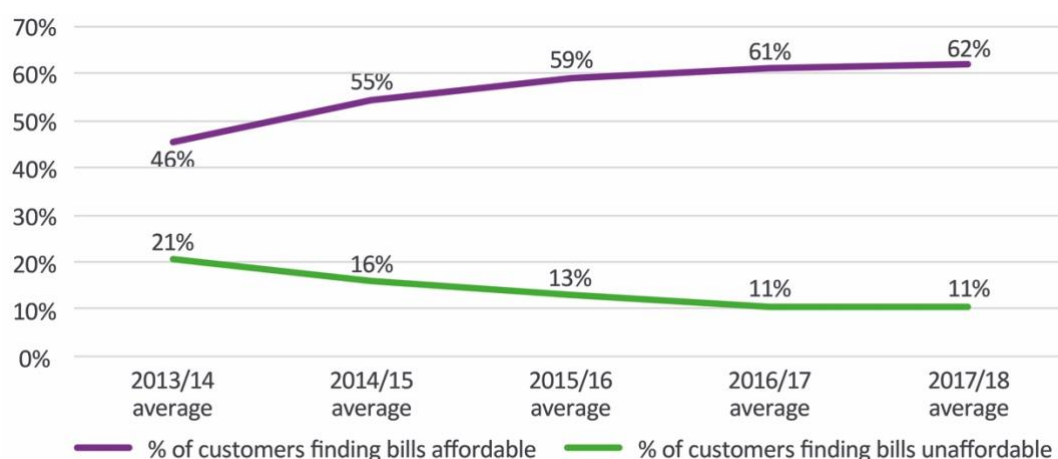
The percentage of customers who explicitly state our bills are affordable has been on an upward trend over this period. Similarly, the percentage of customers who find our bills unaffordable has dropped from 21% to 11%. Only 51% of our least affluent customer segment find bills affordable - but satisfaction amongst these customers still remains high, with only 8% explicitly stating they are dissatisfied.

Affordability in the long term

Customers have an expectation that their bills are no higher than necessary. A key learning from our research with customers, and underlined by our discussions with the Water Forum, involves customers' views on how we should manage and invest for uncertainty, such as the impact of climate change on our supply-demand balance and the requirements of the Water Framework Directive. We received strong support for a 'real options' mechanism – to invest only when we have greater certainty. At the same time, we should take action to minimise the time to respond, thereby protecting the interests of customers by not exposing them to the risk of unnecessary upward pressure on bills.

More detail on our real options mechanism is included in Appendix 8: Securing cost efficiency.

Our deliberative research on long term affordability has highlighted the issue of intergenerational balance between today's bill payers and future customers. How can we best share the financial burden of totex and the recovery of the inflation component of the Regulatory Capital Value (RCV)? We discussed bill profiles over a multi-AMP journey, explaining the choices we have to strike this balance, and received strong customer support for our proposed use of financial levers (pay-as-you-go (PAYG) and RCV run-off) to manage bill affordability over the long term. Our proposed approach to longer-term bill profiles received considerable support from customers, with 88% of those surveyed preferring a smaller bill reduction over the next five years, but a more stable profile over time.

Prospects for bills over the longer term
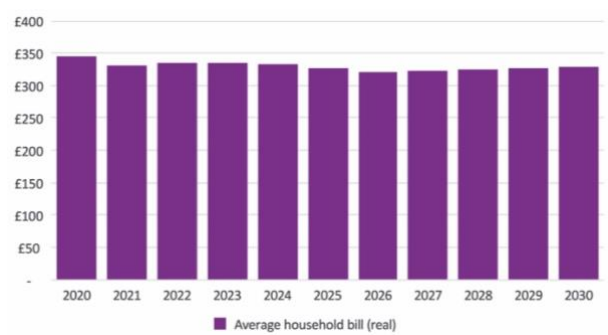
Support for those struggling, or at risk of struggling to pay

Through our research into the extent to which customers are willing to cross-subsidise our social tariff, we learned that they are typically happy to help others in financial difficulty. In fact, 67% of customers surveyed were willing to pay an extra £8 per year on their own bills to do so.

The next five years – keeping bills 5% lower

Our five year plan is set against a challenging economic backdrop for many of our customers, with rising interest rates, significant changes to benefits, changing employment trends and Brexit uncertainty. By welcome contrast, we're proposing the largest bill reduction for our customers in two decades, reflecting our ambition to have the lowest possible bills now and in the future without sacrificing the quality of the service that our customers receive.

The direct consequence of our bill reduction alone is that we are projecting a 30% decrease in customers that are in water poverty.

We're able to achieve this in a number of ways. Taking the average combined water and wastewater bill in 2019/20 of £345 (expressed in 2017/18 prices), our customers will see a reduction of:

- £13 from overall totex efficiency (by using a number of levers including continuous improvement, better use of technology and improved commercial and procurement capability);

- £15 from a reduction in the weighted average cost of capital; and

- £(10) from other components such as midnight adjustments and changes to financing levers.

Optimising costs

The reduction in totex doesn't mean that we're cutting back on the investment needed to improve the quality, resilience and environmental sustainability of our services. In fact, the reduction is being delivered by innovation and efficiency - and by getting the balance right between making investments in assets we know we need in the next five years, and creating optionality where the need is less certain, and we can safely afford to defer investment until we have better information. For example, we're taking a measured approach to the challenges presented by climate change, consistent with the research we've carried out with customers. A wide range of forecasts are available for the future impact of climate change on the services we provide. Our proposed totex programme will address imminent challenges, such as a reduction in abstraction licences, with early design and feasibility work. This will enable us to have a plan in place to respond quickly to emerging trends.

Everyone pays their fair share – voids and gap sites

We're also improving overall affordability and reducing our average bill by targeting both household and non-household void properties and gap sites. These include properties connected to our network that receive water and wastewater services from us, but are not charged. As our total revenues are fixed, the remainder of our bill-paying customers are paying extra to subsidise these non-paying customers.

Our level of voids is inflated by occupied properties incorrectly classified by us as unoccupied. The level of void properties in each water company shows a strong correlation with deprivation indices. A recent PwC report shows that our level of voids (approximately 4% on average at any point in time) relative to other water and wastewater companies is consistent with our relative position on deprivation:

Average Voids as a % of Total Connections vs Deprivation Index
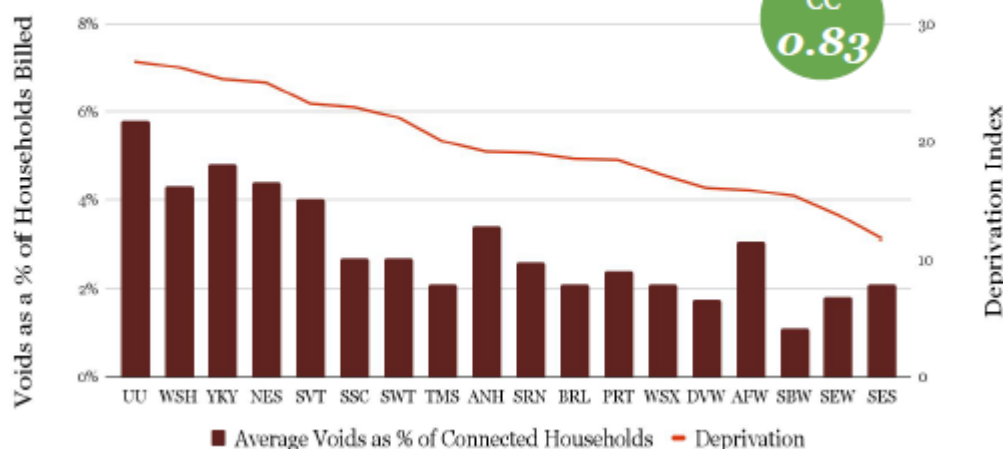
Source: PwC Retail Services Efficiency Benchmarking – September 2017

The PwC report revealed a slight increase since 2012 in the number of voids as a percentage of total connected properties across the sector. There may be number of reasons for this, not least a genuine increase in the number of unoccupied properties. But there are also significant disincentives for companies to bring these properties into charge. The costs of investigating void properties, bringing them into charge if occupied, and the subsequent bad debt risk (deemed higher for this segment of customers) are not recovered through higher revenues. This is why we agree with the introduction of performance commitments that provide companies with incentives to target such properties.

In AMP7, we'll reduce our household void properties by:

- improving our Change of Responsibility (CHOR) processes – when customers move home, to improve the accuracy of customer information when there's a change of occupier;

- using every contact with our customers as an opportunity to validate and update the relevant data we hold about them and their properties; and

- working more closely with third parties who can help us identify occupied properties that we've recorded as void.

Gap sites are properties connected to our network but not known to us, and are therefore not being billed. In AMP7, we'll work with other utilities to improve the speed and accuracy of the way in which we identify gap sites. We'll carry out regular data sharing with energy retailers to get visibility of all electricity supply points in our area, and cross-reference these to our own database to identify households that we should bring into charge for water and wastewater services.

Following the introduction of the non-household retail market, retailers are responsible for billing non-household

customers. However, it is still in the broader interests of our customers that void and gap properties are minimised, to spread wholesale service costs across a wider paying customer base. We'll also be incentivising water retailers competing in the non-household retail market to identify voids and gap sites and bring these into charge. Where they're successful, they'll receive a financial reward from us.

Our performance commitments for reducing voids and gap sites are discussed in section 10.4.

Everyone pays their fair share – debt strategy

In AMP7, we'll introduce a number of new initiatives to reduce the likelihood and cost of our customers falling into arrears with their bills. Sustaining and improving our bad debt performance will mean:

- pre-empting and preventing customers getting into debt, by reminding them promptly when they fall into arrears and making it easier for them to pay;

- supporting customers to recover arrears, through our new Matching Plus initiative and payment breaks; and

- collecting more from those who can pay but won't, through data sharing, pre-emptive analytics and robust, personalised debt management journeys.

More detail on our customer support proposals is included in Chapter 14: A service for everyone.

Customers understand what they're paying for and feel they're getting value

During our engagement with customers, many told us that, while they were broadly happy with the current cost of their water bills, they wanted to understand more about where

their money goes. Over AMP7, we'll be doing much more to inform our customers about the services we perform, and the value for money their bill provides. We already have a head-start with many of these initiatives.

For example, we've always worked with schools in our area, helping children learn about the water cycle, the role we play in the environment and how customers can save water and be 'sewer-savvy'. In AMP7, we'll be going much further - we've developed an immersive experience which we'll take into schools to inspire the next generation of water users. Our ambition is to instil water-wise behaviours for life, as we recognise that water scarcity and waste management will be issues that they'll have to deal with as customers of the future. Our new immersive experience will show them the role that Severn Trent plays in society and how they can make a difference.

This summer (2018), we launched our media campaign 'Wonderful on Tap'. This is designed to support the findings of our customer research which indicated that the most engaging, emotional and interesting factor in connecting with our services was the product itself – water. The campaign focuses on the important role that water plays in everyday life and encourages people to take care of this precious resource so that generations to come can still enjoy all it has to offer. Building on the strength of 'Wonderful on Tap' – and with the support of our Water Forum – we plan to launch a media campaign which explains our AMP7 plan in a way that's easy to understand for our customers.

We recognise that our visitor sites – which include some of our most valued and attractive assets – offer a unique opportunity to achieve deeper engagement with our customers. Our AMP7 investment plan will create a sustainable and value for money service across our sites, so that we can share the wonder of our visitor sites with even more customers.

We've also redesigned our bills, with our customers, to make them easy to understand. The new bills help us to convey the value for money we believe we offer for our customers - and they describe a customer's water usage in simple terms, such as the number of baths or cups of tea. We've not only received positive feedback from our customers, but the number of queries we receive about bills has also fallen. We achieved a 17% reduction in unwanted calls when they were first issued, compared with the previous year.

Excerpt from our new, simpler bills

In addition, since 2016 our website has included a summary Annual Performance Report, specifically for customers which provides them with an easy-to-read representation of what activities and costs the average customer bill goes towards funding.

A longer term view of affordability

We're committed to keeping our bills as low as possible for both current and future customers, and to eradicating water poverty in our region. We must do this while also improving our performance to meet our customers' expectations, and while investing in a resilient future that protects the service we provide as well as the environment.

Factors beyond our control could impact our cost base

While we're confident that we'll reduce our totex over the five year period to 2025, we can see longer term external pressures on our cost base over which we have limited control, for example:

- construction market conditions - supply chain demand and relative construction costs are expected to increase, driven by demand from a number of large national projects such as HS2, on top of traditional construction programmes;

- energy costs - we're forecasting a 35% increase by the end of AMP7, with pass through costs being the main and permanent contributor to this rise; and

- material costs - the Office of National Statistics has reported rising global market prices for materials (17% since 2010). This, and the depreciation in the value of sterling, are driving higher prices for imported finished equipment and materials.

Our long term strategy therefore has to include a strong element of innovation, in order to deliver sustainable

improvements to our performance and keep costs and customers' bills low.

More detail on initiatives we're pursuing to keep long term bills affordable is included in Appendix 7: Innovation to deliver better outcomes.

Long term influences on our customers

A number of socio-economic drivers may impact the relative affordability of our bills, customers' perception of the value their water and wastewater bill provides, and how they feel about paying it. These include:

- the wider social and economic climate - such as interest rates, Brexit, types of employment contract, the roll out of Universal Credit or other future changes to benefits;

- customer attitudes and behaviours - for example, their 'hierarchy of bills' may change and with it their views on what is most important to pay;

- customer experience - customers' perception of our service could inform their view on value for money; and

- customer circumstances - including their ability to manage their own finances.

Many of these drivers are out of our direct control, but we can continue to seek to influence our customers' perception of their service, for example:

- their perception of water, its value and the role it plays in their lives, for example, through our Wonderful on Tap campaigns;

- the standard of service we offer, with fewer service issues that can alter customers' perceptions; and

- offering more holistic support, like the Severn Trent Trust Fund, to help and advise our customers on managing their finances, and working with other debt advisory third parties who perform a similar role.

The balance between short term and long term bills

One of the consequences of interest rates remaining low for a sustained period is that the balance of revenue earned under the regulatory model by way of a cash return (through customers' bills) and by way of an inflationary return (through growth in the RCV), has shifted over time. The allowance for financing costs (weighted average cost of capital - WACC) has fallen over successive price reviews, while the long term view of inflation has increased. The relatively slow pace at which embedded debt in the sector is refinanced, and the modest increases in interest rates predicted by the yield curve, mean that this trend may well continue through AMP8.

This poses an important question: how much of the low-interest windfall implicit in the AMP7 WACC should be passed on immediately to today's customers through lower bills, how much should be invested for future service and resilience improvements, and how much should be used to help keep bills low for tomorrow's customers?

The PR19 methodology allows companies to use PAYG and RCV run-off levers to get this balance right. We've undertaken deliberative research with customers to understand their preferences for bill profiles over time. A majority of customers supported our proposed approach. This research was then used to inform wider engagement through our online community, with 500 customers who took part (88%) supporting our approach.

10.4   THE COMMITMENTS WE'RE MAKING

Our performance commitments are designed to hold us to account for the improvements we've promised to our customers, and track progress against our outcomes.

Evaluating our current commitments

We currently have two performance commitments against this outcome – 'Customers rating our services as good value for money' and 'Percentage of customers who do not pay'. Although we've performed strongly on these measures, we believe we can further improve the outcomes for customers by refocusing on new measures.

Our value for money measure forms part of our quarterly customer tracker and will continue to be one of the metrics we monitor internally to understand customer perceptions of our bills and services. But it can be a subjective measure, which does not always lend itself well to the criteria required

of performance commitments. As such, we are intending to retire this as a performance commitment.

Similarly, for debt levels, we'll be reporting on our performance through our annual statutory and regulatory reporting, and this will remain a key focus area for our business. And, as a component of our costs to serve, we'll continue to be incentivised to keep bad debts as low as possible.

From 2020, we're proposing three new performance commitments, all of which relate to bringing more void properties and gap sites into charge, helping towards ensuring everyone pays their fair share for the service we provide.

As described in the PwC report previously mentioned, there are clear links between levels of deprivation and void

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properties. As our area features the fifth highest level of deprivation, it is inherently likely to be more difficult for us to significantly reduce the number of void properties.

Our current experience supports this theory. Despite this, we've set stretching targets which not only stop the number of void properties increasing, but also reduce them by 2025.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Reducing residential void properties	Financial	Number	168,221	168,221	167,380	164,020
Reducing residential gap sites	Reputational	Number	-	-	3,440 (cumulative)	-
Reducing business void and gap site supply points	Financial	Number	-	-	250 (cumulative)	250

We've also set performance commitments that support our affordability objective to help customers who are struggling to pay. These are discussed in detail in Chapter 14: A service for everyone.

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11 GOOD TO DRINK

Your water is consistently safe, clean and good to drink.

11.1 SUMMARY

It is vital that customers trust that their water supply is safe. In 2017, our water was 99.96% compliant against the strict legal standards. This represents an excellent performance and has remained consistently high for many years. But, as ever, we want to do more.

We've learnt from engaging with, and listening to our customers and the DWI, that legal compliance alone isn't enough. Understandably, customers think it's a given that their drinking water won't harm them and so they don't judge quality on that basis. They judge it on how it looks, how it smells and how it tastes. We've a better insight into what our customers consider as 'acceptable' and particularly what frustrates them than ever before. Our plan covers improvements across our system including removing more of the main cause of discolouration, manganese, at source. We'll use new dynamic control valves in our trunk mains network to prevent deposits building up and transient waves to better manage pressure spikes that cause disturbance.

We know that we can do more to improve our service, particularly when things go wrong. While customers do understand that this happens occasionally, they are increasingly intolerant of receiving discoloured water. When it does occur, particularly if it's unexpected, they want to be kept informed through the communication channel of their choice at a time convenient for them. We've factored this into our plan with initiatives to reduce occurrences of discoloured water and to improve awareness of what to do if it does occur.

Some customers are acutely aware of changes to their water and it matters to them. We use different sources on occasion to maintain supplies to customers either as a result of planned maintenance or operational issues. It can be unsettling to receive water that looks or tastes different, especially if there's no explanation as to why it's happened. We've improved how we update our customers about changes, for example, we created an easily accessible booklet to explain

changes that could occur as part of our work to deliver improved resilience in Birmingham. And we'll continue this into the next AMP.
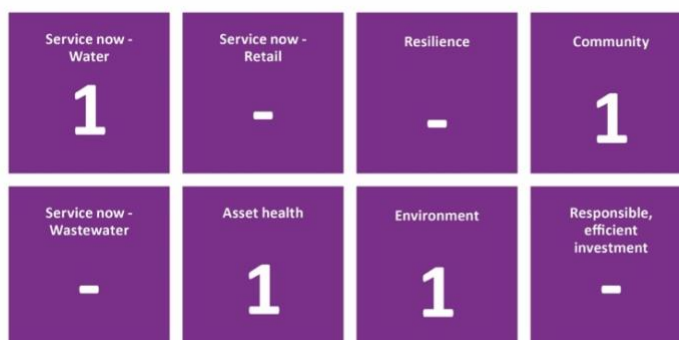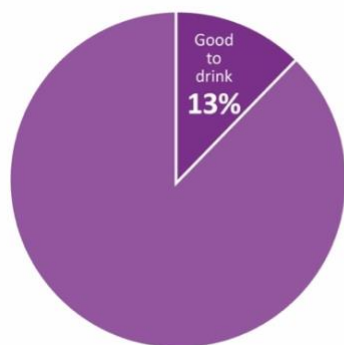
It's our duty to ensure compliance with regulatory standards as well as being critical to maintaining customers' trust in both their water supply and us. Our performance on the new Compliance Risk Index (CRI), a measure designed to illustrate the risk from treated water compliance failures, shows we need to do more. So, while we're already investing more and investing better in our assets and our people, this will continue to be a feature of our plan over the next five years – we'll carry on systematically reviewing our processes and investing to drive consistently improved performance.

There is one area of regulatory compliance that warrants particular focus, and that's the issue of lead in drinking water. We've made significant strides over the years in reducing this by replacing existing lead pipes on our network and tailoring our treatment processes. But there's more to do to protect our most vulnerable customers and future generations from the risk presented by lead. Since most of the risk arises from customers' pipes and fittings, solving this problem requires effective partnership with property owners. We're planning to work actively with local councils to work towards schools in our region being assured of the absence of lead in their network.

Customers care about the environment and they want us to look after it. Rivers offer a very visible indicator of the health of the environment – they represent the whole landscape they run through; all of the woodlands, meadows, farmland, towns, cities and communities. Customers want us to work with all others who have a role to play to better manage the environment and provide better raw water quality for us to treat. We're leading the way with our truly collaborative approach to catchment management which, with strong uptake levels, is demonstrating that sustainable outcomes can be achieved. And we've just won the top prize for the Best

Environmental and Sustainable Programme at the Corporate Engagement Awards 2018. We want to build on this momentum and do more.

This outcome includes £0.9bn (13%) of the totex in our plan and covers four performance commitments.

Service now - Water	Service now - Retail	Resilience	Community
1	-	-	1
Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
-	1	1	-

11.2   OUR CURRENT POSITION AND TRACK RECORD

We're committed to achieving sustainable improvement

We've taken action to improve our performance, particularly on reducing discolouration complaints and coliform (bacteria) detections at our treatment works. Our AMP5 coliforms performance, which resulted in £25m being returned to customers for failing to meet the required standards, acted as a catalyst for a fundamental review of our approach to drinking water quality. We improved our risk management approach, using it to better target where interventions were required. This enabled an early start on investment, with feasibility and design on almost half of the 2015-20 programme starting in 2015.

Alongside our investment programme we made operational improvements including all of our water production employees completing a competency evaluation programme –

'skilled by choice'. The programme focused on improving and sustaining competency levels of the workforce, through assessment and 'on the job' coaching to increase confidence and competence in technical and scientific aspects of water treatment.

We're also working collaboratively with the DWI and benefitting from their secondment programme, industry oversight and learning.

By continuously monitoring our progress on a wide range of asset health metrics, we could see we were making progress and that coliforms performance had significantly improved. But our analysis also showed we needed to do more to sustainably achieve our committed performance levels and improve on the new CRI measure. We increased investment significantly beyond the levels in our 2015-20 business plan, £80m of which has come from outperformance.

Areas of increased investment in 2015-20

Area	Activities undertaken
Treatment works	• Additional investment on five additional schemes for refurbishing coagulation and clarification processes at major treatment works. • Measures to improve resilience at our five largest/critical works related to power supply, river intake pumping stations and ingress risks in tanks. • An extra ultraviolet (UV) scheme where aquifer deterioration was indicated in 2015.

Area	Activities undertaken
	• Innovative manganese reduction at treatment works, reducing manganese entering the network by 40% and subsequently reducing discolouration complaints by up to 55% across associated networks.
Distribution service reservoirs	• Additional investment for the enabling works and complex repair work identified through our enhanced distribution service reservoir (DSR) inspection programme. • Improvements to disinfection and chlorine control. • Enhanced inspection programme to achieve a 1 in 8 year frequency by 2020.
Boreholes	• Installation of electrical control panels and disinfection equipment as part of civils structural schemes to improve resilience.
Distribution network	• Fire hydrant locking caps in Derbyshire and Birmingham to prevent illegal use of our network; taking an industry leading stance on prosecutions around illegal hydrant use, successfully securing 57 prosecutions in the last two years. • Increased activity on mains cleaning and flushing to reduce discolouration, doubling the length of mains cleaned compared to our AMP6 plan.

We're specifically focusing on coliform compliance and the new CRI measure. Using our risk-based approach we've identified further investment for the remainder of AMP6 to both achieve our targets and get us ready for the challenges we'll face in AMP7, including:

- Further investment in our people by creating an academy to deliver technical excellence across all levels of our organisation. Replicating the approach used in Singapore, recognised world leaders in this area, the academy will help ensure all operators have the right skills and knowledge to provide high quality drinking water consistently - even in the most challenging of operational circumstances. As part of this we're forming strong relationships with regional universities to develop a pipeline of graduates and post-graduates with the technical skills to match our operational needs for now and the future.

- Investing more in improving assets on our sites to drive up standards to achieve our 'food factory' approach to water production, including renewing all our upstands and hatches on our treated water tanks; upgrading our sampling facilities and investing in mobile UV plants as a proactive contingency; and installing online flow cytometry at our critical sites to improve our proactive bacteriological management.

Innovation: improvements to bacteriological risk management

Traditional monitoring techniques used across the water industry take 24 -48 hours and are too slow for proactive interventions if coliform failures do occur. We've identified new technologies using our own global technology scout across different industries (including food and drink sector). We've tested a range of novel rapid detection techniques to determine their suitability for the water industry including on-line and operator tests for total bacteria and coliforms.

We've also developed new lead measures for the risk of failure, based on total bacteria that can highlight asset deterioration (such as ingress into treated water tanks). We can now measure the presence of coliforms in minutes to a few hours, which will enable a rapid on-site response. We're one of only five companies worldwide using this technology and the first in the UK to implement an on-line pro-active and rapid-response monitoring protocol for bacteriological detection.

The technology is still developing but our evidence shows that the real time data provided by flow cytometry will be an effective tool to target and plan proactive interventions and manage residual risk on our water treatment works.

On-line technology gives us 38% more data, and therefore more control
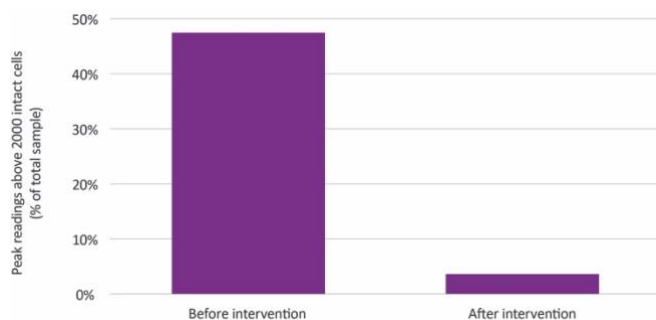
As well as interventions on our network to reduce discolouration complaints, we've also stepped up our customer communications. We learnt that customers want to choose their own channels of communication and they want us to be proactive in providing them with information in a timely manner. We acted quickly to meet the opportunities presented by social media. We've updated our websites to provide information in real time when customer supplies could be impacted by discoloured water as a result of incidents, and we provide 24/7 social media communications.

Away from the world of our household customers, we've been bringing greater focus on the farming community with our work on catchment management. We offer grants to farms located within a priority water catchment area targeted at reducing the risk of pollution into local watercourses – and so delay or avoid the need for costly treatment, particularly metaldehyde (slug control). A critical feature of our approach is flexibility. The grants can be used for farm management (moving livestock from high-risk fields or growing cover or catch crops) or infrastructure (including watercourse fencing, hard bases for livestock troughs, pesticide handling areas, biobeds and the purchase of precision farming equipment).

Farmers also have the opportunity to propose their own innovative ideas in a farmer innovation option. We've rebranded the scheme as 'Farm to Tap' and in July 2018 launched a highly targeted campaign using PR, direct communications, influencers and supply chain engagement.

Appendix A5 provides more detail on our past performance.

11.3　OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

We've developed our five-year plan by taking into account a range of factors including affordability (for both today's and tomorrow's customers), sustainability and the efficacy of potential solutions to ensure that we deliver the best possible plan to meet our customers' needs. It's critical that we improve compliance with regulatory standards which means taking a source to tap approach.

We've used a risk-based approach to develop our plan

Drinking Water Safety Plans (DWSPs) are the most effective way of ensuring that a water supply is safe for human consumption and that it meets the health based standards and other regulatory requirements. A DWSP is essentially a framework of hazard identification, risk assessment, risk management including the control measures, monitoring and incident and emergency plans and the associated documentation for each stage in the water supply chain.

DWSPs allow us to systematically address risk

DWSPs allow us to assess the risks for each of the main processes at our treatment works. We've used our DWSP 'effectiveness of control' approach to focus on ensuring our key treatment processes are fully effective, which in turn maintains water quality compliance, reduces unplanned outages and improves water quality aesthetics. In short,

DWSP enables us to systematically address risks over time through investment.

Compliance with regulatory standards is at the forefront of our plan

We're clear that ensuring compliance with regulatory standards remains a critical underpin to maintaining customers' trust in both their water supply and Severn Trent. Our regulators expect us to substantially improve. So, we've set ourselves the target of improving our CRI compliance to zero. This is an extremely stretching target and we're committed to achieving it.

Our plan for our surface treatment works is to shift the focus to downstream processes. We've already looked at processes to control cryptosporidium and bacteria (rapid gravity filters, coagulation and clarification and disinfection) so our plan will now focus on:

- granular activated carbon - ensuring we have enough capacity and flexibility for pesticide compliance, so we can have vessels out of supply for maintenance without risking customer supplies and addressing many of our vessels built in the 1990s where justified by on a whole-life cost basis;

- sludge and wastewater - ensuring good condition and effectiveness to avoid bottlenecking of sludge production that can otherwise restrict the amount of water we can

treat and put into supply, and also ensuring we recover as much water as possible from our treatment processes;

- tanks - continuing to improve DSRs, tackling ingress risks at balance tanks and contact tanks at works; and

- pumps - addressing ageing and poor condition electrical control gear at our large river abstraction and treatment works distribution pumps.

On groundwater treatment, we'll move from marginal chlorination at nine sites where existing treatment and mitigating action will no longer be appropriate given the increased cryptosporidium and microbiological risk. This will build on the work we carried out at 23 sites in AMP6. The sites identified have been prioritised using an expert understanding of hydrogeological data (high risk pathways) and sources in catchment, captured within DWSP and our catchment risk assessment – crucially, our risk-based approach means we'll be investing before failures actually occur. For the remaining lower risk sites, we'll be reviewing our risk mitigation (including emergency connection points, run-to-waste/flow diversions, short term controls, and use of innovative flow cytometry).

Our plan will also reflect the increasingly important role of boreholes in our water supply as environmental and climate change pressures impact other sources. Our data shows that around half of older boreholes experiencing unplanned structural issues will eventually be abandoned which would be wasteful given the economics (refurbishment is significantly cheaper than drilling new boreholes). So, we plan to use data gathered through geophysical surveys and CCTV to prioritise borehole sites based on criticality in terms of people served, the water resource position, asset performance and condition to support drought weather action plans. We'll also survey a further third of our asset base in line with UKWIR best practice which should enable us to plan for the future more effectively as improvements can take many years to deliver and require specialist contractors.

We'll use a DWSP risk-based investigation approach and flow cytometry to target our most risky DSRs for inspection and cleaning. We'll continue our approach for routine inspections and repairs and expect major refurbishment to be required at 10 to 15 sites with one strategic storage reservoir with 25 Ml/d capacity or more to be refurbished.

We know the work can be particularly challenging – some assets had never been taken out of service before – so we'll use more technology like flow cytometry for better targeting and remote operating vehicles for some inspections and cleaning. Our experience in Staffordshire, where we built a new 43,000m³ reservoir using efficient construction techniques including pre-cast concrete panels as well as innovative technology to remotely monitor the operational integrity of the asset during its entire life, is another good example of smarter investment. We also installed 5km of fibre optic cables within the joints and on the roof to detect

changes in strain and temperature which could signal deformation or leakage.

More flexible treatment works for greater resilience

We've used the recommendations from the Franklaw cryptosporidium review to build our plan to ensure our treatment works have the operational flexibility to support resilience, including real-time monitoring and fail-safe arrangements that make provision for containment and/or flow diversion in the event of an issue. We have one remaining surface water works where we need to make further improvements in Derbyshire. While resilience has been significantly improved over the last decade following improvements to the contact tank, DAF (dissolved air flotation) treatment and chemical dosing plant, we plan to install an automated run to waste process for the DAF plant, with a new pumping station constructed to divert water away from downstream filtration, and disinfection processes to protect final water quality.

Our plan also provides second source/dual stream solutions at four treatment works, strategic network flexibility to enable rapid rezoning, increased tankering capability, and improved network monitoring and control to reduce the risk of discolouration and reduce second source deployment time. And we've responded to the National Flood Resilience Review by increasing protection of our critical water treatment works and assets from 1 in 1,000 year floods.

Reducing the impact of discolouration by prevention and improved response

Our plan focuses on two areas – the prevention of discolouration events and an improved response when they do happen. We've an ambitious target of 9,500 complaints a year which is a huge stretch from our 2017/18 position. Our plan for AMP7 includes:

- removing manganese at source. Having achieved a 40% reduction in manganese leaving our surface treatment works in two years, we'll continue to invest in this area including new technology to optimise manganese control;

- preventing accumulation by using dynamic flow control valves and flow conditioning on trunk mains to better target discolouration hotspots, more mains cleaning and distribution flushing. We've proved that this works as we've seen a 56% reduction in complaints in two years in the areas where we've focused our cleansing activity;

- minimising disturbance of sediment by reducing flow and pressure changes, improving operational practices to reduce disturbance during repairs and maintenance and using innovative monitoring of spikes in pressure/transient waves. We're working with research institutions to improve our knowledge of pressure transients – short lived pressure waves in our network – and in partnership with

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

Inflowmatix (Imperial College, London) to predict pipe failure rates arising from the effect of pressure transients; and

- underlying the investment is our commitment to ensure we can quickly and effectively respond to issues appropriately and empathetically. We'll improve our proactive customer messaging (though a range of contact channels) to warn of potential discolouration issues and provide practical advice.

## Working with farmers to change mindset and behaviours – catchment management

Our plan builds on our learning in AMP6 and the recognition we've received from the DWI for our industry leading approach and ability to apply it at scale. Our catchment approach covers over 284,000 acres, much more than our peers and at lower cost. Almost half of the farms in our priority catchments have already switched to ferric phosphate instead of metaldehyde.

We're confident in our approach so our plan will feature catchment management as our main way of addressing raw water deterioration. Our plan will feature the following:

- Work on arable land in three surface water catchments to address metaldehyde, nutrients and grassland herbicides. Where it is appropriate to use a catchment based approach, for every £1 invested, we estimate customers will avoid £2-£19 on treatment and the wider environment will benefit by £2-£7.

- Advisory schemes in four groundwater catchments to address uncertainty in trends, short term start-up spikes to mitigate significant changes in the catchment, and 13 new groundwater catchment investigations.

- Extending our catchment approach where there is an opportunity to deliver biodiversity benefits, flooding improvements and better management of phosphate discharges from sewage works.

And we're finding our catchment approach is providing more and more opportunities. For example, we've been working with the University of Sheffield to develop a catchment model to predict the arrival of metaldehyde spikes at abstraction sites. The model enables us to temporarily suspend abstraction and avoids putting high levels of metaldehyde into our reservoirs, which in turn could lead to compliance failures. We're currently trialling technology in Warwickshire with a planned roll-out over the next five years.

Intake management – managing metaldehyde peaks through the use of catchment modelling
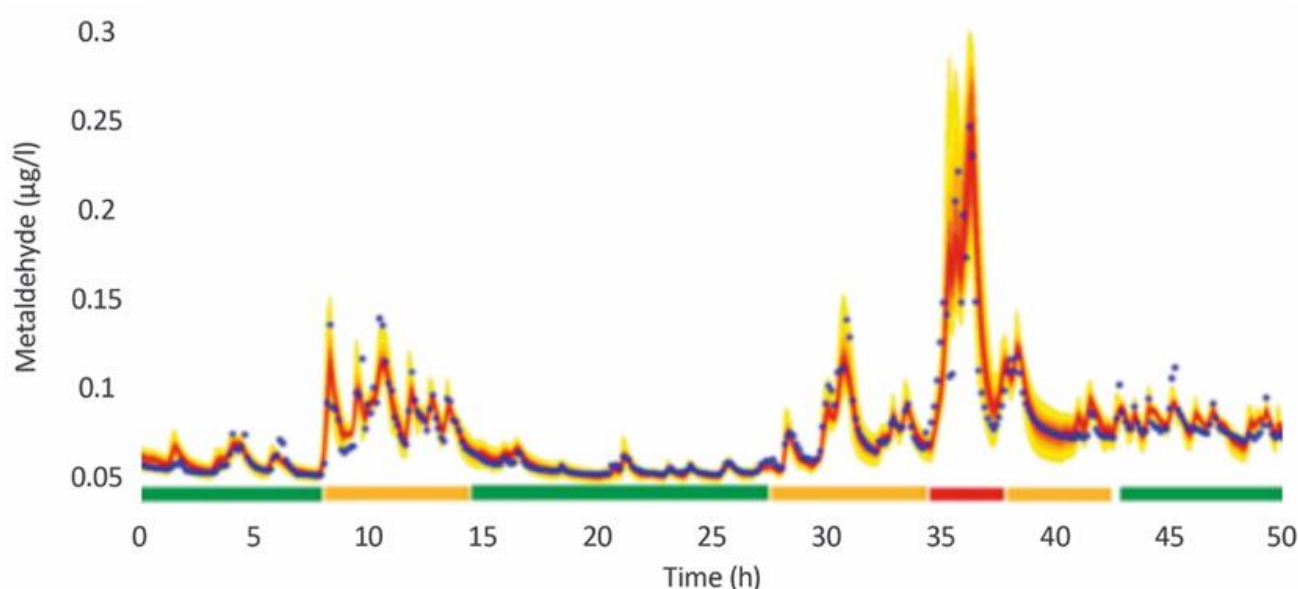
In addition to smarter uses of technology, we're looking at whether markets, specifically reverse auctions, could be a more cost effective way to deliver catchment interventions. We'll be trialling the approach this autumn but analysis to date suggests that our catchment approach provides a better outcome for our region – we pay around £60 per hectare for cover crops compared to an average of £80-89 per hectare in United Utilities and Wessex Water EnTrade trials.

Making a bigger contribution to lead reduction

Our plan is based on a combination of phosphate dosing at source, lead pipe replacement and information and support to help reduce the levels of lead in drinking water. Having reduced lead failures by 80% since 2005, the greatest risk of lead in drinking water now lies in customers' own pipes and fittings.

We'll target high risk areas and consumers for lead pipe replacement, as indicated by our DWSP. We're also creating GIS risk mapping using data gathered when we replace/separate common supply pipes. Linking this to information on housing age, postcodes and water quality failures will enable us to identify potential lead hotspots which will really improve how we target investment and advice. One area we will look at in particular is how to improve data granularity across our region and link it to customer vulnerability data. This, linked with our plans to actively work with local councils to enable all schools in our region to be assured of the absence of lead in their network, should help address the lead risk for the most vulnerable in society.

More on our innovative approaches to identify and manage drinking water quality risks is included Appendix A7: Innovation to deliver better outcomes.

Building a resilient and adaptive asset base for the future

The impacts of climate change on the quality and availability of water resources, as well as the continuing need to protect the environment, mean that we face a significant challenge to balance water supplies with demand in the future. To ensure supplies are resilient, we'll continue to take a twin-track approach of demand management and infrastructure improvements – including, potentially, water transfers and new reservoirs. In designing a more resilient network using new or altered supplies, we'll take account of the impacts on quality of drinking water, the acceptability to customers of changes in source or blend, and the implications for asset health and supply management.

We're also looking at the configuration of our asset base. We're using long-term scenarios to help us make decisions between local and strategic systems. This analysis will help us select an adaptive pathway by using data on costs, quality, availability and external factors, and allow us to optimise our investment decisions across the value chain.

Investment in our people is critical to success

We've developed a five-stage training programme to further enhance the technical competence of our frontline employees. This programme was recognised at the Water Industry Achievement Awards in 2017 – winning the People Initiative of the year.

By 2020, we will have rolled out the programme for all of our frontline operational roles. The programme is iterative and we will continue to upskill and test competencies throughout 2020-25, supported by our technical training academy. We're also changing the way we deliver larger capital schemes including moving to more in-house design which will ensure that critical expertise and specialist skills are retained within our company.

Our plan has been built to respond to customer and stakeholder needs

The plan we've summarised above responds to what we've learnt from engaging with, listening to and learning from our customers, and the DWI who act on their behalf. The range of insight we've used to understand our customers' needs is explained in more detail in Appendix A1, with the key elements summarised in the following table.

We've synthesised our insight into four areas which our plan responds to

What we heard	How we're responding
Customers support that the causes of discolouration, taste and odour complaints should be tackled.	Removing more of the main cause of discolouration, manganese, at source. Using new dynamic control valves in our mains network to prevent deposits building up and transient waves to better manage pressure spikes that cause disturbance.
Water quality incidents, and misconceptions about the safety of the water supply (resulting from a change in aesthetic quality) can lead to concern and dissatisfaction.	Enhancing our customer communications, utilising multi-channels (text, social media, web and traditional channels) to reassure and inform customers about the safety and high quality of their supply. Further improving the way we use our dedicated customer water quality management process to diagnose and resolve customer issues.

What we heard	How we're responding
Our customers perceive lead pipes – regardless of mitigations in place – as a health risk.	More support to address lead pipes with additional focus on schools in our region. Working with councils and local education authorities, we will offer support and technical advice, and plan to offer places at our technical training academy for councils to upskill staff in water quality management on private supply pipes.
Customers support the use of catchment management approaches (but expect that risks will be managed).	Expanding our use of catchment management and measuring impacts to provide evidence and assurance. Developing a new performance commitment to measure behavioural change.

We've worked closely with the DWI to understand how our plan should respond to its guidance note on long-term planning for drinking water quality. This guidance confirmed there were no new policy initiatives or new legal obligations and provided a clear direction for company plans. Plans need to be set within a long-term context, be sustainable, risk-based and proactive, innovative, consider people and skills, use catchment management as a primary approach – as well as needing to better understand the impact of resilience on drinking water supplies. The key elements are summarised below.

We're acting in five areas to protect our customers

Feature	Our actions
Risk assessment	• Drinking water safety plans are used to identify risks to water quality from source to tap, learning from events or near misses and mitigating any identified risks in a timely, effective and efficient manner. • Risk mitigation and performance is driven through a comprehensive weekly performance management meeting, chaired by a member of the executive. • We've enhanced our approach through the introduction of Waterpedia – an online document repository and management for all our process, operational management, maintenance, and investment standards. • Real-time monitoring has been enhanced and is driving proactive intervention of risks, for example through raw water monitoring and adapting our abstraction regime to minimise risk.
Catchment	• Routinely pursuing proactive catchment management for all supplies. • Using resource and supply management to achieve greater flexibility to alternate between water sources while maintaining a high standard of water quality. • Using raw water deterioration projections to monitor at the abstraction points of each treatment works, investigate the cause of any deterioration and undertake (primarily catchment) investigations and actions to control pollution at source. • Work with parties within catchments to improve and safeguard quality. • Where seasonal catchment issues arise that cannot be mitigated through catchment management we are investing further to provide long-term mitigation.
Water treatment	• Providing treatment facilities with operational flexibility to support resilience and prevent supply of inadequately treated water. Decisions on supply provision must consider implications on water quality, driven by operators with the right skills and knowledge. We've invested in enhancing technical knowledge and competence, with a commitment to build a world class training academy, based on the leading exponents (Singapore). • Supporting work to develop reliability and use of real-time on-line monitoring systems to improve responsiveness and optimisation of our sites.

Feature	Our actions
	• Using extensive sampling and data analysis to scrutinise the efficacy of our operation. We understand the root cause of failure and have adapted our operation and investment to ensure we address underlying root causes.
Water distribution	• Using an effective asset health approach as a basis for a proactive maintenance and operation regime. For example, by targeting our DSR inspection and clean programme based on risk while achieving an average of 1 in 8 year frequency. • Using intelligent smart networks to pre-empt and mitigate water quality impacts from burst mains. • Targeting transient pressure wave reduction to reduce risk of bursts and discolouration across our network.
Consumer	• Proactive strategies for lead, operating a collaborative approach with stakeholders and support action aimed at vulnerable consumer groups. • Active support and leadership for industry and the Water Regulations Advisory Scheme initiatives on fitting regulations and plumber competence. • Dedicated water quality expertise to resolve customer issues.

In line with DWI guidance, the Severn Trent Water Limited Board has confirmed that our draft Water Resources Management Plan (2018), has taken account of all statutory drinking water quality obligations. In summer 2018, we provided a statement to the DWI to assure them that our risk assessments for drinking water quality included a long-term view (included as Appendix A10).

11.4   THE COMMITMENTS WE'RE MAKING

Our performance commitments are designed to hold us to account for the improvements we've promised to our customers, and track progress towards our outcomes. For AMP7, we've selected four performance commitments against which we have set targets that we can demonstrate are stretching. Our approach to selecting commitments and framework for setting targets is explained in Chapter 9.

Compliance Risk Index

The Compliance Risk Index (CRI) is a measure of the risk arising from treated water compliance failures. It comprises separate risk indices for failures recorded at customers' taps, at water treatment works and at service reservoirs. As this measure reflects our statutory obligations, and in line with the DWI and Ofwat's expectations, we will be targeting full compliance (i.e. an index score of zero).

Should the ODI applied be financial, there is choice on the level at which we set the deadband. Although the available dataset is limited, we can see that CRI is relatively volatile compared to previous compliance measures. Our performance has ranged from 14.4 to 7.12. Setting a deadband at 3.62 represents a 48% improvement from our anticipated 2019/20 baseline and is particularly challenging given our current position and would represent a 62% improvement from this. It is in-line with the average performance of companies in England over the last three years.

PROPOSED TARGETS	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Water quality compliance (Compliance Risk Index)	Reputational	Index	9.44	7.00	0	0

Farming for water

This performance commitment measures the number of catchment schemes where we have reduced raw water quality risks by changing farming practices. Following our experience in 2015-20, we have a much better understanding of what drives successful outcomes (changing behaviours), and this new performance commitment builds on our current measure by stretching ourselves to go beyond outputs, and measure outcomes.

This is a bespoke commitment and we've based our target with regard to the balance of the overall plan. We believe a target of 16 schemes is challenging and ambitious, based on our current and wider industry experience of seeking to change farming behaviours and practices. Our projections

show this equates to catchment management across 350,000 acres, a 23% increase against AMP6, and incorporating work with over 900 farms, issuing in excess of 1400 grants, a 42% increase compared to AMP6. There are 200 potential catchments we could target, although an uplift of this scale would not be aligned with a risk-based approach.

In 2015-20 our target was 12 catchments. For 2020-25 we're further expanding the work done in these catchments, and adding an additional four. Of these 16, approximately half are in the Environment Agency's WINEP3, of which four are groundwater schemes for nitrate, three are surface water schemes for metaldehyde/other pesticides, and one is a biodiversity scheme. This represents a significant stretch against our current performance commitment.

PROPOSED TARGETS	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Farming for water	Financial	Number (catchments)	-	0	16	Based on WINEP

Drinking water complaints

This performance commitment is the same as our current measure and covers all contacts from customers regarding dissatisfaction with the quality their drinking water. Given it is driven by customer insight, we've used comparative data, cost benefit and expert judgement to set the target.

Our own performance has ranged from 11,657 to 14,489 complaints, which compares to an industry upper quartile of 5,911 complaints. However, our analysis shows that it is more appropriate to compare our performance with companies in

the west of our country, given they have similar geology associated with naturally higher concentrations of manganese (which catalyses iron deposits in mains, causing discolouration) and which requires careful optimisation of treatment processes or more frequent mains cleansing. As such, our proposed target of 9,500 complaints is more challenging than the upper quartile of western companies (11,145 complaints) and represents a 5% improvement on our ambitious 2020 position (18% on our best performance to date). The proposed target will stretch us beyond the cost beneficial level, meaning we will be challenged to find more effective ways of delivering the improvement.

PROPOSED TARGETS	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Water quality complaints	Financial	Number	12,708	10,011	9,500	8,600

Protecting our customers from lead – starting with schools

This is a new performance commitment to track the number of schools and nurseries where we have conducted a sample survey, and/or service and communication pipe inspection to assure the absence of lead in the supplying pipework. This is a new measure with no historic or comparative context.

To set the target, we've used our Drinking Water Safety Plans to identify how many of the circa 6,000 schools in our region are in areas where lead pipes are more likely to be found. We know we've previously replaced between 735 and 2,228 lead communication pipes per year, and that replacement activity ranges widely in its complexity. Our target of 500 is cost beneficial and builds in the fact that surveys are likely to be carried out in school holidays to avoid disruption.

PROPOSED TARGETS	Incentive type	Unit	Current	2020 forecast	2025 target	2035 target
Protecting our schools from lead	Financial	Number	-	0	500	6,000

12 WATER ALWAYS THERE

Our customers can rely on water to start their day, and throughout their day, every day. And we work together to make sure it stays that way for future generations.

12.1 SUMMARY

A piped supply of quality drinking water is integral to modern society and modern life. Customers need and expect it - *always*. While customers know things go wrong from time-to-time and understand that interruptions may occur as a result, they are increasingly intolerant of even short-term interruptions. Long-term interruptions are simply unacceptable. They expect a temporary supply to be provided and want to be kept informed through the communication media of their choice at any time of day or night. We've factored this into our plan.

Customers want us to ensure that they have a resilient supply that they can rely on, regardless of the climate or weather. We've led the way in developing major resilience schemes with our Birmingham Resilience Programme and we're progressing well with implementation. However, we know that there is still more we can do to improve the consistency of the performance we're delivering from our existing network. We made a strong start to the AMP and we've performed well for long periods but our performance has been inconsistent. We struggled to cope with the extreme freeze / thaw weather our region experienced in early 2018. We need to raise our game on leakage, supply interruptions and on asset renewal. We've started work on this already and have taken action to: install around 1500 additional loggers to improve leakage detection (with 35,000 planned by the end of 2020); improve our communication strategy in rural areas; work better with local partners; and improve delivery of alternative supplies.

Customers care about the environment and they're aware of climate change. They want us to provide their water without harming the environment and want us to put right any damage that has been done in the past. However, it's clear from the dry and hot summer in 2018 that they want to use what water they want, whenever they want to. This requires us to think about, and plan, to meet peak demands for treated water use, alongside our work on raw water storage.

Customers recognise that balancing supply and demand is a complex issue to solve, but that's what they expect us to do. They are willing to support investment to achieve what they want but with one very clear proviso. That we deal effectively with leakage. It simply has to be lower – they don't accept economic arguments to justify a certain level of leakage. They expect us to find ways to innovate to achieve what they want affordably. Stakeholders including the National Infrastructure Commission (NIC) are clear in their recommendation that leakage should be halved by 2050 and we agree.

We're passionately committed to safeguarding the environment and fully support the Environment Agency (EA) in its efforts to ensure sustainable abstraction. The latest requirements set out in the Water Industry National Environment Programme (WINEP3) mean that many of our present sources of water will not be available in the future and this places great strain on future supplies. We're determined to find the right way forward and have worked collaboratively with the EA to find ways to manage this risk and avoid about 100Ml/d of potential supply shortage. In our plans, we've focused as much as possible on demand reduction but customers still face a deficit of around 130Ml/d. So, it is likely that we will need to turn to new water sources. Since there is inherently uncertainty in this estimate, we're not going to invest until we're sure that they are needed. Our proposal is covered in a separate cost adjustment claim (included in Appendix A8).

We've made some great strides on communication in this AMP and we are the first water company to provide 24/7 social media contact for customers. We widely use SMS and web communications to keep our customers informed, including when things go wrong. We've also strengthened our bottled water provision and tankering capability to ensure customers have a basic supply if our piped supply fails. We have 500,000 litres of bottled water available immediately and a further 300,000 litres after 18 hours.

We've used our extensive and proven asset modelling capability to develop a balanced plan that delivers customers what they want in an affordable way. The expenditure and performance commitments are summarised below.

This outcome includes £1.7bn (26%) of the totex in our plan and covers 15 performance commitments.
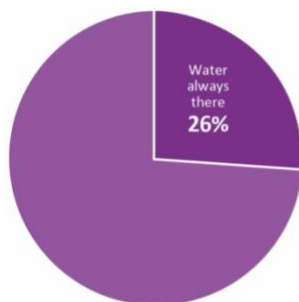
Water always there 26%

Service now - Water	Service now - Retail	Resilience	Community
5	-	4	1

Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
-	2	3	-

12.2 OUR CURRENT POSITION AND TRACK RECORD

We're investing now to improve resilience for the long-term

We took action in PR14 to address resilience risk through our Birmingham Resilience Programme. We're on track to deliver all three components of this ground-breaking programme:

- **The Birmingham Resilience Scheme** – creates a new alternative supply of water, plus upgrades to Birmingham's main water treatment works. This element of the programme is an enabler which will allow more detailed inspections and maintenance of the Elan Valley Aqueduct (EVA) from 2020. This element will not alter the risk of failure itself.

- **Community risk schemes** – reduces the risk that a failure of the EVA will lead to significant impacts for three communities along its route. This element specifically reduces or removes risk of failure at three critical locations.

- **EVA maintenance** – maintains a specific element of the route where the current EVA structure needs essential maintenance.

More detail is included in Appendix A5: Accounting for past performance.

Elsewhere, our investments to improve the performance and resilience of customer supplies are progressing well. On our Strategic Grid, which supplies two-thirds of customers, we've increased the storage capacity by 34Ml and built a new reservoir to improve supply resilience in Derbyshire.

We've innovated to meet supply demand challenges

We completed the largest ever abstraction rights trade in 2016. This was the first between two utility sectors on this scale and secured enough water for 200,000 customers at a significantly lower cost than building new infrastructure.

We've also continued to work with our customers to help them use less. We designed our resource efficiency performance commitment to help us manage water efficiency and leakage to enable us to take less from the environment. We've found it tougher than expected to make progress and we do not expect to achieve the 2020 target. However, we've gained valuable experience that we'll apply as we continue to develop our approach.

We've introduced an innovative scheme to incentivise developers to build water efficient homes. Developers receive a discount on the charges relating to the new supplies if they design and build homes that have low water usage levels.

After a positive start, our leakage performance suffered in the 2018 freeze / thaw

We hit our leakage targets in the first two years of this AMP and were on track to hit year three targets. However, the freeze / thaw event late in the year meant that, despite delivering recovery rates that outstripped anything we'd previously achieved, we were unable to recover in time to achieve our year-end target.

As a result, leakage was higher than planned at the start of 2018/19, which means a challenging year particularly given the impact of the hot and dry summer. Nonetheless, we remain completely focused on achieving our target.

Our supply interruptions performance has been inconsistent

We analysed the issues that impacted performance in AMP5 and in AMP6 implemented improvements to our operational response, distribution mains renewal activity and network monitoring and control technology. The improvements looked to have stabilised performance and we met our target in the two years to 2016/17. However, the operating conditions through the 2017/18 winter proved exceptionally difficult; the extreme cold conditions followed by rapid thawing caused an increase in mains bursts across our network with consequent supply interruptions.

Our performance in 2017/18 did not meet our expectations or those of our customers. We knew we'd inconvenienced our customers and immediately paid £30 compensation to any who were without water for more than 12 continuous hours, or experienced intermittent supply for more than 15 hours. We also worked with business customers and their retailers who were affected. We've returned over £21m (post tax) to customers through underperformance penalties and we have used our experience to change our compensation policy.

This reaffirms the need for us to continue to improve both our network resilience and response to interruption events. We know that we need to be resilient to these weather events and we've taken action to understand our network better and improve performance.

We've acted to keep customers supplied through tankering and alternative supplies…

Through recent experience, we've gained valuable insight about our customers' expectations and we know they value greatly having an alternative supply of bottled water available from the very early stages of a supply interruption. We've stepped up over the past three years. For example, when supplies to customers in Tewkesbury were interrupted by a burst trunk-main in 2017, we provided 100,000 litres of water for customers from convenient local locations with supplies being delivered directly to vulnerable customers.

… and stepped up our customer communications through all channels

We learnt that customers want to choose their own channels of communication and they want us to be proactive in providing them with information in a timely manner. We acted quickly to meet their changing expectations of social media. We've updated our websites to provide information in real time when customer supplies are interrupted and we provide 24/7 social media communications. For example, in the freeze / thaw event in early 2018 we worked to provide regular communication with our customers and with key stakeholders throughout the incident, using a range of different channels. We also significantly bolstered our 24/7 contact centre and social media teams to manage the higher than normal inbound queries. We proactively contacted our vulnerable customers as well as hospitals, schools, care homes, prisons in the affected areas to offer alternative supplies. During the event we specifically:

- operated a full incident response communications team 24/7 throughout the event to keep customers informed with key updates, including the locations of any bottled water stations and when supplies would be affected / restored;
- proactively sent out over 852,000 direct messages to customers' phones via SMS text or voicemails, and contacted all of our most vulnerable customers directly.
- proactively contacted all our sensitive non-household customers including hospitals, care homes and prisons;
- liaised directly with farmers and schools in the affected areas to offer them alternative supplies and as a result, we are only aware of one school that had to close for one day as a result;
- proactively worked with the media and conducted TV and radio interviews which helped to generate around 700 media updates on TV, radio and local press;
- posted 91 website updates and registered 1.6m page hits, 100% higher than normal;
- increased staffing levels in our 24/7 operational call centres.
- ran a 24/7 social media team. We responded to all customer tweets needing a response and proactively issued updates on social media including boosting them across the local areas so that they appeared in the feed of everyone in the area and not just those people that already followed Severn Trent. This helped to generate around 1.9m impressions on Twitter and reach around 277,000 people on Facebook. Our analysis of social media sentiment shows that 80% of posts we received from customers were either positive or neutral in tone; and
- provided 200 updates to MPs, Councils and our regulators including Ofwat, Defra, CCWater, EA and DWI. We would like to acknowledge the support they provided in helping us to communicate and engage with their constituents and stakeholders.

In July 2018 we launched our second and biggest campaign of the year focused on water efficiency. The campaign was aimed at getting customers to reappraise the value of water and the part it plays in their lives. We used a multi-channel approach that included TV, outdoor advertising, social media, digital and local radio weather sponsorship. The campaign created engagement with Severn Trent and the campaign message of 'use water wisely', and delivered water saving tips and access to free and discounted products.

We also make great use of more conventional channels, as illustrated by our proactive communications in our planned works.

We're investing to improve our assets as a basis for performance improvement

We've experienced some challenging mains bursts over the past three years and have taken action to strengthen our mains renewals programme in the final two years of the AMP. We've increased our mains renewal investment in AMP7. We're investing more than we originally envisaged in our boreholes to deliver more resilience in our water supply network.

Additionally, we've looked long and hard at what more we can do now to improve performance. We're investing £100m of outperformance in AMP6 into a variety of initiatives to improve performance and asset health to give us strong momentum going into AMP7. This includes, for example, trunk main monitoring, additional tankers, improved telemetry in service reservoirs and increased leak detection activity.

12.3 OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

We've developed our five-year plan considering a range of factors including affordability (for both today's and tomorrow's customers), sustainability and the efficacy of potential solutions to ensure that we deliver the best possible plan to meet our customers' needs. It's critical that we improve the performance and resilience of our network which means approaching the network as a system – every piece has to work and fit together perfectly to bring the service that our customers want and that we want to give them.

Using a risk-based approach and metrics to evaluate our assets and develop our plan

For example, with our underground assets, we use driver trees to look holistically at the factors (short and long term) that affect delivery of an outcome. This provides a set of asset health measures that create a good balance between service now measures and long term stability (and risk profile) of the asset base to keep delivering service and enable us to:

- predict and avoid future service failures (avoided costs, improved customer satisfaction);
- target investment (and resources) on the most critical assets, which would result in more effective risk management;
- improve the robustness and efficiency in our long term plan by identifying interventions based on high quality data and rooted in a robust assessment of the long-term capability of our asset base; and
- deliver cost efficiency.

We use a suite of asset deterioration models to predict future performance and in turn help us make targeted interventions. We have developed our infrastructure model – Water Infrastructure Supply Demand model – over the past two AMPs, and this provides a high-quality basis for investment planning. Importantly it ensures continuity and consistency in building our plans.

The deterioration rate of our pipes is determined by calculating the relationship between pipe attributes and failure. The attributes include pipe material, age and soil characteristics. We combine these asset/system attributes with historical failure data – that includes bursts, interruptions, leakage and supply demand balance. The models create cohorts of similarly behaving pipes to then calculate the least cost intervention plan for delivering the specified service levels.

Our plan has been designed to achieve the right blended mix of factors, balancing asset investment and operational improvements across our network to achieve customer outputs affordably. The main elements are outlined in the following sections.

Leakage reduction is a priority

Leakage is consistently number one on the agenda for customers when it comes to any discussion on water supply. Quite simply, they expect us to reduce it substantially. So we've set ourselves the target of reducing real leakage by 15% by 2025. That's a stretching target and we're committed to achieving it.

We plan to move away from the traditional campaign-led leakage control strategy to a more proactive data-driven targeted approach. This will allow us to improve awareness, detection and response times, all in a more efficient manner. Coupled with more effective mains replacement and network calming activity, we can deliver a 15% reduction in leakage by 2025 in a more cost effective way than before.

Our leakage plan is built on increased network monitoring, driven by our investment in pressure loggers and fixed acoustic loggers. These two types of logger enable us to address the extremes of our network. Pressure monitoring, combined with our hydraulic models, will be used to identify leaks on more rural areas of the network that are primarily not metallic in construction, whereas acoustic logging will be installed on more densely populated areas of our network primarily on metallic pipework. Data from both of these detection methods will be handled by an advanced analytics system that can combine hydraulic data to identify issues sooner and narrow the areas of interest. Taken together, these interventions will reduce the time taken for us to be aware of an issue and enable us to prepare a targeted response which is key to saving large volumes of water.

We'll continuously improve our approach. We've undertaken a global search of best practice in leakage with our people visiting USA, Singapore, Denmark and Australia to get first-hand experience. This has identified exciting innovations such as a robotic leak detection device being developed by Massachusetts Institute of Technology. In addition, we're using known analytic technology to forecast areas where bursts are likely to occur so we can target our leakage find activity better. We're also trialling the use of satellite detection technologies to detect leaks in our very rural areas.

In addition to the smarter use of technology, we also need to respond to leaks more quickly. It's critical both to creating the right relationship with customers and reducing the amount of water lost. We set ourselves a hugely ambitious and stretching target in AMP6 to fix leaks in 24 hours. While we didn't achieve the target, we learnt a lot and will apply this to better planning and scheduling and work management to achieve our more robust performance commitment in AMP7.

Leakage from customers' own pipes (rather than on our network) is something that we have to address as we strive to reduce leakage. We've recourse to legal action, but we find this to be slow and not conducive to the relationship that we want with customers. We'll use it only as an absolute last resort. The answer lies in a much more collaborative approach with customers to find the right solution in each case. We'll work to develop a fair approach to this issue over the AMP and in the meantime we are focused on fixing the more complex issues arising from shared supplies and those of vulnerable customers.

Reducing the impact of supply interruptions by prevention and improved response

Our plan focuses on two areas – the prevention of interruptions and improved operational response when they do happen. We have a very ambitious target of 8:41 minutes which is a huge stretch from our 2017-18 position of 35 minutes. We will establish good momentum from our additional investment of £100m in 2018-20 and a strong plan for AMP7 which includes:

- Monitoring and control of our network to pinpoint failure early and minimise customer impacts. We'll invest in new fixed acoustics and pressure loggers across our network at strategic points, purchase additional satellite 'leakage tiles', harness new programming functionality in our outstations to detect indications of storage issues in our distribution service reservoirs, trial three new trunk main monitoring solutions for early leak detection and accelerate the roll out of advanced pressure control systems to 16 sites.

- We're also working with research institutions to improve our knowledge of pressure transients – short lived pressure waves in our network – and in partnership with Inflowmatix (Imperial College, London), working to predict pipe failure rates arising from the effect of pressure transients. The results of this work will enable us to prioritise investment on areas most severely impacted.

- We've used our infrastructure model to assess the rate of mains renewal required to offset deterioration on our network and achieve the required improvements on mains bursts, supply interruptions, leakage and water quality complaints. We're using extensive pressure management and optimisation across our network to reduce stress and extend the life of our assets.

- We're continuing our proactive trunk main renewal and increased trunk main network monitoring to help to minimise the number of catastrophic failures we experience on our network by allowing us to respond with planned repair work. On critical sections of our network and where failure would have a widespread impact, we are proposing to install a fixed network of condition monitors to act as an early warning system for a potential issue on these assets.

- Underlying this investment is our commitment to ensure we can quickly and effectively respond to issues appropriately and empathetically. The creation of our new academy, a high quality training centre for our workforce will provide state of the art facilities for learning and will enable us to undertake scenario planning alongside the other organisations we'd be working with in the event of a failure. We'll review our tankering and continuous supplies

provision to ensure that it meets our customers' expectations for continuous supplies.

Increasing metering to deliver demand reduction

Three companies – Southern Water, Thames Water and Affinity Water – have undertaken large scale metering programmes since 2010 and have reported demand reductions of between 8% and 16.5%. Their experience supports the benefits of metering.

We plan to increase the proportion of metered households to 65% in 2020-25, with full metering by 2035. This will require us to treble our current run-rate. Compulsory metering can still only be undertaken in areas classified by the EA as seriously water stressed. So, we aim to achieve our targets by installing meters proactively and offering customers the opportunity to switch based on information on what their measured bill would be. We recognise that this is an ambitious target which involves real risk, it is nonetheless, the best option for customers. We'll ensure that we do not invest customers' money unnecessarily and will reflect our actual expenditure through our ODI mechanism.

We expect the increase in meter coverage to deliver a demand saving of around 10Ml/d by 2025. This includes benefits from finding and fixing leaking supply pipes. Again, this involves risk since we have seen some evidence in summer 2018 of metered customers' usage being higher than non-metered customers. Anecdotally, this is driven by a mindset of "I'm paying for it, so I'll use it". We'll feed this into our analysis of how customer and community demands and expectations have changed and what impact this has on peak treated-water supply requirements.

To maximise the supply pipe leakage reduction opportunity, we are proposing to install meters externally at customers' properties' boundaries. As meter technology develops, and over the course of the 15 year programme we would expect innovation in metering technology to help reduce the number of properties that can't be metered, through the use of smaller, non-intrusive clamp on meters and ultra-sonic flow meter technology. The roll out will be undertaken on a water resource zone basis, targeting the zones with the greatest supply and demand challenges first.

Working with our customers to change mindset and behaviour

We'll work with our customers to improve how water is valued by extending our water education programme to deliver a saving of 19 Ml/d a day by 2025. We'll use a range of channels – outreach visits delivering workshops, interactive school lessons and assemblies – and focus on schools in order to inspire a generation to drive behavioural change. The message will cover both how to use water wisely and its importance to health and well-being. We'll also continue to focus on current bill payers too - including text messages,

targeted letters and advertising on buses, trains, print media and through social media.

We're looking to stimulate permanent behavioural change. UKWIR research (2009) suggests a change of behaviour factor of 18% is usually at the higher end of the range that has been achieved in our industry. We've set ourselves an ambition to overachieve this by aiming to inspire 27% of those we see to adopt the right water and waste water behaviours for life. We've already invested £400,000 of our money in initiatives and school outreach programmes to prepare for a rapid start in AMP7.

Approaching water supply from a nationwide perspective

We've long been proponents of taking a holistic, national perspective on optimising raw water sources for the benefit of customers, communities and the environment. We have established the River Severn working group which brings together other water companies, abstractors and environmental regulators with the objective of developing and optimising the strategic planning for this important river. We're active participants in a similar group for the River Trent, as well as other water resource planning initiatives with neighbouring water companies for the east, the south-east, the north and the West Country.

Having worked closely with United Utilities and Thames Water, we have included an innovative mechanism, which will allow us to progress an interconnector between the Severn and Thames (detailed in Appendix A8). This is an exciting option that could alleviate the need for a new raw water reservoir in the Thames area.

Taking a prudent approach to investing in new sources of supply

Using our adaptive planning approach, we have selected a mix of demand management, supply side and water trading options to ensure we can maintain supply in a way which better protects the environment and prepares for the impacts of climate change. Within our region, those water resource zones that are reliant on multiple groundwater sources are most impacted by the need to reduce unsustainable abstraction and protect against future deterioration. Those zones that are reliant on upland reservoirs and river abstraction are most affected by the impacts of climate change. Some of our zones will see their headroom gradually eroded over time, and we are projecting that our Strategic Grid, Nottinghamshire, and North Staffordshire zones – covering a significant portion of our customer base – will go into supply / demand deficit by 2025 if we take no action.

We recognise that there is uncertainty in climate predictions and we are alert to the risk of investing too soon and causing intergenerational unfairness. We're facing a supply shortfall of just over 130Ml/d by the 2025. We're likely to need new sources to fill this gap and have taken a real options approach to investment, learning from the gas transmission sector approach to investment.

More detail on the development of our water resources management plans are available at: severntrent.com/wrmp

Ensuring customers receive the right water pressure

We've a good track record of eradicating low water pressure issues in our network. However, our enhanced customer research gave us new insight and identified that pressure (including low, high and varying pressures) is still a cause of irritation and frustration for many customers. Armed with this new insight, we have increased our focus on this area in our plan.

We've solved the majority of persistent low pressure problems over the last decade and, as a consequence, our average cost to resolve problems through capital investment has almost trebled over 2015-20 as we resolve ever more difficult problems. We therefore need to take a new and more innovative approach.

We'll tackle many of the remaining issues through better network optimisation, driven by real-time monitoring and targeted interventions. Our plan includes a range of interventions: installation of small service booster stations, renewal of lengths of pipework to allow those areas suffering poor pressure to be rezoned onto other areas, and upsizing pipework that is causing poor pressures due to high head-loss at peak demands. New small pumps have been developed that dramatically reduce the cost to address those issues that affect a small numbers of customers where pumps are required to lift their service to an acceptable level. These small scale improvements are vital since they enable us to address issues that were previously non cost-beneficial.

Using a systems thinking approach to improve resilience to long term outages

We gather and analyse data about our assets and the external environment, reviewing our processes and, when failure does occur, interrogating the reasons and impact it has had on our customers. This systems thinking approach enables us to improve our understanding of the wide range of shocks and stresses that could prevent us from providing the services our customers expect now and in the future. It also improves our ability to predict how these shocks and stresses may change over time and therefore enable us to identify the most cost beneficial way of responding to them over the long-term.

Our plan for 2020-25 focuses on our Strategic Grid - the main water transfer system in the Severn Trent region, which at

1,200km in length spans from Derbyshire in the north of our region, down the eastern side of our region and across into Gloucestershire in the south of our region. The Strategic Grid is an integrated system of aqueducts, pipelines, reservoirs, resources, water treatment works and control systems.

Our 2020-25 plan has three key components:

- **Strategic sections of assets**. Risks associated with the tunnel and conduit sections of the Strategic Grid, which form a strategic link in Derbyshire will be addressed. Almost 100,000 customers will benefit from the reduced risk of long duration interruptions.

- **Large surface water treatment works.** To improve the resilience of four of the larger surface treatment works to reduce the risk to almost 400,000 customers experiencing supply interruptions as a direct result of an outage.

- **Network assets.** To improve the capability of the distribution infrastructure to move water around and maintain supply in the event of one of our larger treatment works failing. Over 2.5m customers would benefit from an improved level of service from preventing such failures and half would also benefit from reduced risk of discoloured water supplies.

Using adaptive pathway planning to enable robust choices to be made

In preparation for PR19, we improved our water infrastructure supply demand model by strengthening the underlying data and risk relationships. This has enabled us to optimise a wide range of interventions that increase supply, or reduce demand (leakage and consumption) for a large number of potential future scenarios. We've also developed:

- An advanced statistical uncertainty analysis system. This interrogates the certainty of the plan and allows comparison with near optimal plans, which may be more or less certain.

- An innovative approach to adaptive pathway planning – building on UKWIR guidance, this is essentially a technique that allows multiple future scenarios to be considered together and analyses how moving between these changing futures would affect which investment plan to follow.

We've considered over 60 different scenarios and carried out more than 6,000 investment optimisation simulations. This gives us confidence that, despite the uncertainty, we are making the most appropriate decision for the long term.

Adaptive planning visualised to show options and outcomes over time
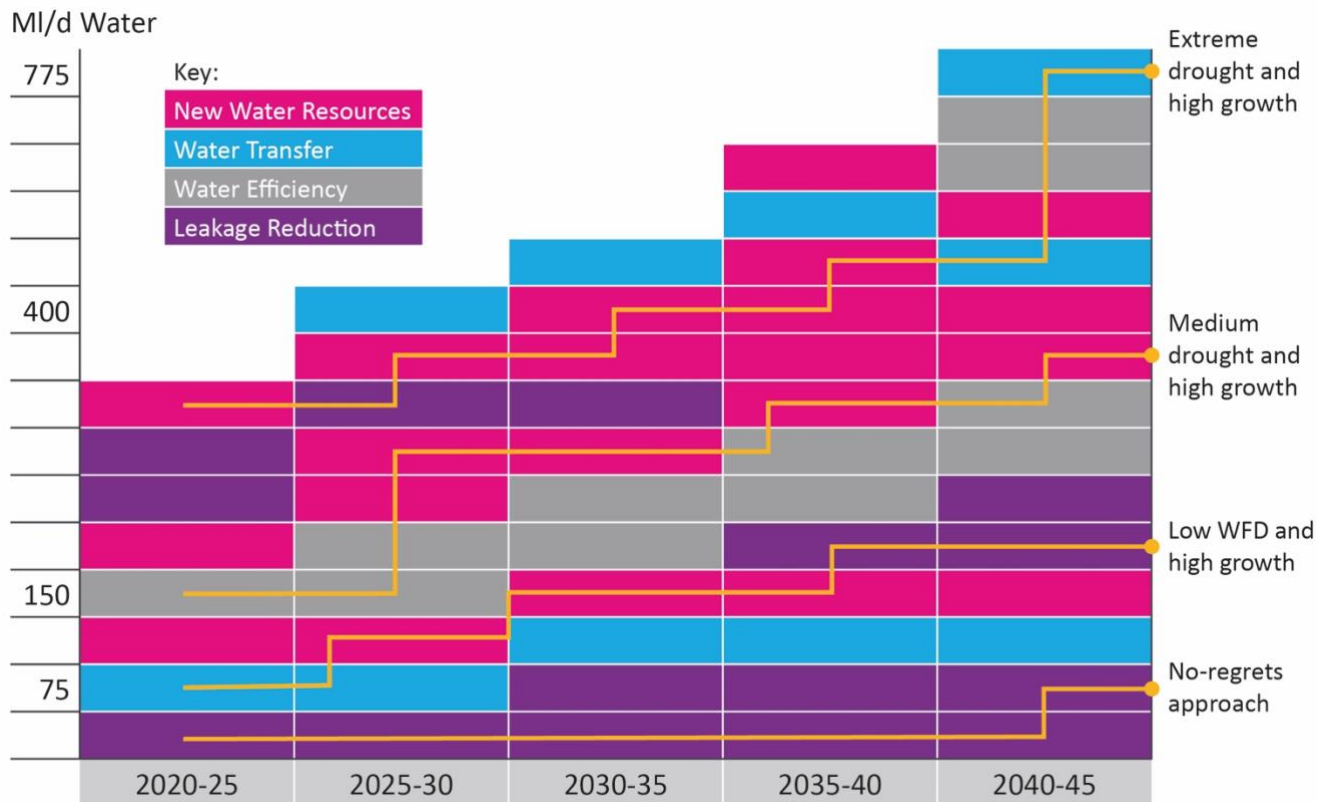
Growing need to protect the environment and deal with increasing climate change uncertainty

The two most significant pressures on our long-term water resource position are climate change uncertainty and the statutory need to ensure we do not cause future environmental deterioration under the Water Framework Directive (WFD).

This chart - produced by the Committee on Climate Change in 2017 - shows the spatial distribution of climate change risks and opportunities for the United Kingdom.

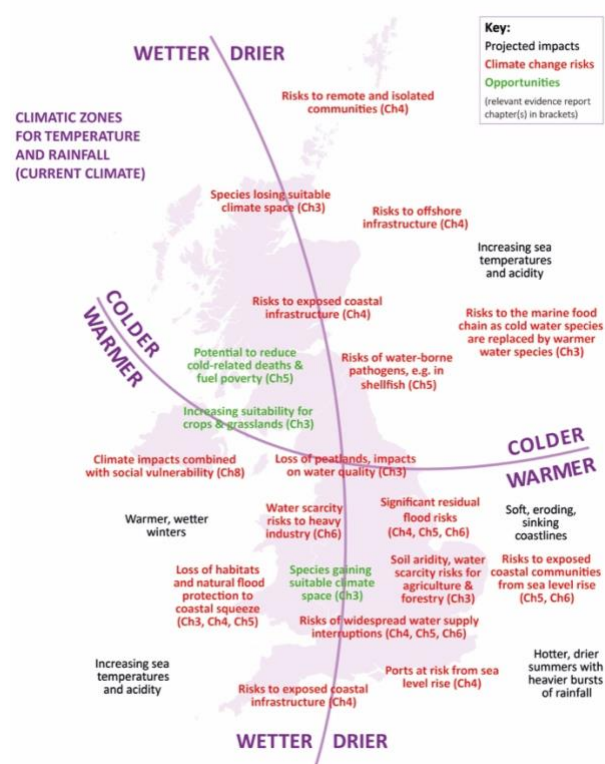Source: Committee on Climate Change (2017)

Amongst its findings, the committee concluded:

> "the greatest direct climate change-related threats for the UK were large increases in flood risk and exposure to high temperatures and heatwaves, shortages in water, substantial risks to UK wildlife and natural ecosystems, risks to domestic and international food production and trade, and from new and emerging pests and diseases… dry periods, when combined with higher temperatures, are likely to result in more severe and prolonged droughts."

In response, we developed a 25-year strategy as part of our 2015-20 business plan. Our strategy focused on the following:

- **Responsible asset management** - maintaining our network in a stable condition, reducing leakage from our own and customers' pipes, and responding quickly to visible leaks. Ensuring our network keeps pace with new development and population growth.

- **Improving resilience** - investing to improve our network's resilience to risks of long duration outage, increasing the number of customers with a second source of supply - particularly those in large communities – and to increasing our flexibility to move water around our region.

- **Protecting the environment** - reducing the amount of water we take from the environment per customer, in particular from unsustainable sources.

- **Partnership** – working with our customers to improve how water is valued.

We believe the core tenets of this strategy remain just as relevant five years on. But we've reviewed and updated it for changes in our operating environment and our enhanced adaptive planning approach.

While all aspects of this strategy are important, the critical aspect for customers is leakage reduction. We've accepted the NIC's recommendation and we are committed to a long-term aspiration of halving it by 2050. We've commenced a comprehensive programme which involves both physical changes to our assets and processes but also to our corporate culture. Our Chief Executive launched this in a series of 'all employee' meetings in October 2017.

Our plan has been built to respond to customer and stakeholder needs

The plan we've summarised above responds to what we've learnt from engaging with, listening to and learning from our customers, and the DWI which acts on their behalf. The range of insight we've used to understand our customers' needs is explained in more detail in Appendix A1, with the key elements summarised below.

We've synthesised our insight into seven areas which our plan responds to

What we heard	How we're responding in our plan
Customers expect a reliable water supply. We now have a better understanding of their frustration at supply interruptions and how we should respond. Long duration interruptions are particularly unacceptable.	Investing in our infrastructure to improve asset health and condition monitoring to reduce failure. Increased organisational resilience to provide the ability, capacity and capability to respond and recover from disruptive events.
They expect bottled water to be available to them quickly for drinking and basic purposes. This puts water in a different position from other utilities.	Increased investment in tankers and alternative supplies.
They want to be informed through timely, accurate and useful information available through all media, 24/7.	Building on existing strengths in proactive customer communication.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

What we heard	How we're responding in our plan
Customers are aware of climate change and have high expectations that we don't adversely impact the environment and that we put right any past deterioration that there has been.	We're maintaining our drought resilience of 1:200 (1 year in 200) and addressing our supply deficit through demand measures, potential trading options and new sustainable sources.
Awareness of the challenges in providing sufficient sustainable supply sources is low. Customers expect to use what they want when they want it, as we've seen in 2018.	We'll assess the implications for treated water requirements and ensure we have sufficient capacity to meet peak demand.
Customers want us to think and act beyond our own company boundaries, sharing water and resources in the best interests of society.	We're active participants in all regional groups; Water Resources East, Water Resources South East, Water Resources North and most recently West Country Water Resources.
Reducing leakage consistently emerges as customers' top priority for improvement, and is seen as a pre-requisite to asking customers to reduce their consumption.	Reducing leakage by 15% in five years – our largest reduction to date and achieving our previous goal by 2025. We'll prioritise water stressed areas.
Many customers want to reduce water consumption but are not currently actively engaged in doing so.	Helping customers reduce usage through education and inspiring future generations to embed behaviours.
Customers see metering as the fairest way to charge for water although the benefits to individual customers are not clear to them.	Tripling installation of new water meters, focusing on areas with greatest water scarcity.
Reduction in water pressure is the most commonly experienced service failure and is a driver of dissatisfaction for customers.	Building on our strong track-record by adding new targeted measures and local interventions to address chronic low-pressure issues cost-effectively.

In addition to our direct dialogue with customers we have assessed the implications from recent publications produced by regulatory, industry and government bodies: Ofwat's Task and Finish Group (2015), Water UK's long-term water resources planning framework (2016), Defra's Strategic Policy Statement (2017) and National Infrastructure Commission's preparing for a drier future (2018). Their recommendations are broadly aligned and can be summarised into the broad themes below.

Themes	How our plan responds
A twin-track approach of improving infrastructure and demand management is the most appropriate strategic mix for the future.	We will reduce demand through a combination of leakage and water efficiency measures first; and increase water available for use through investment in new supplies and / or importing water from an area of surplus into the area of deficit.
There should be a clear target to halve the amount of water lost through leaks by 2050.	We will reduce leakage by 15% in five years – our largest reduction to date and achieve our previous 2040 goal by 2025. By 2050, we'll aim to halve leakage.
Companies should be enabled to implement compulsory metering beyond water stressed areas by 2030.	We will triple the number of new water meters installed, focusing on areas with greatest water scarcity. We plan to increase the number of metered customers from 45% now to 90% by 2030.
Benchmarking, standards and metrics need to be developed to enable resilience levels to be measured and compared.	Our 2020-25 plan includes a number of performance commitments to measure resilience.
Customer engagement and education should be increased to enable the customers to have an active role in resilience, both in terms of adaptation and mitigation.	Adding to our existing water efficiency programme by setting a bold ambition to inspire future generations to use water more wisely. We aim to achieve a higher impact from our initiatives than those set out in the UKWIR research (2009). We will

Themes	How our plan responds
	transparently report progress in our Annual Performance Report so customers can hold us to account on progress being made.
There needs to be coherent planning for resilience at both a regional and national level.	We'll continue to work with other water abstractors and users – including participation in the Water Resources East, Water Resources North and Water Resources South East working groups.
An improved understanding of risk and failure would enable companies to focus on the risks to critical assets and services, and to plan for the effective delivery of services in critical conditions, with a mandate from their customers and society, and from their regulators and government.	We've improved the 'system risk of failure' approach developed as part of our Birmingham Resilience Programme in PR14 to robustly assess risk across our asset base. We've clearly articulated risk to our customers in our PR19 research to enable the results to be meaningfully applied to intervention options.
We should put the environment first – sources of supply should be environmentally sustainable and should not cause future environmental deterioration.	We will reduce abstraction at sites where our investigations have established we are likely to cause environmental deterioration (WFD requirement).

Building resilient water supplies – a joint letter

In August 2018, Defra, the EA, DWI and Ofwat jointly set out the actions needed to ensure we are building resilience in water resources management in England. Their letter called for companies to own the challenge of meeting customers' water needs in a safe, resilient and efficient way, while balancing the need to protect the environment and respecting good supply practice and meeting the needs of other water users.

We're fully supportive of this ambition. We've already committed to reducing leakage by 15% over the next five years alongside a stretching commitment on reducing water consumption. We're planning to retain this momentum, which together with other measures such as legislative change on water efficiency standards for new homes and technological improvements on our network, will see a halving of leakage and consumption rates over the coming decades. Our PR19 plan contains an ambitious step-up in metering rates, an essential tool in reducing consumption. We know there are delivery risks, so we've sought to ensure the onus is on us to deliver, rather than place the risk on customers. Our approach to demand management also includes a novel new way of ensuring future generations know and value water.

Defra's letter emphasises the need to turn thinking into action. We've been actively looking at cross-sector solutions and want to build on having secured the largest ever abstraction rights trade between two utility sectors in 2016. As well as including a mechanism in our PR19 plan to enable us to make real progress on an interconnector to transfer water from the North West to the South East, we'll continue to contribute to regional and multi-sector water resources planning. We're active participants in all regional groups;

Water Resources East, Water Resources South East, Water Resources North and most recently West Country Water Resources.

We've initiated two multi-sector working groups on the primary river transfer routes that run through our region; the River Severn Working Group and the River Trent Working Group. The purpose of these groups is to understand the potential in-combination impacts of transfer and new abstractors on the rivers. Critically, we've included investment in our plan to carry out meaningful feasibility on our water resource options as we build towards the next price review and water resource management plan.

Another area of note is the need to make plans easier to understand to improve engagement with customers and other water users. We're committing to including analysis of potential climate change impacts in our Annual Performance Report. Until now, this has largely been a technical and academic debate but we believe more should be done to make customers part of the decision making process. Our approach is linked to the mechanism we've developed to manage climate change uncertainty. We'll look into whether we can do more to share information on other key assumptions, regional economic and population forecasts as these are critical in determining risks and the pace at which we should adapt and change to ensure we can meet customers' water needs in a safe, resilient and efficient way.

Our detailed cases for resilience and meeting supply demand challenges are included in Appendix 8.

12.4   THE COMMITMENTS WE'RE MAKING

Our plan for ensuring that 'water is always there' has, at its heart, a deep understanding of customers' needs and an honest assessment of our performance, both good and bad. This provides a strong basis on which to build a comprehensive range of initiatives that, in combination, offer best value for money for customers. We're committed to implementing it and delivering customers the performance that they have asked for. We've designed the following performance commitments to hold us to account for the improvements we've promised to our customers, and track progress towards our outcomes. The approach to selecting commitments and framework for setting targets (including why they are stretching) is explained in Chapter 9.

The challenge we set ourselves at PR14 was stretching compared to other companies. Our self-imposed target of 8 minutes in 2020 was already a third tighter than the industry upper quartile positon of 12 minutes determined by Ofwat. As such, we're exposed to underperformance penalties for a level of performance for which other companies may receive outperformance payments.

Incorporating the consistency definitions also has an adverse impact on the overall value we will report. The change to 1 meter of head pressure is a more cautious view of when customers are back on supply and will increase our reported number by up to 10%.

Our analysis of performance across the industry suggests that companies are striving to meet the challenge to be upper quartile performers this AMP and we will see a further reduction of around 25% in AMP7 just to maintain our position in the industry.

Water supply interruptions

Our performance in 2017/18 demonstrates that supply interruptions can be volatile. However, our track record of performance has demonstrated a consistently improving trend across a number of years.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Water supply interruptions	Financial	Minutes	35:50	08:50	08:41	Upper quartile

Leakage

Leakage is a mandatory commitment for us and the only commitment where Ofwat has made its expectations clear, we need to aim for at least upper quartile performance of a 15% improvement across the AMP.

We're also facing significant water resource challenges in the future and need to consider all options for reducing our need to abstract water from the environment. Our Water Resources Management Plan identified a need to reduce real losses by up to 67 Ml/day by 2025 as part of the best value package of solutions. This equates to just over 15% of our current leakage position.

Achieving this level of reduction will be unprecedented in our history as we will have to average around 13 Ml/day per year, that's compared to a target reduction of 20 Ml/day across the whole 2015-2020 period.

Analysis shows that by 2024/25 we will be operating around 35 Ml/day below the sustainable economic level of leakage – in order to ensure we continue to invest responsibly, we will need to identify new and innovative ways to deliver the improvements.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Leakage	Financial	Ml/day	401.14	387.63	15% reduction	50% reduction

Per capita consumption

Changing customers' behaviour can be difficult. Water efficiency campaigns often have short term benefits as water savings devices are installed in homes, but their impact can be time limited as their effectiveness reduces with time.

At the same time the low cost of water compared to other utility bills, coupled with customers' desire to change their water use based on the seasonal conditions, make it difficult to enact meaningful behavioural change. This is especially true for the younger generations of bill payers who may never have experienced a summer when temporary use bans have been put in place.

While our proposed increase in metering will likely help drive down per capita consumption, our education programme and water efficiency messages are key to meeting our future targets. Enacting behavioural change 'en-masse' is not easily achieved and will test our ability to educate our customers in a variety of ways.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Per capita consumption	Reputational	l/h/d	134.57	133.27	3.5% reduction	118.0

Risk of severe restrictions in a drought

Understanding our customers' future water needs and where we can source it from is a key part of balancing supply and demand. For AMP7, Ofwat has introduced a common performance measure focused on the percentage of our customer base that is at risk of severe drought restrictions (such as standpipes) over the next 25 years.

Our proposed performance is dominated by a potential shortfall in the water available in our Strategic Grid, putting around 57% of our customers at risk of severe restrictions if we do nothing. Our proposed interventions are designed to provide the additional capacity needed before each water resource zone is in deficit and in a timely manner to ensure we continue to invest efficiently. Accelerating delivery would increase our customers' bills faster without them seeing any additional benefit for a number of years.

Most of our interventions are due to provide beneficial use during AMP8 (2025-20), ensuring that none of our customers are at risk of severe drought restrictions by 2030.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Risk of severe restrictions in a drought	Reputational	Percentage	63.7	63.7	58.2	0

Mains bursts

We report mains bursts based on the number of repair jobs we complete during the year. Not all bursts are visible, some never cause water to leak above ground and are only found when we actively search for them.

There is a key link between our ambition to reduce leakage by 15% and our asset health measure for mains bursts. We cannot meet our leakage targets unless we increase our activity to find and fix bursts that are not visible above ground – this will inevitably lead to us fixing more burst pipes and increasing the number we report each year.

We set our current performance commitment at a level that ensures our service over time remained broadly stable. Year-on-year performance will show some volatility, but by maintaining performance well below the target - even in a difficult operating year such as 2017/18 - we were able to keep the number of repairs well within target.

We're proposing a target of <6,995 bursts, which reflects around 10 times improvement on reactive bursts and accounts for an increase in proactive repairs from 1,863 to 3,500 to deliver the 15% leakage target.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Mains bursts	Financial	Number /1,000km of mains	124.15	113.69	147.66	Stable

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Unplanned outage

This is a new measure required by Ofwat. We are currently working hard to understand our level of performance and will use the remainder of AMP6 to improve our reporting function and data accuracy.

We are confident at this level customers will not see any loss of supply due to unplanned outages at our production sites.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Unplanned outage	Reputational	Percentage	0.8	Stable	Stable	Stable

Speed of response to visible leaks

We set ourselves the most challenging targets for this measure in AMP6 by committing to respond to 100% of visible leakage within 24 hours. We are evolving this measure for AMP7 to ensure it focuses on the more significant bursts, allowing us to prioritise our response on those that will have the greatest customer impact.

To ensure we are appropriately challenging ourselves we are proposing to deliver a 50% improvement on our 2019/20 forecast by halving the number of days it takes to fix significant customer reported leaks.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Speed of response to visible leaks	Financial	Days	8.01	7.68	-50%	-75%

Persistent low pressure

This is a new measure that considers low pressure in a new way. By reporting the number of days of low pressure, we are able to prioritise those customers who receive more persistent below standard service from us – it is often more difficult to find solutions for these customers in a cost-beneficial way.

We've only just started measuring low pressure in this way, so have been cautious about forecasting our 2020 start position. Our ambition for 2025 will be to take the equivalent of around 3,000 property days off the measure. This is the equivalent of removing 147 properties from the risk of experiencing 25 days of low pressure across the AMP period.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Persistent low pressure	Financial	Number property days	20,073	20,073	-15%	-

Resolution of low pressure complaints

Our customer research suggests that fluctuations in pressure is the service failure experienced most by our customers. We also know that small changes to the level of service can have a big impact on our customers' daily lives – so focusing on improving our resolution to low pressure complaints first time will reduce the impact it will have.

We already perform well and resolve nearly 90% of complaints first time, but we're not complacent and know there is still more we can do. By 2025, we will commit to resolve at least 95% of all low pressure complaints first time.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Resolution of low pressure complaints	Financial	Percentage first time	89.78	90	95	99

Abstraction incentive mechanism (AIM)

Our AIM focuses on environmentally sensitive sites where a reduction in the level of abstraction would be beneficial for the environment. These are sites where we do not have a formal reduction in our abstraction licences but ones where we could potentially do more to help protect the environment.

We've set our target at the average annual long-term sustainable abstraction level, stretching us to continually look for ways to reduce our level of abstraction from the sources that would benefit from it the most even where we have no obligation to do so.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Abstraction incentive mechanism	Financial	Ml per year	-	-	0	Based on WINEP

Resilient supplies

By evolving our measure to incorporate best practice guidance on response and recovery, the scope of customers and situations covered by this measure is much wider than in AMP6. The new definition ensures we are focusing both on the connectivity of our network to allow us to be more flexible moving water around the system while, at the same time, considering our response capability to provide an alternative supply to customers during an event.

We are also challenging ourselves to ensure more of our customer base receive this level of service. As such we'll be increasing our coverage to 96% by the end of 2025 and our long term goal is to reach 99% of our customer base.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Resilient supplies	Financial	Percentage	-	87	96	99

Increasing water supply capacity

Our water supply capacity measure is designed to offer customers protection as part of the special cost factor claim for the supply/demand balance. The targets are based on the additional resource capacity required to ensure appropriate headroom is available in line with our Water Resources Management Plan requirements.

This commitment relates to our real options mechanism proposals which are explained in Appendix A8.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target[1]	2045 target
Increasing water supply capacity	Financial	Ml/day	-	0	68.5	Based on WRMP

[1] 2025/26 delivery

Metering

Metering is a key activity necessary for us to meet the future demand in our region. It has the potential to save our customers money, and benefits the environment.

Our target is based on the reduction in water use needed and is aligned with our supply demand balance enhancement expenditure. Please note, the profile increases throughout AMP7 and the cumulative figures for each AMP are shown below.

This commitment relates to our real options mechanism proposals which are explained in Appendix A8.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Number of water meters installed	Financial	Number	35,611	166,764 (cumulative)	324,999 (cumulative)	-

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Security – reducing the risks to our sites

We have extended our efforts to address resilience to the security of our sites. In acknowledgement of increasing threats in the current environment, we have pledged this performance commitment to ensure that we play our part in protecting our infrastructure, which a significant proportion of the population rely upon. Our target is aligned with Defra expectations on site security as outlined within the Protective Security Guidelines (PSG) (2020).

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Security – reducing the risks to our sites	Financial (penalty only)	Number of equivalent sites	-	0	20.25	-

Interconnector

We strongly support water trading, and this commitment enables us to develop proposals for a water trade from the North West to South East of England. Action is contingent on confirmed interest and regulatory approval. The feasibility investment will enable us to develop both the water resources entering the River Severn, the commercial arrangements to enable the market to be open to all potential buyers and sellers, agreement from quality regulators and the viability of the interconnector to transfer water to the River Thames.

This commitment relates to our real options mechanism proposals which are explained in Appendix A8.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Water trading - interconnector	Financial (reward only)	£m feasibility	-	-	0	-

13 WASTEWATER SAFELY TAKEN AWAY

We safely take wastewater away, ready to be made clean again.

13.1 SUMMARY

Flooding from our wastewater network is simply one of the most unpleasant failures that can happen, whether it be in homes, gardens or the wider environment. We made a commitment to improve our track record and we've done this. Our technicians, planners and engineers have used their skills, data and modelling to make us one of the best performing companies in the sector. We've made a massive shift, but we can do more. As a leading company, we accept the responsibility to go beyond what is the current benchmark for a wastewater company – and we'll share our expertise so all customers can benefit.

We've learnt from engaging with, listening to and learning from our customers. A huge majority of our customers have never experienced sewer flooding, but they do empathise with those who have. They want fewer failures without the cost increasing significantly. We plan to continue systematically monitoring and managing risks, using our extensive and detailed data mapping to identify potential problems and moving towards an approach where more flooding incidents are prevented before they actually happen. We'll develop our toolkit of responses – from major investment schemes to improving the hydraulic capability of our network all the way through to simpler ways to stop flooding coming into individual homes. It won't be easy to keep the cost down – we've tackled the highest density clusters first, so we'll need to innovate to ensure solutions are cost-beneficial.

For those customers who have suffered sewer flooding, while they may accept things can go wrong from time-to-time, they want us to respond quickly and empathetically. They certainly do not accept repeat flooding. We've strengthened our approach to dealing with long-standing issues and have improved our target response time to attend to reported sewer blockages that could cause flooding to within two hours. It's not just speed of response – we've also made some great strides on improving training so that our operators can

deal sensitively with customers who have been affected. While we cannot stop flooding from ever happening, we can continue to improve our response and plan to do so. We'll also look at ways to better target our investment to benefit those communities most vulnerable to flood risk, based on factors including tenure, affluence, health and age.

Our approach extends to pollutions. The Environment Agency (EA) has led the sector in raising standards and we have responded by diligently investigating the root cause of every event, learning lessons and making improvements. We've secured the top environmental rating three times over the last five years – clear recognition of the progress we've made. Our plan is to do more, with our modelling linking flooding and pollutions improvements.

We want to improve our understanding of our network and do more to work with others – sewerage networks can be complex and there are many stakeholders involved. We've developed partnerships with other organisations including local authorities to prevent flooding and aim to do more of this, breaking new ground by sharing experience, knowledge and data in order to deliver what customers ultimately want – resolution. It frustrates our customers when we present issues or complex responsibility maps – they don't want to know whose problem it is, they just want it sorted out. They also want to know what they can do to help. A leading company should do more and we will. We plan to extend our partnership working and introduce a new commitment to deal with sewer flooding in public areas. We'll also continue making sure everyone knows what they should be doing to stop our wastewater pipes from blocking up.

Customers are aware of climate change. They want us to protect them from flooding, whatever changes may happen, but not at any cost. This means we need to think differently. We know we must develop more innovative and sustainable solutions alongside improvements to our network, reinforcing

the need to work with others – including developers who are key to generating economic progress in our region, and with stakeholders to manage the impacts of HS2. We're committing to working in a way which prevents flooding and also generates wider benefits including green spaces, public amenity and improved habitats. We're on the right track and motivated to do more as we know that this is the best way to achieve a sustainable outcome.

This outcome includes £0.8bn (12%) of the totex in our plan and covers nine performance commitments.
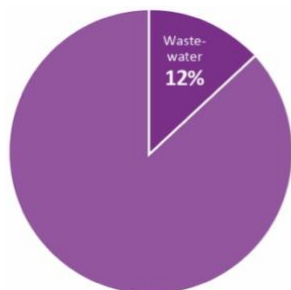
Service now - Water	Service now - Retail	Resilience	Community
-	-	2	-
Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
3	2	2	-

13.2 OUR CURRENT POSITION AND TRACK RECORD

A step change for our customers

We've come a long way in recent years, driven by our desire to do better for our customers and to lead the sector. Our successful delivery has been achieved through a data-driven approach, targeted proactive investment and operational rigour.

Our people are dedicated to serving customers and protecting the environment. It's what we do, every single day, and it's why we come to work and what we care about. Our culture is one of continuous improvement, learning and operational excellence. To deliver the bold targets we agreed, we act on data and facts and set clear objectives and rewards for our people and supply chain. We also have dedicated communities of experts who are empowered to make a difference, and we have invested in equipment, network monitors and data to deliver improvements, better manage our assets and prevent the impact of service failures.

We've reduced the frequency with which our customers experience flooding issues by completing detailed root cause investigations on every flooding and pollution incident, then identifying an effective resolution. We also use our root cause analysis to inform our education programme, identifying how

customers can help stop network failures from happening and addressing persistent or chronic issues. We've driven a 60% reduction in repeat sewer flooding incidents over the last three years and aim to achieve a total of 80% reduction over AMP6.

A great example of this has been identifying clusters or hotspots of external sewer flooding, caused by asset deterioration or the build-up of fats, oils and greases or wipes in sewers. Identifying hotspots allows us to effectively target investment. We've invested nearly £70m on proactive sewer maintenance in AMP6, around 40% more than we originally planned. We've also completed 3,000km of sewer camera surveys, 1,000km of sewer jetting and nearly 10,000 structural repairs.

On average, for the hotspot areas we've targeted, we've been able to reduce the number of flooding incidents by over 75%. In order to maintain incidents at their new record low level, we will need to continue with our programmes of proactive intervention and improve our predictive capability to prevent flooding before it occurs. However, we know that it will become increasing difficult to maintain this rate of improvement.

Identifying clusters of sewer flooding issues will become increasing difficult

This is an example of a dense cluster of historic incidents that we targeted in 2015/16

This is an example of an area we are targeting in our 2018/19 programme. The incident density had reduced significantly.

Unit costs are increasing significantly because we are having to inspect and clean large areas and increased sewer length. The cost to reduce a flooding incident through our proactive works programme has increased by 300% since the start of AMP6. Due to this diminishing rate of return on incident reduction it will become progressively more challenging to deliver further performance improvement.

As well as proactively preventing failures, we've also improved our response to reports of sewer blockages that we believe could cause flooding if not resolved quickly. We've flagged properties at higher risk of flooding (based on flooding history in postcodes areas) and when a sewer blockage is reported in these areas, we quickly deploy a team to resolve the issue before the blockage results in flooding. We aim to attend these priority call outs within two hours.

Investing wisely for our customers and the environment

We've invested in a range of improvements. At one end of the scale, we have designed strategic solutions such as in Newark, where we are investing £60m in a three-year project to replace more than 20km of pipes, including a 2.8 metre diameter tunnel running 15 metres below Newark's streets. We've adapted our approach so that not only will 400 households be at reduced sewer flooding risk, but we've worked with other organisations to ensure our design incorporates wider flooding benefits where cost beneficial to do so.

At the other end of the scale, we've sought to cost effectively protect individual properties from flooding, with over 700 properties benefiting from the installation of additional resilience measures in AMP6. We've also set up a mitigation programme to provide solutions for complex, high unit cost problems where there is risk of repeated flooding and traditional solutions would not have been viable or affordable.

We're installing around 2,500 event duration monitors at combined storm overflow (CSO) locations across our network allowing spill monitoring at more than 85% of our CSOs by 2020. We're also delivering over 1,000 additional network

monitors in the most high-risk areas to allow us to monitor the performance of our wastewater network in real time. These monitors are tracked regularly to identify changes in trends so we can intervene quickly if needed. We're also now resourced to respond 24/7 to alarms so we can proactively prevent pollutions from occurring.

Making the right decisions

We use a range of modelling approaches to inform our decisions from risk and consequence modelling to traditional asset deterioration.

Our risk and consequence model enables us to target sewers that are most likely to cause a pollution. The model uses a variety of data feeds, such as dilution factors, environmental factors (e.g. housing and neighbourhood characteristics), sewer flow data, historic performance data and sewer camera surveys. 100% of our network is now covered and we're focusing on our top three problem counties to use the model to simulate a blockage in every pipe to understand where the sewage could escape. Using this alongside our flood mapping software and ground profile information allows us to predict where the sewage could flow into a watercourse.

We've continued to use and develop our suite of asset deterioration models to predict future performance and we're developing the ability to overlay our flooding analysis alongside our priority services register and other guides of vulnerability, such as critical infrastructure like hospitals and schools, to understand whether our initiatives could be better targeted to support customers who are most at risk of service disruption.

Valuing partnerships and collaboration

We recognise the importance of working with other organisations to help prevent flooding that could not have been addressed in isolation. We're planning to deliver 21 schemes in AMP6 where we've worked in partnership with the EA or Lead Local Flood Authorities (local authorities) to deliver multi-source flood risk benefits. We'll seek to do more in AMP7, based on a more complete picture of overall flood risk and the interactions of our sewer network with surface

water, highway drainage and watercourses. We've already helped create an online sharing platform to allow easier identification of potential crossovers between different organisations. This should enable us to increase the opportunities for co-creation and co-delivery with partners, by simplifying how we contribute to each other's schemes, and to better align how we measure risk.

Working with our customers

We know our customers want to work with us and a key tool is our education programme where we encourage our customers to use sewers responsibly. Many businesses, once aware of these issues, will work with us to make changes.

But at the same time we're serious about tackling persistent misusers of our sewers and have prosecuted a growing number of food establishments for continually misusing the sewer network to dispose of fats, oils and greases (FOG). Left untreated, these could solidify into fatbergs which limit the capacity of our sewers and cause sewer flooding or pollutions. We also know it will be difficult to completely avoid misuse so we are also looking at innovative techniques to help, including trialling a chemical to harmlessly clear fatbergs while in the sewer.

Appendix A5 provides more detail on our past performance

13.3 OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

We've developed our plan using a range of factors including affordability (for both today's and tomorrow's customers), sustainability and the efficacy of potential solutions to ensure that we deliver the best possible plan to meet our customers' needs in a way that is consistent with our emerging drainage plan.

The main features of the plan are a focus on repeat incidents, proactive intervention, innovation and enhancing hydraulic flooding resilience. Underlying all the improvement is a need to keep on getting the basics right, using good quality asset data in our models to identify effective interventions on our network, and to monitor the effects of our actions through a comprehensive suite of asset health measures. We know it's not going to be easy – our improvements to date mean that there will be fewer hotspots or concentrations of problems. We also know that solutions will be more complex, partly as we provide solutions which deal with wider interactions with our system. Our long term strategy is to have a resilient and smart wastewater network, the best trained people, and high quality data combined with technology to prevent service failures from happening.

Keeping data accurate and up-to-date

By 2020, 100% of our population will be covered by our Sewerage Management Plans. It will have taken a decade to get to this point and having achieved this, we'll do our utmost to make sure the data is kept up-to-date. We're planning to keep investing to make sure our data is updated to reflect changes in the catchment, with risks regularly reviewed. We know this will provide a solid foundation for assessing risks and developing solutions.

We're also increasingly using our data in conjunction with our GIS mapping system. This will make it easier to visualise the data, enabling quicker and more accurate decisions to be made. We've conducted a detailed capacity assessment across 93% of our region – a much higher proportion than other companies – to inform the Capacity Assessment Framework undertaken as part of the 21st Century Drainage Programme.

Modelling capability second to none …and still improving

Good data alone is not enough. We're planning to invest to improve our modelling capability to integrate our sewer models with pluvial and fluvial models so we can understand flood risk interactions at a catchment scale. We're also enhancing our capability in modelling overland flood paths to better understand the interaction of below ground drainage systems with surface water exceedance flows. This will enable us to evaluate all forms of flood risk and potential partnership solutions.

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Using data to prevent service failures

We're exploring factors that might increase the likelihood of service failure and understanding the severity of the consequences should a failure occur. An example is incorporating factors like population density factor and a food outlet proximity factor, into our predictive modelling. Both factors have a good causal relationship with the number of blockages, which will help target efficient and effective interventions for customers in AMP7.
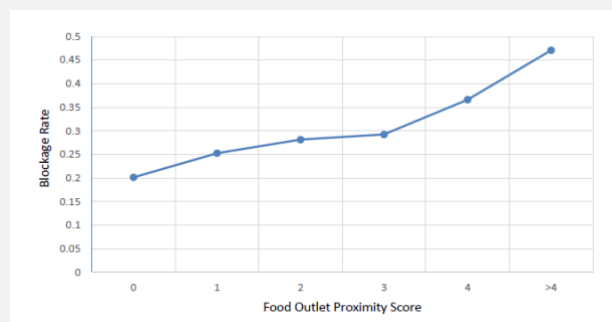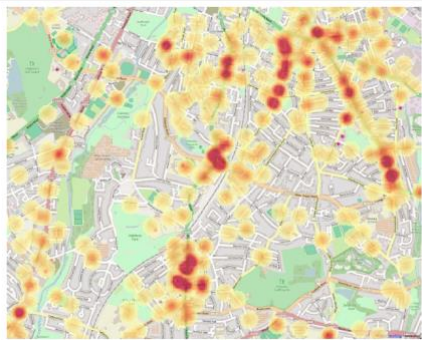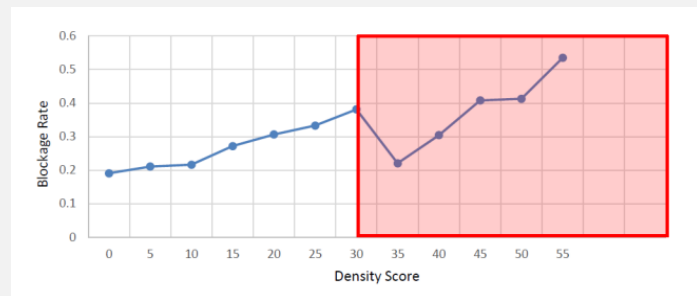
Changing with our customers - cellar flooding initiative

In 2017/18 over 50% of our internal flooding incidents affected cellars. Properties with cellars are generally most at risk from internal flooding because they are much closer to the level of the sewer and are the low points for the surrounding area. As property prices and the cost of moving continues to increase, more of our customers are choosing to convert unused spaces, such as cellars, into additional living spaces. We're therefore proposing to specifically target cellar flooding with some of our proactive intervention investment in AMP7. We'll look to use data to target key locations and remove the problems that could cause flooding, such as interceptor traps that are common on the age of properties that generally have cellars (Victorian properties, which we know are likely to be inhabited by those vulnerable to flood risk). We'll also consider whether active sewer monitoring could provide an early warning of potential problems or in the most difficult of cases we will consider altering cellar connection points to remove the risk of backflow.

Working together with others to maximise benefits at the lowest cost

We are fully committed to working with the EA, Lead Local Flood Authorities and local community groups to work out how we can best prevent flooding through an integrated drainage approach. For example, we're continuing to work with the EA to develop an online, GIS based, data sharing portal where partners can upload their information and see the information of others. This is helping us to identify collaborative opportunities earlier which is critical to delivering schemes that, when considered separately, may not have been cost beneficial. Through our data sharing, we have identified a pipeline (long list) of just over 150 opportunities.

The screen shot below provides an indication of the detailed online sharing platform developed with the EA. The colours represent different types of flooding activity in the location.
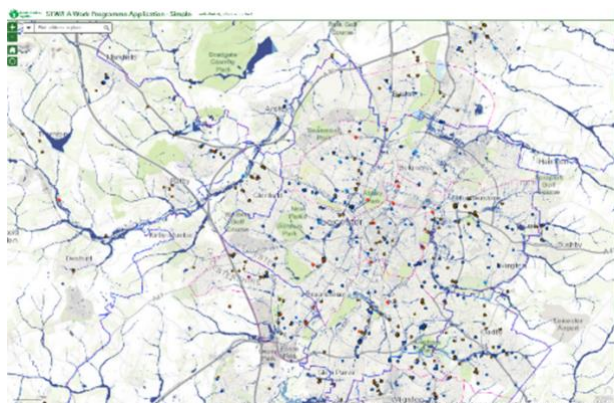
Our next step is to work together to understand the flooding mechanisms and to develop an integrated drainage plan. We've shown this can work in AMP6 in the Bourn Brook catchment where we've used an integrated drainage plan with Birmingham City Council and local residents association to co-design, co-fund and co-deliver an integrated sewer and surface water management strategy for the Lodge Hill area. It's a far better solution than the alternative we'd developed alone - the integrated solution costs the same but delivers more benefits, including surface water flooding benefits to the local community.

This shared approach is important given the scale of change in our region. We expect an AMP-on-AMP increase of over 20% in new properties connecting to our waste network, so we'll need to invest as effectively as possible to increase network capacity. As we've done at Newark, we'll work with other agencies at the two sites earmarked as strategic sewer flooding sites in AMP7 - Ilkeston and Stroud. We're confident that sharing good data and modelling will enable us to exploit the wider benefits available.

Developing new ways of dealing with sewer blockages

We experience over 40,000 sewer blockages a year, with around 70% caused by FOG discharged into sewers from food service establishments and domestic households. FOG solidifies in the pipes, reducing their capacity and results in odour issues, blockages, sewer flooding and pollutions. Cleaning FOG from sewers is a costly operation.

We believe bio-augmentation products could be an important solution. These products enhance biodegradation of contaminants and can be applied as a method to mitigate FOG build-up. Following results of an extensive trial in AMP6, 11 sites have been set up to test bio-augmentation in a number of scenarios. The solution is easy to apply and requires minimal intervention. In fact, we're so confident that this could signal a shift in how the sector deals with blockages that we want all customers to benefit and will be making the results of the trial available for others rather than pursuing an exclusivity deal with the suppliers.

Leveraging the benefits of technology

Technological improvements are evolving rapidly and at lower cost. For example, we're investigating the use of a new fibre optic monitoring and communication system for sewers, just one of many possible innovations we are looking at. The ability to understand what is happening across a large proportion of our network in real time would enable a step-change in how we intervene to prevent failures and prioritise the investments we make.

It will also be a key enabler for autonomous robotics and artificial intelligence systems, allowing remotely controlled systems (such as valves and pump controls) to communicate with each other, as well as with a centralised control system, so they can collaborate to resolve problems without any human intervention. Examples we have now include an intelligent pumping station control system, that automates and remotely control functions that could prevent a pollution, and high frequency pressure monitors to help us reduce the likelihood of a burst sewer rising main.

Transient pressure monitoring

Transient pressure monitoring was originally developed from trials undertaken to understand the impact of transient pressures (very short duration spikes of pressure caused when pumps start or stop) on water main bursts. We have taken this a stage further and applied this to our waste water rising mains which transfer sewage to other locations. Using an ultra-high speed pressure logger we can detect the transient pressures in the rising main. We can then undertake work on the pumps, controls or ancillary equipment such as air valves, to remove transient pressures, reduce the likelihood of a burst and extend the asset life of the pipe. We can also use the monitoring to give an early warning of a burst, helping to reduce pollutions and flooding.

Improving our response

We currently aim to respond within two hours to an internal flooding issue and four hours for external flooding, compared to a sector norm of between 4- 6 hours. While we have network technicians who are responsible for investigating the cause of flooding incident and keeping the customers informed, we recognise we can do more to better support our customers following a flood event. We plan to work with the National Flood Forum, an independent charity based in our region, to look at ways to help individuals to recover after they have been flooded and to support communities so they feel empowered to manage their flood risk.

Adapting to changing climate

Climate change is expected to increase the intensity and frequency of storms. An UKWIR study looking at the changes in rainfall patterns as a result of climate change predicts an increase in the intensity of rainfall over time with an average increase of over 20% for the Severn Trent region by 2050.

We'll need to do much more as we get ready to deal with this risk. Building bigger and bigger sewers to cope with more intense rainfall would be costly and disruptive for our customers. We plan to do more sustainable drainage, increase collaboration with other flood Risk Management Authorities

and advance pre-emptive modelling and planning to deliver improved resilience without increasing cost.
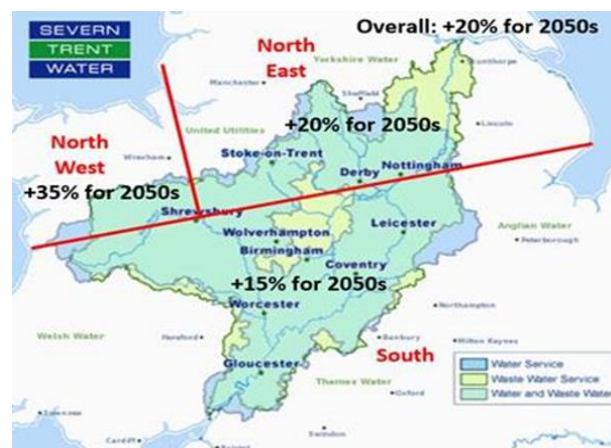
Creating long term wastewater drainage and management plans

One of the most significant changes over the last five years has been the need to develop a comprehensive plan to manage our sewerage asset base. These plans will help create a more resilient waste network for our customers and stakeholders. There are a number of activities we will undertake in response to the six areas in the drainage framework.

Building wastewater drainage and management plans

Feature	Actions we plan to take
Partnership is key to developing objectives, performance indicators and milestones.	• Sharing data and information to develop a shared understanding of the risks and opportunities. • Using data visualisation to articulate drainage risks. • Maintaining strong links with partner organisations. • Considering alternative funding solutions - shared costs, grants, subsidised equipment.

Feature	Actions we plan to take
	• Making responsibilities across organisations clearer.
Uncertainty in predictions of future risks or data should be recognised.	• Extending use of confidence grades and data improvement plans. • Identify low regrets solutions tested through scenarios, to deal with uncertainty. • Use adaptive planning (as used in Water Resources Management Plans).
Strategies should be risk based.	• Visualise catchment risks. • Develop source-pathway-receptor model for at risk catchments.
Strategies should be informed by consideration of whole life costs and benefits.	• Post project appraisal on the system we introduced to monetise risk. • Develop robust approach to quantify wider benefits of green space, public amenity and improved habitats.
Regular reviews are needed to reflect investments, changing priorities and emerging risks.	• Review approach to hotspot analysis to assess whether further improvements can be made. • Align updates with internal rolling business planning process.
Move to innovate and adopt sustainable drainage solutions.	• Consider a wider range of solutions including customer incentives. • Develop future performance commitment to encourage adoption of sustainable solutions.

We've included an early draft of our drainage and wastewater management plan in Appendix 9 to show the progress we've made and the benefits the process has already provided.

Our plan has been built to respond to customer and stakeholder needs

The plan we've summarised above responds to what we've learnt from engaging with, listening to and learning from our customers. The range of insight we've used to understand our customers' needs is explained in more detail in Appendix A1, with the key elements summarised below.

How we're responding to our customers

What we heard	How we're responding
Reducing sewer flooding is one of our customers' top priorities. Customers value reducing internal sewer flooding more than external flooding.	Securing even higher levels of performance by systematically monitoring and managing risks; developing a range of solutions.
Customers are altruistic and strongly empathise with those who have suffered from sewer flooding. In particular, there is strong support to address repeat incidents.	Using data to predict hotspots; developing a range of solutions – from mitigation to investment – and working with partner organisations to implement more sustainable solutions.
Customers want us to give equal priority to flooding in roads and highways compared to gardens/curtilages.	Introducing a new performance commitment for public sewer flooding.
Reducing pollution is a priority for customers - the environment is becoming increasingly important in their everyday lives.	Linking interventions on our network to deliver synergies between measures (driver trees); increasing monitoring capability to push beyond upper quartile performance.

There is a need and appetite for more education around responsible sewer use. Customers want to play their part in driving behavioural change.

Widening our customer education, with a focus on children in an effort to embed behavioural change for the future. Pursuing commercial customers who abuse the network. Influencing producers to better label products to avoid misunderstandings.

13.4   THE COMMITMENTS WE'RE MAKING

Our performance commitments are designed to hold us to account for the improvements we've promised to our customers, and track progress towards our outcomes. For AMP7, we have selected nine performance commitments against which we have set stretching targets.

Internal sewer flooding

Sewer flooding in the home is the most distressing service failure our customers can experience. Throughout AMP6 we have made significant improvements in the number of internal flooding incidents and we are already operating ahead of the upper quartile level of performance determined by Ofwat at PR14.

Ofwat has confirmed that internal sewer flooding is one of the core measures all companies must report consistently in AMP7. Ofwat has challenged us to consider where the industry performance will go in future and to continue to deliver upper quartile performance. Our forecasts suggest that, in order to maintain our position well ahead of the upper quartile and pushing the frontier position, we'll have to reduce the number of incidents by a further 9% in AMP7. This is really challenging as driving frontier performance requires increasing predictive and novel solutions as it becomes progressively more challenging to deliver further performance improvements.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Internal sewer flooding	Financial	Incidents/ 10,000 of sewer connections	1.63	1.70	1.51	Upper quartile

External sewer flooding

Sewer flooding outside a property, in a garden or in outbuildings, is a distressing issue for our customers. It has been a priority focus for us during AMP6 and our performance has improved by almost 60% in just three years. The move to a consistent definition only has a small impact on our reported numbers as our current definition was already well aligned.

Comparatively, we believe we are well ahead of the upper quartile position and are moving towards the frontier position. Looking forward, our analysis suggests that maintaining our current level of performance would be sufficient to retain an upper quartile position. Despite this, we are ambitious to keep improving and believe we should continue to drive gains and push the frontier forward. As such, we propose a further 8% reduction in AMP7. Performance gains though are becoming increasingly hard and more expensive as a result of having addressed our worst performing areas.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
External sewer flooding	Financial	Incidents	3,990	3,692	3,397	Upper quartile

Public sewer flooding

Our customers find all types of sewer flooding inconvenient. While the focus has been on internal and external incidents around homes, customers also want us to focus on public

areas like highways. This new measure ensures that our sewer flooding commitments together, offer a more holistic view of performance than ever before.

It's not a measure we have reported on before, and our baseline position is likely to move around over the next couple of years as we improve the quality of our data and reporting process. It's also going to be a challenging area to improve as we will have to learn how to target and address issues, many of which will be larger sewer mains and will involve working in the highway, which can be difficult and expensive. Throughout AMP7, we are committing to a 7.4% reduction from the 2020 outturn position.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Public sewer flooding	Financial	Number	1,389	2,035	-7.4%	Upper quartile

Pollution incidents

During AMP6 we have sought to outperform against our pollution incident commitments as we strive to maintain our position as an Environmental Performance Assessment 4* company. Our commitments up to 2020 ensure that we will have aimed to eliminate the most serious pollution incidents (category one and two). Despite the future measure combining all incidents we will continue to target zero serious incidents.

Our proposed target will retain our position as one of the best performing companies. The EPA 4* target represents a very stretching reduction, requiring us to deliver performance well beyond that we've delivered before. We've great new tools like our pollution consequence model, to help us prioritise which sewers we should inspect, proactively maintain or monitor to prevent pollutions. The challenge is that in our top three hotspot catchments our predictive model shows that we needed to check and invest in over 80km of sewer to potentially save 10 pollution incidents, which is both costly and challenging.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Pollution incidents (cat 1-3)	Financial	Number/ 10,000km of sewer	29.29	27.41	22.49	Upper quartile

Risk of sewer flooding in a storm

This is a new measure required by Ofwat – it measures the percentage of the population at risk of sewer flooding in a 1 in 50 year storm event. Our sewer network is, on the whole, designed to cope with a 1 in 30 year storm event. As we look to the future and potential changes in rainfall quantity and intensity, it is beneficial to understand which of our customers are at greater risk of sewer flooding. We're proposing to maintain a stable level of performance for this measure.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Risk of sewer flooding in a storm	Reputational	Percentage population	4.11	4.11	3.95	0.80

Sewer blockages

Sewer blockages, whether caused by misuse through flushing inappropriate objects like wipes or foreign objects such as tree roots, can be a useful indicator of the health of the sewer network. A stable number of blockages demonstrates that our sewer maintenance programme is preventing the sewers from becoming blocked. It is also an indicator of the success of our education programme as blockages from misuse reduce.

Blockages, in the majority of cases, are a leading indicator for more serious issues such as sewer flooding or pollution incidents. During AMP6 we've focused on reducing these service failures for customers and the environment, rather than reducing the total number of blockages themselves. Looking forward, we're proposing to maintain a relatively stable number of blockages with a 5% improvement across the AMP, targeting areas that may result in more serious service failures.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Sewer blockages	Financial	Number	45,090	43,215	41,000	41,000

Sewer collapses

Our view of current performance for sewer collapse is based on our historic reporting definition. As we adapt our reporting to align with the consistent definition, we anticipate an increase in the number of reported collapses by 2020.

Sewer collapses is a measure of asset health – the reported value can be volatile from year to year but a deteriorating trend could indicate potential issues with the wastewater network. In order to maintain an efficient but affordable level of investment, while we'll focus on the service impact on customers and the environment, we also propose to maintain stable performance in this metric from the 2020 position allowing for a small improvement to account for better targeting to deliver against the new definition.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Sewer collapses	Financial	Number/ 1,000km of sewer	5.14	Stable	Stable	Stable

Collaborative flood resilience

This measure is an evolution of our existing commitment for partnership working. It focuses on working with other stakeholders, such as local authorities, communities and wildlife trusts, to deliver a collaborative solution that has benefits wider than just sewer flooding.

During AMP6 we committed to work with 21 partnerships – and we're aiming to deliver a similar level for AMP7. While many opportunities exist, gaining commitment to a project from all interested parties can be difficult and time consuming. Although this commitment is very resource intensive, it is the right thing to do to deliver wider benefits for our customers and communities.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Collaborative flood resilience	Financial	Number of properties or areas	-	0	360	-

Green communities

This is a new metric for us that measures the positive impact we can have on communities and the environment in a completely new way. By valuing the natural and social capital that we can generate through creating green open spaces and managing rainfall sustainably, we encourage ourselves to work out ways in which we can factor these positive impact factors into the solutions we deliver.

We are currently exploring what options exist for us to introduce natural and social capital across our region and are committed to introduce £0.12m worth of natural capital in to our region each year, £0.6m across the AMP. We've included an outperformance payment incentive with this measure should more opportunities exist than we are currently forecasting to ensure we are incentivised to implement more than the annual commitment if the opportunity exists.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Green communities	Financial (reward only)	£million	0	0	0.6 (cumulative)	Ongoing

14 A SERVICE FOR EVERYONE

Everyone can access our service and enjoy its benefits, no matter what their circumstances.

14.1 SUMMARY

Water should be affordable for all. While we work to keep our bills as low as possible for all our customers, we know that for some the issue of affordability is more acute. We therefore want to do all we can – with the support of all our customers – to take away the worry for those in genuinely difficult financial circumstances.

We also believe water should be accessible for all. For some of our customers, their circumstances can make them more vulnerable if there's a problem with our service. Others may even struggle to access our service at all. So we aspire to design a service that works for every single person.

This outcome relates to our proposals to help those who are struggling to pay their bills, and also to help those whose circumstances may make them more vulnerable – to make sure that they can access and benefit from our service.

On affordability, we start from a strong base. Our bills have been the lowest in the industry since 2010 and we've successfully established a new social tariff in this period, which with other support options, has enabled us to increase the number of customers we help around fivefold. But with 11% of our customers telling us they're struggling with affordability, we know there's an opportunity to do even more.

Over the next five years, our customers should expect:

- more support with future charges, previous arrears and short term challenges;

- easier to access support; and

- independent, holistic advice to help their financial situation.

For vulnerability, while we already have in place a number of support options for customers, we want to do much more to raise awareness and take-up of our service offering – as well as better tailoring it to individuals. So we've first worked to better understand the complex and varied circumstances that may make some of our customers more vulnerable than others. We've then designed a service response that includes:

- proactive promotion of our service offerings to find those most in need;

- tailored, individual support and communication based on customer circumstances;

- full support for all our priority service customers during an incident;

- support from teams who have an understanding of individuals' needs and engage in an empathetic caring way; and

- dedicated case managed support if their circumstances are complex and require it.

In Chapter 7: Addressing affordability and vulnerability we summarise our overall approach to all aspects of affordability, and in Appendix A2 we provide further detail.

This outcome is one of two that principally relate to the retail part of our business (the other being Chapter 15: An outstanding experience). Together, they make up £0.5bn (8%) of our totex overall. This outcome includes two performance commitments.
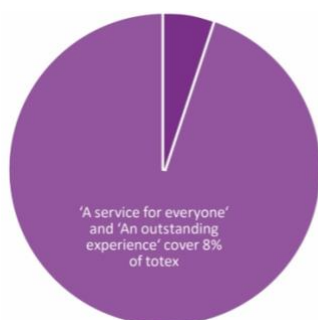
| **14.2** | **TOWARDS A SERVICE THAT EVERYONE FINDS AFFORDABLE** |

While we're delivering our biggest bill reduction for two decades – helping to keep bills affordable for all – we know that the issue of affordability is more acute for some of our customers. During 2015-20, we've increased the number of customers we help around fivefold. We now want to help even more and offer a wider range of options, while retaining our commitment to offer meaningful levels of support.

Affordability is a multi-faceted issue. We've thought about affordability in three ways in our plan – overall affordability, long term affordability and customers struggling to pay. And we've worked with our Water Forum, using insight from our research, to identify six levers we can use to reduce the affordability challenge in these three areas. They are explained throughout this plan:

1. **We optimise our costs (while delivering what our customers want and need).** Delivering our services efficiently over the long term is fundamental to keeping our bills low.

   Chapter 20: Securing cost efficiency gives more detail on how we're driving efficiency.

2. **We ensure our bills are fair (spread across as many customers as possible).** We've a good track record on the level of bad debt relative to other water companies – and believe we can do more to improve this and lower the level of properties incorrectly classified as void.

   Our bad debt performance is covered in more detail in Chapter 20: Securing cost efficiency. We discuss our new commitments for voids in Chapter 10: The lowest possible bills.

3. **Customers understand what they are paying for and feel they are getting value.** For customers to feel confident that they're receiving affordable, value for money services, it is important that we help them understand what their bills are paying for.

   Chapter 10: The lowest possible bills explains how we'll be doing more to explain to customers the contribution they make.

4. **We make it easy for customers to pay.** In AMP6, we've successfully launched new payment channels, with various frequencies, to make it easy for customers to pay. In AMP7, we're committed to keeping pace with changing customer expectations and technology to maintain our high customer satisfaction scores in this area.

5. **We help customers to reduce their usage.** In AMP7 we plan to triple our current rate of metering and will be undertaking a range of activities to reduce demand – including behavioural change campaigns.

   We discuss water efficiency in more detail in Chapter 12: Water always there.

6. **We support customers who are struggling to pay.** We'll build on our good progress in AMP6 with a range of measures, including a co-designed social tariff and payment matching to ensure we offer meaningful support to more customers in need.

This outcome focuses on levers 4 and 6 – making it easy for customers to pay and helping those who struggle.

Our current position and track record

In the current AMP we're making good progress against levers 4 and 6.

We already offer a range of payment channels and frequencies

Current channels
Credit – debit card
Deductions from benefits
BACS
Standing order
Giro
IVR – card payment
Watercard/PayPoint (including cash)

And our customer feedback channel (voice of the customer) suggests these options are working well – with customer satisfaction scores of 4.80 out of 5 for payment options. However, as explained in Chapter 15: An outstanding experience, customer expectations can rapidly change, and it's important we continue to keep pace with them.

Lever 6 - meaningful support for customers who are struggling to pay

We have a package of support options available for customers who are struggling to pay. These range from payment plan concessions – where the plan amount can be negotiated and reviewed regularly – to reduced charges through WaterSure, our social tariff, and the single occupier assessed charge, or

Lever 4 – making it easier to pay

At the start of AMP6, we sought to make it as easy as possible for customers to pay. This involved offering a range of payment channels, and various frequencies that are convenient for them.

Current payment options
Half yearly
Monthly
Four weekly
Fortnightly
Weekly
On-demand

financial assistance and debt advice available through our Trust Fund (funded through a charitable donation of £3.5m a year). The single occupier assessed charge is a fixed rate tariff available to those customers who are the single occupier of their property, where it has not been possible for us to install a water meter.

In 2015 we introduced our 'help when you need it' performance commitment. This includes our social tariff (the Big Difference Scheme which offers means tested discounts administered by specialist third parties ranging between 10% – 90%), WaterSure, water health checks and proactive metering. Since 2015, we've increased the number of customers we support across these areas around fivefold.

Support for struggling customers has increased around fivefold
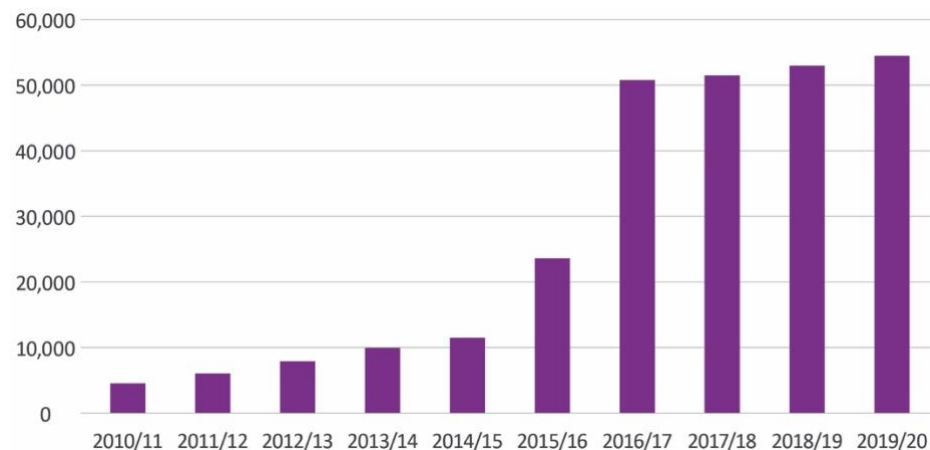
We've now reached the number of customers provided for in our 2015-20 plan – and are confident we will meet our performance commitment in this area. But, given the on-going need from customers, we don't want to lose this momentum and we therefore plan to extend the number of customers we help in the remainder of the AMP.

To do this, we'll expand our social tariff to support a further 15,000 customers (to 50,000 in total) which – in the light of the customer support indicated in research we undertook for this plan -– will be funded by an increase in the cross subsidy from our customers from £3 to £5. This, together with grants from the Severn Trent Trust Fund, payment plan concessions and home water efficiency checks – which are not counted as part of our current performance commitment – will increase the number of customers we're supporting to around 135,000 by 2020.

Understanding our customers' needs

Over the next five years we want to build on this new forecast baseline of 135,000, and continue to improve the quality and reach of our support options. We've built our proposals by first seeking to gain a more in depth understanding of our customers' needs.

Understanding how effective our current support is

One of the areas in particular that we wanted to explore with customers was how our current assistance is viewed by recipients and non-recipients (including those who would potentially qualify for support, but for varying reasons are not currently receiving support).

We explored the circumstances that lead to arrears, how customers view paying their water bills, and how they view our debt management approach. We engaged around 430 customers in total, in a programme including in-depth interviews (some in our customers' homes), focus groups, telephone interviews and co-creation workshops.

We found that, while we've achieved significant success with our efforts to date, there are improvements we can make.

- We can increase the reach and accessibility of our support.

- Many of our support options prevent our customers from falling into greater debt – there's more we can do to tackle their arrears too.

- Our current support options do not address some of the situations experienced by our customers (e.g. some customers may only require a payment break to help them).

- While it's important to offer meaningful discounts, for many a social tariff discount of 70% could be just as impactful as 90% (72% of social tariff customers surveyed stated the current reduction was more than they expected).

Using segmentation to better understand the nature of affordability issues

Because every customer's concern or worry is individual to them, we've used segmentation to try to better reflect this diversity. Firstly, we've used credit referencing agency data to help segment customers who are in debt between those who won't pay and those who can't. And for the latter, using customer research, our insight and a workshop with expert stakeholders, we've identified five key customer groups that would benefit from bespoke support. We've used this segmentation to improve both the range of support we offer, and how we find those in need.

Using segmentation

Segment	Description
Long standing	Those in long term unemployment or reliant on benefits; potentially with wider vulnerabilities such as poor numeracy or literacy, mental/physical health issues/disabilities.
Borderline	Employed but low to average income; a life event may have caused reduction in income for a short term period e.g. lost job or ill health; general overall finances tight but not severe.
Sudden and severe	Previously employed with average or higher income; experienced serious unexpected life event e.g. major injury; sudden loss or severe drop in income – particularly acute if self-employed.
Struggles with finances	Household income low to average; often busy and chaotic lifestyle. May find managing finances and bills confusing and difficult which could accumulate and cause anxiety.
New to country	Or for whom English is not their first language. These customers may have come from countries where they didn't have to pay for water and therefore could get into debt without realising. This group also might have difficulty engaging due to language barriers, may not have the same access to benefits and other support, and often believe that rent includes all bills – meaning there's a need to promote/advise via social/private landlords.

Drawing from the expertise of our stakeholders

The circumstances of many of our customers are not unique to us. Other utilities and expert organisations share in these challenges and bring a host of experience about how best to offer support. We held a workshop with our stakeholders to test our ideas for affordability and learn from their best practice. These experts helped us identify the fifth customer group 'new to the country'. They also confirmed that our range of support offering was comprehensive and there were no schemes that other relevant organisations were providing which we were not already proposing to.

Understanding how many customers may be struggling

Our region is incredibly diverse, ranging from affluent suburbs to some of the UK's most deprived areas. The Office of National Statistics' most recent report (ONS statistical bulletin: Regional gross disposable household income, UK: 1997 to 2016) revealed that six of the ten poorest local areas, as measured by gross disposable household income per head, are areas that we serve – including the lowest.

It is therefore no surprise that despite having the lowest bills, for many of our customers, these bills are unaffordable. We've analysed our customer base, focusing on wages and other variables. We estimate that approximately 226,000 of our customers are currently in water poverty (spending more than 5% of their income on the water bill). And our analysis suggests that with the 5% bill reduction we are proposing in this plan, this will fall by 30% to 157,000.

However, affordability is linked to numerous drivers, not just income, including expenditure, existing debts and supporting a family. And when we ask our customers about affordability from their perspective, around 11% (in 2017/18) say they find their bill unaffordable. So we know we cannot take a single, sweeping view of affordability.

Wider customer support to help others

Our experience of our current social tariff suggests that customers are typically happy to help others in difficult financial circumstances. We completed new research for this plan to understand the extent to which our customers would be willing to provide this support in the future.

Our research found that:

- 81% of customers interviewed are happy to pay £4 per year;

- a significant majority (67%) are prepared to pay £8 per year;

- more than half of customers (53%) are prepared to pay £12 per year; but

- 14% of customers do not wish to contribute to the Big Difference scheme at all.

For the latter group, their opposition tends to be driven by deep cultural perceptions that people should be self-reliant. Many customers who took part in our research were concerned to make sure that their contribution should go to those in genuine need. This insight has shaped the design of our future scheme.

Our new insight has shaped our proposals for the next five years

What we heard	How we're responding
Affordability is a complex and sometimes a transient issue for our customers. A 'one size fits all' approach is unlikely to be either efficient or effective.	We'll combine a range of new and existing support schemes to help our customers who may be struggling with future charges, previous arrears or short term challenges. We'll also introduce any additional new schemes as they are developed and keep pace with new payment channels.
Around 11% of our customers tell us they find their current bills unaffordable.	Our new commitment will focus on support provided specifically to this group of customers rather than just the overall number of customers helped.
67% of customers would be prepared to increase their cross-subsidy to £8 a year to support those in genuine need.	This increase in willingness to pay from our customers will allow us to significantly increase the number of customers supported through bill reduction on our social tariff.
We could reduce the scope of discount of our current social tariff scheme and still offer support that is meaningful and effective.	Customers told us a 70% reduction in charges will still be seen as impactful and would help increase the overall volume of customers we can support. For those most in need a 90% reduction will still be offered in exceptional circumstances.

14.3   OUR FIVE YEAR PLAN TO TACKLE THE AFFORDABILITY CHALLENGE

Given this insight, our plan for the next five years will focus on:

- making it easier for all our customers to pay;

- using analytics to help predict if a customer may struggle – so that we can offer preventative support; and

- helping more customers in need, with a wider range of support options.

Making it easier for customers to pay

We already offer a wide range of different payment options and frequencies to make it easier for our customers to pay. We'll continue to offer these options, as well as being 'early majority' adopters for new payment methods – by drawing on customers experience in other sectors. This approach allows us to optimise our costs to serve, while ensuring we're meeting our customers' expectations for payment options.

By using our new community panel – Tap Chat – and trials, we'll continue to test new payment options and identify the right time to introduce them. And we'll also use segmentation and behavioural nudge techniques to make customers aware of the options available and their payment experience as easy as possible. Our recent behavioural marketing campaign to encourage customers to switch to Direct Debit, for example, delivered an uplift of over 1.7%.

Pending the success of a trial currently underway, we'll also send proactive text messages to customers to inform them if they've missed a payment.

> ## SMS reminders have the potential to work better for us and our customers

Mobi-pay allows us to remind our customers about their upcoming bill with a simple SMS or email and dedicated payment link. Our current trial is focusing on customers who typically pay their bill once they receive their first reminder letter. In its first 10 weeks, we've seen a 43% response rate, from the 21,000 customers contacted, of which 14% used the link provided in the SMS to pay, and 29% paid using another channel such as web self serve, PayPoint, Water Card or Direct Debit. Not only have £1.4m of transactions been completed, but we've also negated the need to send 9,000 white mail remainders.

Using analytics to help prevent customers from falling into debt

By acting early and trying to predict which of our customers might be struggling or at risk of struggling with their bills, we can offer support proactively to prevent them going into debt in the first place – this is especially relevant for the 'struggles with finances' customer group used in our segmentation. To help us better find these customers, we'll focus on five mutually dependent initiatives, which are explained in the table below.

Five insight initiatives to pre-emptively help our customers

Initiative	
Data sharing	In this AMP, we're implementing full data share capability with credit reference agencies. We'll be focusing on trialling how we use it to better distinguish between those who are struggling to pay and those who won't pay - and therefore better focus our approach.
Predictive analytics	By using data share and predictive analytics together, we'll be able to better pre-empt a problem and identify/support customers before they go into debt.
New enabling technology	We'll combine this with our outbound dialler, email and messaging capability to proactively engage customers if they miss a payment or start to slip into debt (today reminder letters are often our first engagement with customers). We'll also be able to identify erratic payers, who we know can also be customers who are struggling to pay.

Initiative	
Increased digital offering	We can then proactively offer flexible payment options, payment plan concessions or payment breaks to customers online.
Personalised journey	Because we'll know more about our customers, we'll be able to develop more personalised offerings – we can choose the right affordability assistance journey to align to customers' actual circumstances.

Helping more customers who are struggling to pay

We want to ensure we support customers in ways that work for them. This means not only understanding the different needs of our customers, but also having a range of support options that reflect those needs. They include preventing customers from struggling, delivering meaningful help when they do, and helping customers recover so that they don't struggle again in the future.

We aim to:

- support in-year bills, arrears and customers' future ability to pay;
- effectively promote our services so that customers are aware of support if they need it;

- ensure accessing support is easy e.g. the application process for our Big Difference Scheme;
- provide support through flexible arrangements or reduced charges for those struggling to pay;
- work in partnership with third party experts to provide effective holistic support to customers; and
- ensure customers transition onto the right payment plans when they no longer require support, to reduce the risk of slipping back into arrears.

Maintaining and improving existing schemes

Because our customers have told us they're generally happy with the range of support we have available, we intend to continue our existing schemes. They have, however, helped us to identify a number of improvements we can make. These are explained in the table below.

Improving our current schemes

Scheme	Improvements
Big Difference Scheme	- Reduce the number of customers receiving a 90% tariff discount – customers feel a reduction to 70% will still be impactful and would help increase the overall volume of customers we can support. - 90% reduction will still be offered to those in exceptional circumstances. - Improved qualification criteria to ensure we offer the right level of support to the right customer groups. - Simplify application process.
Water health checks	- We intend to include this measure again but will introduce new measures of effectiveness such as contact profiles, debt position, amount saved and payments received.
Free meter option	- Our learning from the current AMP shows that proactively promoting the free meter option to customers who are struggling to pay is ineffective and not efficient in supporting their needs. We'll remove this project in its current format from our offering next AMP, but instead continue to make it available to all customers.

Introducing new support options

By introducing new initiatives, we'll ensure that we better reflect the diverse circumstances of our customers, and the segmentation we created.

Our insight revealed gaps in our offering relating to providing support for in-arrears debt, creating more flexible arrangements for customers who may be at risk of struggling to pay, and providing more tailored management and advice. We're introducing two new schemes in response.

New initiatives

Initiatives	
Matching Plus	Our current social tariff helps customers reduce in-year charges but doesn't help with arrears built up over several years. Our new debt write-off scheme for customers with historical debt will give them a fresh start. Customers sign up to a payment plan which if maintained will clear all greater than two year debt. Both our initial trial results and customer research feedback show that this scheme is a positive addition to our range of support – and we therefore propose making it part of our future offering. It is different to similar schemes used within our industry as it works over much shorter time period, making it more manageable for customers.
Payment breaks	We'll be introducing a payment break option to allow customers to seek financial support if circumstances means they have no income for short periods (e.g. hospitalisation).

We've tested our overall package – which captures all of our initiatives as opposed to our current performance commitment that measures four- to ensure we have comprehensive coverage across our five segments.

Our overall support offering for AMP7 against our five segments

Customer group	Payment plan concession	Single occupier / assessed charge / assessed volume	WaterSure	Free meter option	Social tariff (likely tariff band cap)	Water Direct	Severn Trent Trust Fund water grant	Matching Plus	Case management (CAT)	Community engagement	Holistic support	Water health checks	Further assisted payments (e.g. white goods)	Payment break	Private issues fixed for free	Home water efficiency check
Long standing	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Borderline	✓				✓ 30%					✓	✓	✓		✓	✓	✓
Sudden and serve					✓ 90%				✓	✓	✓	✓	✓	✓	✓	✓
Struggles with finances	✓	✓			✓ 50%			✓		✓	✓	✓		✓	✓	✓
New to the country	✓									✓	✓	✓		✓	✓	✓

Improving the accessibility of our support

It's important that our support is accessible to the customers who need it. Based on the feedback from our customers who are currently supported, or are eligible but are not currently supported, we'll further improve accessibility by:

- promoting that support is available through existing touchpoints, for example bills and online self-service;

- working with trusted third parties who engage with financially vulnerable customers to identify customers who need support and help them apply;

- supporting community organisations, such as food banks, who engage with hard to reach customers; and

- simplifying application processes to make them easy, while also ensuring fairness.

Ensuring our approach is effective and efficient

We've designed our approach to be more efficient by focusing on:

- taking preventative action to keep customers from falling into debt;

- better targeting our support so that the right schemes reach the right customers; and

- focusing on outcomes by better understanding customers' recovery (rather than just looking at the volume supported).

This will ensure that we're spending our customers' money wisely and making a real difference.

We're working to ensure the right schemes reach the right customers by updating our eligibility and qualification criteria for the social tariff – based on customer feedback – and working with third parties who are experts in making assessments of 'need' (they have the capability and trust with customers to be able to challenge unnecessary expenditure or help customers access other holistic financial support).

We'll also be working to continually improve our support by putting in place processes that allow us to monitor effectiveness. For example, a key feature of our social tariff is that if a customer does not keep up with their payments then we will not auto-renew their support. This helps ensure the right customers are on the scheme – namely those customers that it helps to reduce debt rather than being a 100% subsidy. We'll ensure contact is made with these customers to understand how best to support them, for example if their circumstances have changed.

And we're ensuring that our schemes incorporate effectiveness measures. For example, in our water health checks scheme, we're including measures for: (i) amount saved after tariff change; and (ii) debt due. We'll be tracking this and use the results to ensure we continually improve our approach.

Cost benefit assessment

We've also undertaken a cost benefit analysis of our affordability assistance schemes. We've assessed the costs of providing support, including administration costs and bill reductions, and compared them to the benefits, including reductions in transactional activity such as billing contacts and processing payments, and increases in revenue received.

The following diagram illustrates the outcome of this cost benefit analysis, taking into account the costs and benefits per scheme relative to the customers who we forecast we'll support on each scheme.

The schemes included in the analysis are social tariff, Water Direct, WaterSure, Matching Plus, water health checks, payment plan concessions, home water efficiency checks and Severn Trent Trust Fund water grants.

Further detail on our assessment is included in Appendix A2: Addressing affordability and vulnerability.

Cost benefit analysis of assistance
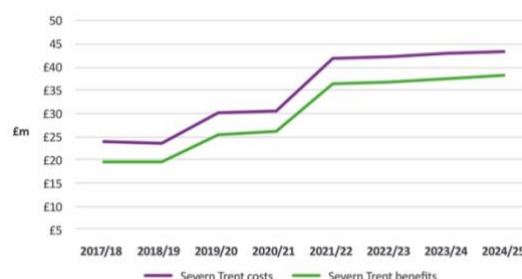
The costs and benefits vary as a result of an assumed 1% bill increase and due to a proposed variation in the forecast number of customers supported on each scheme. For example, we propose to increase the social tariff cross-subsidy from £3 to £5 in 2019/20, which will increase the number of customers supported through the social tariff from 35,000 to around 50,900. Changing the social tariff banding design in 2020/21 will increase this further to around 61,600 and the increase in social tariff cross-subsidy in 2021/22 from £5 to £8 will take the number of customers supported to around 97,750.

A proportion of our charitable donation to the Severn Trent Trust Fund goes towards helping customers with water grants and paying off their arrears. The expert third party responsible for administering the Trust Fund is also able to provide holistic support for these customers and to identify other opportunities – for example, additional benefits or other utility schemes the customers could qualify for. Every £1 we invest in the Trust Fund gives a return on investment of £2.62.

We propose to continue to administer our key schemes using external third parties as they provide holistic advice to customers who need it most, and therefore deliver additional benefits.

A longer term view of affordability

We're committed to ensuring our bills are affordable for all and to eradicating water poverty. Our current strategy is to keep our bills for both current and future customers as low as possible, and to address the needs of our customers for whom affordability challenges are more acute. We believe this approach will remain appropriate into the next AMP and beyond.

We will, however, continue to evolve how we address the needs of our customers and measure our effectiveness. For AMP7, we're proposing to evolve our measure from the number of customers helped to the percentage of customers

in need helped. By AMP8, we want to further evolve our measurement to the number of customers rehabilitated – where our interventions have helped to prevent them falling back into debt – or to the eradication of water poverty.

However, forecasting the extent of the affordability challenges our customers may face in the future – the need – is difficult, not least because some of the factors influencing affordability are outside our control.

Forecasting how many customers could be impacted

As discussed above, 11% of our customers currently find bills unaffordable. Using a combination of econometric modelling and our quarterly tracker data, we've used simulations in order to forecast the percentage of customers who may find bills unaffordable by 2025. The probability of customers defaulting is determined by two variables: the bill relative to 10th percentile income accounts; and a measure of default risk constructed by Equifax. Our simulations changed only the income of the lowest 10th percentile earners, which is by far the most significant driver in the model.

The simulations show that:

- if income growth rises to 4%, which wouldn't have been unusual in the pre-financial crisis years, the unaffordability levels should improve significantly to 5% by 2025;

- if growth is expected to remain at the current rate, then our 2% or 3% growth level simulations show affordability levels would be in the range of 7.5% - 10.5%; and

- if growth slows to 1%, the results will deteriorate somewhat and unaffordability levels increase to 14.5% by 2025.

We've factored these simulations into our new performance commitment, which focuses on the percentage of struggling customers helped, explained in section 14.6 below.

14.4   AN ACCESSIBLE SERVICE FOR CUSTOMERS

While we already have in place a number of support options for customers with health and well-being vulnerabilities, we want to do much more to raise awareness and take-up of our service offering, and better tailor it to individual circumstances – so that our service works for everyone.

We've used a three stage process to develop our proposals for this area of our service.

A three stage approach

Understand and learn → Identify → Respond

A. Identify what could trigger an issue
B. Identify customers' circumstances that could increase susceptibility to, or size of, adverse impact
C. Develop a suite of personas to explore who could be impacted, when and how

1. Promote our services
2. Pro-actively find those with specific needs

3. Accessible channels
4. Accessible information
5. Support when you contact us
6. Support when we contact you
7. Proactive advice in an incident
8. Alternative supplies directly to you in an incident
9. Support with issues on your property
10. Help to prevent fraudulent activity

Understanding vulnerability from each individual's perspective

Like affordability, vulnerability is complex – it can be transient or chronic, and most importantly, it is always specific to each individual. This means that defining and responding to vulnerability is challenging, particularly without in depth and meaningful insight about our customers. So to design our plan for the next five years, we first carried out detailed needs research with our customers in their homes, and sought to immerse ourselves in their daily lives. From this we learned that:

- few people consciously see themselves as 'vulnerable' – few of us are aware of what could trigger an issue for us, until it happens;

- every person's circumstances continually change – any of us could become vulnerable at any time;

- providing a more tailored service to those that need it most is therefore more challenging; and

- the nature of the service we provide needs to strike a balance between making sure that our customers feel they are included and empowered, but not unnecessarily differentiated.

Understanding the service changes that could trigger vulnerability

In developing our approach, we wanted to understand how and why a customer could become vulnerable in the context of our service. We've built on the five potential service triggers suggested by Ofwat with two additional triggers derived from our own operational experience and the expertise of the Water Forum, to create a suite of seven potential triggers (of which 3 and 4 are additions to Ofwat's suggestions).

Seven triggers of vulnerability

1. Vulnerable during supply interruptions.

2. Vulnerable during actual or potential drinking water contamination incidents.

3. Vulnerable as a result of a private and/or wastewater issue.

4. Vulnerable as a result of our work in the community, for example, roadworks.

5. Problems in communicating or receiving information in the formats that we usually use.

6. May need help to read their meter, understand their bills, or to make arrangements to pay.

7. Vulnerable to fraudulent activity, for example, bogus callers.

The circumstances that could make our customers vulnerable

To some extent, we are all vulnerable. For example, a supply interruption affects every customer to some degree. But for some of our customers, the impact is greater. Our Water Forum challenged us to create customer personas in order to help to bring to life our customers' needs and understand how they could be impacted by our service (or a change in it), how best to identify them, and how to respond to those needs.

Seven personas to better understand customer needs and multiple vulnerabilities

Our customer	Their circumstances
Jack, 75 years old from Solihull	- Jack has recently been diagnosed with dementia. - He is living at home with his wife. - Both Jack and his wife are partially deaf.
Sarah, 28 years old from Birmingham	- Sarah lives with her husband Tom, 29, two daughters aged 5 years old and 4 months old. - Sarah was recently diagnosed with breast cancer and is currently receiving treatment. - Water is priority as the family need to sterilise and prepare their daughter's bottles.
Liam, 36 years old from Gloucester	- Liam has type 1 diabetes and has been on and off dialysis for the last 5 years, currently undergoing treatment at the hospital 3 times a week. - Liam has recently had ileostomy surgery. He needs to regularly clean his wound and bag and take medication. He is also partially sighted. - Liam lives between two addresses with his girlfriend.

Our customer	Their circumstances
Ethel, 77 years old from Nottingham	• Ethel is housebound and has low mobility. • She has a carer coming in once a day to support. • Ethel has no internet access.
Dafydd, 92 years old from Shropshire	• Dafydd is very frail after a number of falls and partially deaf. • He lives with his son who is 69, partially sighted and receives no help from external carers.
Randeep, 28 years old from Leicester	• Randeep has autism and lives alone. • Due to his condition, Randeep finds it difficult to socialise with people, particularly strangers, and feels extremely anxious if he experiences changes to his routine.
Kirsty, 29 years old from Coventry	• Kirsty is affected by bi-polar disorder and is a full-time mum of two teenagers. • There are times when she feels she could be considered vulnerable.

We've mapped these personas against the triggers above in order to develop our future service offering.

What we heard	How we're responding
Every customers' circumstances are different, and their needs are individual.	Capturing customers' needs within our priority service register across a range of outcome-based categories, and tailoring support to meet individual needs.
Customers may not see themselves as vulnerable or be aware that they are until there is a service issue.	Promoting the support available through routes that customers already engage with – for example, through our trusted partners – and bringing it to life with examples of circumstances that might make a customer vulnerable.
Vulnerable customers' needs are most prevalent during an incident – but not exclusively.	Providing a range of service offerings including those specific to an incident (proactive contact and bottled water delivery) and also more generally for communication (alternative print format bills). And also providing support through our dedicated care and assistance team.
Support needs to strike a balance between customers feeling they are included and empowered, but not unnecessarily differentiated.	Sensitively promoting support through existing touchpoints and using our trusted partners. We're able to adapt our standard offering to meet customers' individual needs and circumstances.

Our current position and track record

We've improved our service offering, but need to reach more customers

While we don't currently have a performance commitment relating to vulnerability, we do have a range of established support options for customers in vulnerable circumstances, including:

- alternative print format bills;
- priority call for dialysis customers during an incident;
- delivery of bottled water to customers on the priority service register during an incident; and

- case management support by our dedicated care and assistance team.

Over the course of this AMP, we've continued to improve our service offering. For example, we used part of the proceeds of outperformance announced in year two of AMP6 to introduce our dedicated care and assistance team, which works with customers who may have specific needs. And following our experience of water supply related incidents, we've worked to establish closer links with local resilience forums to help us identify customers who may be vulnerable in the affected area, and established a dedicated phone line to support them.

Understanding the potential scale of need

One of our biggest challenges is to identify those who may need support. Our priority services register (PSR) records the specific needs of some of our customers. Our PSR volumes have gradually increased from 24,000 customers pre-AMP6, to a forecast volume of 52,000 by the end of this AMP (based on current activity). During 2019/20 we plan to undertake a data share trial with Western Power Distribution for 5,000 customers. We recognise the large gap in the number of customers we have registered on our PSR system.

We're also investing in a new PSR system during 2019 which will give us the flexibility to adapt how we categorise need. The new PSR also gives us the ability to easily capture multiple and transient customer vulnerabilities.

Volume of customers on our PSR in AMP6
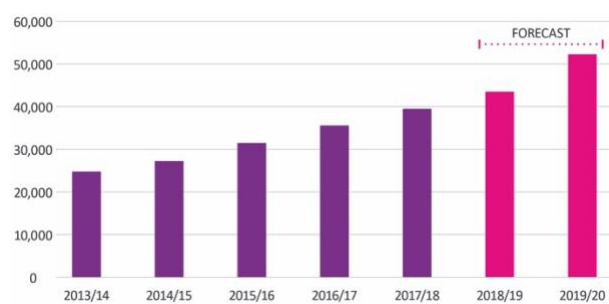
Understanding the potential scale of need

Our customer research showed that not all customers would see themselves as vulnerable until they were potentially impacted by a trigger. Because customers may not self-identify as vulnerable – or if they do, may be reluctant or unware that they can contact us – we have to work harder to understand the potential scale of need.

Through researching our region's demographics and engaging with specific organisations, for example Guide Dogs for the Blind, we've assessed the number of customers in our region who might be experiencing certain health and well-being issues. For example, we understand that there are likely to be around 266,900 visually impaired customers in our region – while we only had 6,500 customers registered on our PSR who are sight impaired (as at end of March 2018).

We've also worked with Western Power Distribution to identify which of the energy sector's vulnerable need categories are also relevant to the water sector, and also any additional categories specific to our sector. Western Power Distribution have shared with us anonymised postcode data for all their PSR customers and identified the vulnerable circumstance category each customer is registered under. This has allowed us to calculate that our PSR could include 409,500 unique customers if we took the Western Power PSR as a guide.

14.5	**OUR FIVE YEAR PLAN TO SUPPORT MORE CUSTOMERS**

By using a combination of the triggers and the personas we've developed, we've built a 10 point plan to respond to the needs of our customers in vulnerable circumstances.

Identifying those who may need help (points 1-2)

We'll use a twin approach to ensure that we better identify the customers who could benefit from a service tailored to their circumstances.

1. Promote our services

To proactively identify customers in vulnerable circumstances, we intend to promote our service via existing customer touchpoints:

- asking customers if there is anyone with vulnerable circumstances in the property when they set up an account or report a certain operational issues;
- speaking to customers when visiting their property;
- promoting the service via our customer bills and through web self-service notifications; and

- promoting the service through our website and social media during an incident.

We will also:

- use proactive advertising to promote the service, including social media campaigns;
- work with our partner organisations including health experts (such as GP surgeries and health visitors), charities and support organisations (such as housing associations); and
- continue to build our local resilience partnerships.

At the same time, we'll proactively promote the PSR and support available in ways that will reach those customers who cannot always access normal channels. For example, we're currently working with the Coventry and Warwickshire Association for the Deaf to record sign language videos for our standard incident messages.

During an incident we'll make additional priority channels available for customers to identify themselves to us, for example a priority phone number or email address. We will

promote the availability of these channels during the incident with the aim of identifying transient vulnerable customers who may not have previously considered themselves as vulnerable.

2. Proactively find those in need

In addition to promoting the support available, we'll proactively identify customers through data share activity. We're currently in discussions with Western Power Distribution to explore the possibility of trialling data share of PSR customers and have already worked with them to forecast potential volumes over a timeframe. We'll be looking to carry out the trial when our new PSR system is available from 2019. From 2020, there will also be the water and energy sector data share which will help us proactively identify customers. Throughout AMP7, we'll seek to engage

with other organisations to set up data share activity in order to make it easier for customers to register a need for support.

We'll seize further opportunities to proactively identify customers who might need additional support. For example, when customers register for WaterSure having qualified through a medical condition, we can ask whether they'd like to be registered on the PSR and what support they require.

Designing services that better respond to their needs (points 3-10)

Some of these propositions are intended to support all customers, for example advice and support when contacting us and during field visits. Other propositions need to be tailored to align to customer needs, for example alternative bill formats or support during an incident.

Responding to our customers' needs

Action	Customers and experts said	What this will mean for customers
3. Accessible channels		
Range of channels	Happy with current range of channels.	• We'll continue to offer our wide range of channels, enabling customers to choose their channel – as circumstances may limit choice.
Digital access	Recognise not everyone has internet access.	• We'll ensure non-digital options are available where possible. • We'll promote the range of channels available.
Digital innovations	Want us to be early majority adopters, rather than too innovative with technology that people won't use.	• We'll continue to evolve digital channels to meet accessibility needs of customers and trial channels that will support their specific needs e.g. British Sign Language videos available on our website.
4. Accessible information		
Key written communications	For many vulnerabilities, all written information would have to be in their chosen format, not just bills.	• We'll propose to offer key written communications in alternative formats for customers including bills, water quality notices, debt letters, compensation letters and water efficiency material.
Application forms	Not all forms are accessible online.	• We'll ensure that our PSR registration form is available and accessible online, but also that there is support via other channels to register.
Our supply partners	When supply partners are working on behalf of Severn Trent they are seen as Severn Trent.	• We'll set the expectation that partners will work to the same standards in terms of both access and promotion. • We'll include supply chain partners in our cultural change programme and awareness.

5. Support when customers contact us

Action	Customers and experts said	What this will mean for customers
Expert support 24/7	Support should be available at all times.	• Customers will be able to reach advisors, across all channels 24/7, who will be able to provide advice and support, understand their needs or register them on the PSR.
100% awareness	All staff should be aware of our Priority Services.	• We'll drive cultural change across the company so all staff across contact centres and operations will be aware of vulnerabilities and the PSR.
Proactive support	Use existing touchpoints to engage customers.	• We'll trial proactive engagement with new customers to ensure everything is ok following a move or setting up a new account, and advise on customer support.

6. Support when we contact customers (and work in their community)

Action	Customers and experts said	What this will mean for customers
100% field awareness and training	Ensure field teams are aware of potential vulnerabilities, even when contact is not made via a phone call into our contact centre.	• We'll provide specialist training to field teams across the region, including supply chain partners. • We'll have vulnerability experts within the field teams. • We're trialling basic sign language training for members of our field teams.
Traffic management and streetworks	Need to understand challenges from customer viewpoint.	• We'll design traffic management layout to acknowledge and support the needs of our customers. • For works affecting street access, we'll work to proactively inform our customers. • We'll introduce Guide Dogs for the Blind to the Streetworks network to share best practice across all utilities.

7. Proactive advice during an incident

Action	Customers and experts said	What this will mean for customers
Proactive notification	Timescales are key when updating customers, especially if needing to rearrange appointments.	• We'll proactively notify customers of an incident through their channel of choice and with tailored messages. • We'll proactively notify a customer's nominee of an incident so they can provide support.
Partnership working in the community	Local groups have a key insight into the needs of their communities and could really help.	• We'll work with local resilience forums and community organisations to provide additional support for customers during incidents, following the example of some of our recent incidents and the support offered.

8. Alternative supplies directly to customers in an incident

Action	Customers and experts said	What this will mean for customers
Bottled water	Seen as a good service, but need to ensure everyone needing water delivery gets it in the right way.	• During incidents, we'll deliver bottled water to customers who have registered for this service including transient vulnerable customers, recognising our social responsibilities - for example, no late night deliveries.
Supporting babies	I have a young child, would I be eligible for anything in an incident?	• Our own bottled water supplies have a low sodium content so can already be used to make formula. We'll highlight this to alleviate concerns.

9. Support with any issues on customers' properties		
Action	**Customers and experts said**	**What this will mean for customers**
Help to fix		• Where a customer's health is at risk as a result of a private issue, we'll fix it or support them to find a contractor who can fix it for them. • For customers with mental or emotional vulnerabilities, we'll support them through the process of getting a private issue resolved and where required fix it for them.
Help with a waste issue		• We'll help prioritise fixing waste issues if they are putting a customer's health and safety at risk in their home and support them through the insurance process where appropriate.

10. Helping prevent fraudulent activity and giving reassurance		
Consistent messaging	Customers should be able to see that communication or visits are from Severn Trent.	• We'll ensure customer messages (on the phone, written and in person) are consistent to help customers recognise genuine communication.
Assistance in event of a bogus caller		• We'll train contact centre staff to provide assistance in the event of a bogus caller so they can support and reassure the customer.
Encourage questioning		• We'll encourage customers to question our staff if they have concerns, and implement a reliable service to prove that visitors are legitimate, where appropriate.
Regulatory challenging	Customers would prefer to be given prior notice before visits, as it helps to prevent against fraud.	• We'll look to make the Drinking Water Inspectorate aware of the potential risks associated with water quality samplers failing to provide notice before visits, focusing on the customer and risks around fraud and bogus callers.

We've tested the effectiveness of these proposals by mapping propositions against our personas and the triggers that might make a customer vulnerable, ensuring that we've covered all areas. Many of the above activities – such as vulnerability awareness training and providing a choice of channels – are already incorporated into our standard ways of working. This also means we're well positioned to adapt to meet changing needs, for example transient vulnerabilities.

By driving a culture that's focused on service vulnerability, we can provide support to customers without having to specifically invest in additional services. For example, customers often just need someone to be empathetic and caring, and to listen to them so we can understand their needs.

We're tailoring our service to meet individual customer needs. For example, we already deliver bottled water to all customers on our PSR in the event of an incident. When our new PSR is available, we'll be able to further tailor that support, for example identifying which customers require bottled water and which don't need this level of support.

Forecasting vulnerability is, by its nature, challenging

Social and technological change will impact our population demographics, the number of customers needing priority services, and the type of support that we'll need to offer and deliver. But identifying exactly how these will change is extremely challenging.

To better understand potential future requirements and volumes, we've undertaken further desktop research on likely trends. For example, Britain has an ageing population, which will lead to an increase in the need for priority support. By mapping our region's population to both 2026 and 2036, we can forecast that the number of people over 65 years old will increase between 0.5% and 4.8% in specific areas across our region by 2026. The highest increases are in rural areas such as the Forest of Dean and Shropshire, and this trend is expected to continue into 2036, highlighting where our focus areas will be.

But beyond this, it is challenging to know exactly how our service will need to change with customers' needs over 25 years. So, in response to this uncertainty, we're building service offerings that are flexible and can easily adapt to future changes.

14.6   THE COMMITMENTS WE'RE MAKING

Our performance commitments are designed to hold us to account for the improvements we've promised to our customers, and to track progress towards our outcomes.

Our current commitment, which measures how well we help those customers struggling to pay, has been successful and we will evolve this measure for AMP7 by broadening its scope and coverage.

We're also introducing a new commitment which focuses on customers in vulnerable circumstances, and in particular, how we adapt our service and respond to their needs during an incident.

While our existing performance commitment focused on the number of customers helped, our new commitment focuses on the percentage of those in need who are helped, and covers a wider scope of support options.

To calculate the percentage who find their bills unaffordable in the next AMP, we've assumed that income levels will continue to grow at their current 2.5% and taken the current unaffordability levels at 11% (based on our modelling explained in section 14.3). We'll review unaffordability levels after year three of AMP7 to assess whether they've remained stable, and also undertake a full review of our service offering and performance commitment to see if there has been a significant change.

From 2030, we propose changing how we measure our support for those struggling to pay in order to focus on measuring rehabilitation outcomes from our affordability offering, or eliminating water poverty. Our aim is to start looking at this during AMP7. In PR24, we may propose that we run our existing performance commitment at the start of AMP8 and evolve this into a new performance commitment during the AMP. We've therefore only forecasted our longer-term targets to 2030 (with a goal of 44%).

Help to pay when you need it

This performance commitment measures the percentage of those customers who find their bills unaffordable who are helped by the following interventions.

Help with	Scheme
Future charges	Social tariff WaterSure Water health checks Home water efficiency checks
Previous charges	Matching Plus
Short term challenges	Payment plan concessions Payment breaks Private issue fix for free

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Help to pay when you need it	Reputational	Percentage	26	30	43	-

Supporting our priority service customers during an incident

This performance commitment measures the percentage of customers in vulnerable circumstances, who are registered on our PSR that we provide support to during a clean water incident.

In choosing this measure we've responded to Water Forum feedback that we should seek to develop a measure that better reflects outcomes for customers rather than numbers helped. It focuses on a point in time that many of our

vulnerable customers are in the most need, and reflects the provision of a service that is very important to them – safe drinking water.

Our proposed target of 100% reflects our judgement, and the expert judgement of our Water Forum, that any deviation from 100% would be aiming to fail our customers and put them at risk.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Supporting our priority service customers during an incident	Reputational	Percentage	-	-	100	100

15   AN OUTSTANDING EXPERIENCE

We consistently exceed our customers' expectations by delivering an outstanding experience.

15.1   SUMMARY

Our business is all about the customer experience. Everything we do, every day, ultimately contributes to our customers' experience of us. We want that experience to exceed their expectations. So by focusing on the quality of the service we offer, how we make our customers feel and keeping our costs to serve low, we'll strive to deliver an experience that is human, receptive and offers great value.

This outcome relates to the experience of our three main customer groups:

- household customers;
- business customers (through our wholesale service and supporting their retailers); and
- developers and customers who want to connect to our network.

And it focuses on the three areas that our customers – regardless of whether they're a household, business (and retailer) or developer – told us contribute to their overall experience.

- **The quality of the service we deliver**. Customers want a service that's reliable, easy to access and simple to use. This starts with a wholesale service that's reliable – with fewer service failures. It also means that if they want or need to contact us, they can do so using their preferred contact channel, at a time to suit them. And it's important they know what service options are readily available to them.

- **How their experience feels to them**. Our behaviours can make all the difference. Customers want to feel supported by a friendly, expert team of people who care about and take ownership of their issue – whether they talk to our contact centre teams, our field engineers face-to-face, or experience our work in their community.

- **Offering value for money**. This means focusing on costs to serve without compromising on service. We need to remove waste and automate where we can, reduce the unwanted reasons customers have to contact us, and engage more proactively with them – so that they can get more out of their service.

Our plan for the next five years focuses on all three areas. It builds from the improvements we're already making in this AMP – with technology, culture and process – to deliver more for our customers, while driving around 10% efficiency in our costs to serve. And it's supported by a technology strategy that's sufficiently agile and inventive to respond to our customers' changing expectations.

This outcome is one of two that principally relate to the retail part of our business (the other being Chapter 14: A service for everyone). Together, they make up £0.5bn (8%) of our totex overall (costs relating to developer services are captured separately under our wholesale control). This outcome includes two performance commitments.
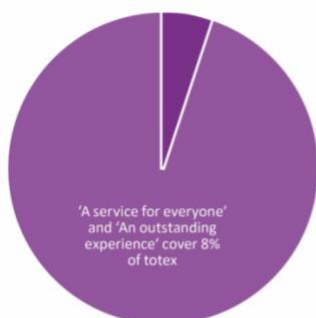
'A service for everyone' and 'An outstanding experience' cover 8% of totex

Service now - Water	Service now - Retail	Resilience	Community
–	2	–	–

Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
–	–	–	–

15.2 OUR CURRENT POSITION AND TRACK RECORD

Over the current period (2015-20) we've focused on delivering a service to our customers that's simple and accessible – reflecting how busy their lives are. We've invested in new technologies that make our service more convenient, sought opportunities to reduce our costs to serve, and we've done this while delivering increasing customer satisfaction in one of our performance commitments (the UK Customer Satisfaction Index (UKCSI)) – but recognising that we haven't always got it right on the other (the service incentive mechanism (SIM)).

Service: simple and accessible

For many of our customers, their experience of us is limited to the few times they contact us – for example, when they open an account or pay a bill – or when they see us working in their community. With busy lives, a simple service that's easy to access is important to them.

Simplifying processes and procedures

While not always visible to our customers, great service relies on simple policies and processes. Over the current AMP we've been working to:

- overhaul non-customer friendly policies, for example, lessening the burden of proof documents required for changes in circumstance;

- change Guaranteed Standards Scheme processes so that we proactively contact customers or make payments automatically, for example, during a water quality incident; and

- strip back complex processes.

Our voice of the customer analysis suggests we still haven't done enough to address the complex processes (for example, longer resolution and less transparency) that cause customer dissatisfaction and adversely impact our SIM performance. It's an area we know we need to make more progress on and we're actively targeting it.

Extending contact channels and opening hours

To make our service easier to access, we've extended our contact centre hours. In 2016 we became the first water company to provide a 24/7 service for non-emergencies so our customers can contact us any time that suits them. We've also extended our range of contact channels from four to nine, including new contact channels, for example, webchat (which saw a 47% increase in use in the first year).

	2014/15	2015/16	2016/17	2017/18	2018/19 (planned)	2019/20 (forecast)
Contact centre opening hours	Billing: Mon-Fri 8am-8pm and Sat 8am-1pm Emergency: 24/7		Billing: Mon-Fri 8am-9pm and Sat 8:30am-5:30pm Emergency and 90% of key billing queries: 24/7			
Contact channels offered	4 (phone, email, letter, website)	9 (phone, email, letter, website, Twitter, web chat, Instagram, Facebook, YouTube)				

A better contact centre experience

Our new customer management portal (CMP) is helping us to deliver a better customer experience. When a customer calls us, the CMP gives our contact centre advisors a complete picture of their previous contact history, and through empathy indicators, helps to bring to an advisor's attention any outstanding issues that may be causing dissatisfaction.

Since its introduction, CMP has helped make it easier to talk to us - average call handing times have reduced from eight to five minutes - and offers customers better resolution (repeat calls have fallen by 15%).

Simpler bills

Complex bills can cause confusion and unnecessary inconvenience for our customers if they need to contact

us to discuss them. By completely redesigning our bills to make them more visual and using simple, conversational English we've achieved a 17% reduction in unwanted calls and positive customer feedback.

> "Out of all the bills I have coming in this is the first time I can look at my bill and actually see what I have used and the cost… Love your new billing. Thank you"

A single view through to resolution

In the past our waste contract partners used different systems to our contact centre teams – making it harder to track the progress of customers' issues. We've invested £1.7m in our systems to ensure that both parties have a clear end-to-end

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

view – and most importantly, can keep customers updated with progress through to resolution.

A simple, efficient process for retailers

For retailers who buy wholesale services from us, our dedicated Wholesale Market Unit provides a consistent point of human contact. Through accessible technology channels, like our new SWIM interface, retailers can see the same information as we do and effectively track jobs.

Since market opening, we've been working to deliver sustainable improvements to our service to our retailers. We want to ensure all parties have confidence in the market and good data is crucial to do this. In 2017/18 we undertook a further data cleansing exercise which identified 4,000 eligible customers that we hadn't previously billed. Although this meant that regrettably we hadn't achieved our agreed service level for these customers, it means that going forward, everyone should now benefit from better data.

Experience: personal and local

While delivering a high quality service is important, so too is how we make our customers feel. They've consistently told us they want a visible, human service. To help build a stronger relationship with them, we've been working to create a more local, personal service.

Because so much of our customers' experience depends on our behaviours, we very quickly worked out we couldn't deliver the experience customers expect without a truly customer centric culture, and an organisational model to support change. In 2015 every employee was taken offline and discussed with our CEO what it means to have a culture that puts customers first. We delayered five tiers of management to empower our people to do the right thing for customers, and later reorganised our teams into a single 'customer delivery' directorate to focus on the end-to-end customer journey.

As well as this cultural change, we've also encouraged our people to develop a more thoughtful, caring relationship with our customers and communities by:

- creating a **new brand** – 'wonderful on tap' – which focuses on the product we all have in common and brings to life our customers' relationship with it;
- working with **community groups** to find opportunities to help communities that have been impacted by service issues;
- using our **capital projects** as another opportunity to deliver a little extra for communities, for example, volunteering to support Newark in Bloom while we undertake major works; and
- creating a new **care and assistance team** to provide specialist support to our customers in vulnerable circumstances or those that have more specific needs of us.

And we've consciously chosen not to 'offshore' our contact centres because our customers have told us they value having a locally based team who know our region.

Value: leading on costs to serve

Customers want us to deliver great value for money and this means we need to manage our costs to serve. Over the first three years of this AMP, we believe our retail costs to serve have been at the industry upper quartile against all water companies, and at the frontier for water and wastewater companies. In the final years of this AMP we're working to minimise the impact on cost to serve of depreciation from technology investment designed to improve service (a key enabler for our future strategy).

Like any retailer, we've pursued a number of smaller, incremental opportunities to drive savings. And we've also looked to our wholesale business to reduce the causes of dissatisfaction that mean our customers need to contact us. We've been pursuing initiatives in two main areas.

Investing in new technology and automation

We've invested in new technology and greater automation (but without losing focus on our customers' experience) with initiatives including:

- expanding our self-service offering – 950,000 customers now use online billing, saving £300,000 per year in postage and packaging alone;
- investing in greater webchat capability – we talk to 6,300 customers on average per week using webchat, 70% of which would otherwise have called us; and
- introducing a new outbound dialler – allowing us to proactively contact 160% more customers about payments, and increasing collection by 35% compared with the same period in the previous year.

And we've more initiatives in our pipeline. We're:

- testing the feasibility of using 'chat bots' to support webchat;
- trialling Mobi-Pay where we send an SMS or email to remind customers to pay their bill with a unique web link to make a payment. It's more convenient for many of our customers and in the first ten weeks of trialling 43% of customers responded helping us to avoid the need to send 9,000 white mail notices;
- improving how we route calls, which twinned with better analysis of customers' contact behaviour, is helping us simplify our customers' journey and allow us to better focus our call centre advisors;
- deploying new high-speed data loggers around our network to support a move to 'prediction and prevention' rather than 'fix on fail' - therefore reducing the number of water and wastewater issues that impact customers; and

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- trialling video chat where our field teams can work with customers to ensure we diagnose and build jobs more efficiency and effectively.

Reducing the need for customers to contact us

By reducing the need for our customers to contact us (for reasons they don't want), we're creating a dual benefit – we're taking inconvenience out of our customers' day as well as keeping costs to serve down. We're:

- reducing household and non-household written complaints - from 19,232 per year on average in AMP5 to 11,596 in AMP6 to date – an almost 40% reduction achieved principally through using root cause analysis to find customer pain points (including our policies) and changing them;

- launching new apps like 'track my job' which proactively updates customers on progress towards resolving their issue or 'in my street' which allows them to quickly access information about how our work may by affecting their local area;

- encouraging 1.3m more customers to use our digital service - reducing our costs to serve by around £550,000 a year; and

- engaging over 600,000 customers on water quality.

Our performance by 2020

While the changes we've made to date are delivering demonstrable improvements for our customers, we're forecasting mixed successes for customers on our two existing performance commitments for this outcome.

On the UKCSI (a cross-utility survey administered by the Institute of Customer Service) we've already moved from a median to upper quartile performance for the utility sector – demonstrating the positive impact of the changes we've made to date. And we're forecasting that we will end 2019/20 in an upper quartile position – in line with our commitment to our customers.

Sustaining upper quartile on UKCSI
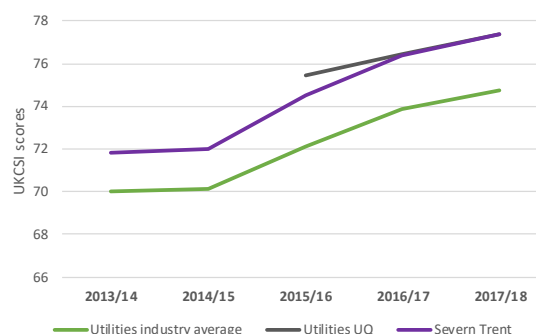
Our performance on the SIM, however, has not always reflected our achievements on the UKCSI. We've seen deterioration, and fluctuations in our qualitative survey positions ranging from 3rd to 17th indicate we've more to do if we're to deliver to our full potential for our customers – and do so consistently.

We noted earlier that one of the key causes of customers' dissatisfaction are complex processes. We know we need to continue to simplify our most complex processes and this will be one of our main focuses in the final two years of this AMP. This will be challenging to achieve quickly – we need to fully think through changes from our customers' perspective if we're to avoid disruption. And while we remain determined to improve before the end of the AMP, we anticipate receiving an ODI penalty for our performance which will return money back to our customers.

Appendix A5: Accounting for past performance includes more detail on our forecast 2020 closing position.

Our non-household regulatory performance, while initially challenging, has continued to improve since the competitive market opened. Our operating standards performance (the proportion of tasks completed within the agreed service level) has improved from a low of 39.6% in June 2017 to 96.2% in May 2018. We were ranked 9th out of 16 wholesalers included in the measure in 2017/18 and are aiming for median performance by 2020. We also recognise that our management standards performance needs improving from our 2017/18 position. Our focus on improvement initiatives including data cleansing, means we're seeing improvements in 2018/19 and are targeting a median performance level for 2019/20.

15.3   OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

Over the coming five years we'll make sure we keep pace with our customers' expectations, and even exceed them – by building on the technological and cultural platforms that we've invested in during 2015-20.

Understanding our customers' expectations

As we built our insight programme to inform this plan, we were aware that many of our customers have limited contact with us – they 'take for granted' that water comes out of the tap and waste is taken away. And by virtue of this 'trusted silent partner' relationship, their expectations of us haven't always been as high as they are from other service providers. But we think they should be. So we adapted our insight programme to take account of this.

Through market landscaping and co-creation, we've focused on understanding what our customers' value from their favourite companies – exploring 'best in class' customer experiences, relating it back to our service – and using it as a basis to build our plan from.

Learning from the competitive non-household market

Since the opening of the non-household market we've been able to learn more about what customers expect from their wholesale and retail services – how retailers are changing their service to win customers, what secures loyalty and what drives complaints. It's evident that both retailers and customers expect consistency in service as well as common language and terminology to make customer journeys easy. Since market opening there has also been an increase in queries about the accuracy of bills – and while this highlights an issue of importance to non-household customers, there are parallels we can draw for the household market. It's important we use this learning to ensure we improve both our wholesale and retail service.

Listening to retailers

Using an independent research agency, we've conducted a series of in-depth interviews specifically with non-household retailers. Our region's business customer base is diverse - ranging from Water Plus, with hundreds of thousands of customers, to those retailers focusing on providing a bespoke service to a smaller number of customers. Most of those we

spoke to are satisfied with the service they received, but their top priorities for the future are:

- good account management;

- the provision of accurate data;

- improvements to the SWIM portal, the information hub between retailer and wholesaler; and

- more personal contact and information.

We believe that, in general, the issues that retailers identified were common across the wholesale industry, with accuracy, consistency and speed emerging as the key challenges.

Our customers' core needs aren't changing, but expectations of how we'll meet them are

All our insight reinforces the importance of the three things that we've been focusing on for this AMP: get the quality of service right; get the experience to feel right; and find the right balance between costs and service.

While these needs aren't new, our customers' expectations of how we should meet them – particularly as they experience and become used to the service offerings of others – can change rapidly.

In a digital world, for example, customers expect greater ability to contact us through multiple channels, at a time to suit them and with the ability to control their experience more online. And in a competitive environment, customers see these facilities as adding value and could offer enough of a reason to change supplier.

This contrasts markedly with research 10 years ago for our PR09 business plan – when customers told us they could not foresee text messages being part of their service.

Our 2020-25 plans focus on delivering against the three key drivers that we've built a stronger platform for in AMP6. But we will continue to adapt with our customers and pre-empt how their expectations might change where we can.

Three areas that create an outstanding experience

What we heard	How we're responding
Service: adopt new technology and communication channels, ensure customers are aware of them, and keep them better informed.	Make customers aware of the options available to them Improve ease of access and simplify journeys Increase choice of channels
Experience: understand individual customer needs and preferences.	Enhance local feel Improve personalised service Build relationships on warmth, empathy and respect
Value: balance cost, service and experience.	Reduce unnecessary need for contact Engage proactively Pre-empt issues before they impact customers

Delivering a step change by building on current platforms

Over the next five years we'll continue to redefine our relationship with our customers. We want them to receive a service that's receptive to their issue and seamless in its resolution. They'll have more options tailored to their needs, be more aware of those choices and know how their bill is spent. And we'll continue to do this while keeping our costs to serve low.

We've already made good progress, but we'll need to make a step change in some areas – particularly if we're to achieve our ambition to move to the top 25% of the industry against the new customer experience measure that's replacing the SIM (discussed below). In addition to our current push to unpick complex processes, we've identified three further enablers to drive improvements in service, experience and value:

- using data analytics to truly personalise our customers' experience;

- innovating to stay adaptable; and

- helping our customers get more from their service.

These improvements will also be complemented by further improvements in the reliability of our wholesale service, including 8% fewer sewer flooding incidents (all types of sewer flooding) and a 5% reduction in drinking water quality complaints.

Using data analytics to truly personalise our customers' experience

By better using data and analytics we can learn more about our customers' preferences – and our own assets. Our analytics strategy includes three areas we've started investment in, which will continue throughout AMP7.

- **Predictive technologies** allow us pre-empt potential issues and take either preventative action or forewarn customers. Our initial 'proof of value' exercise for leakage found that by using billions of data points, we could isolate the characteristics that suggest a pipe will leak, and reduce the time to find leaks by around 70% (based on the initial roll-out to two counties). Other potential areas of application include sewer flooding and pollutions, water quality failures and asset maintenance – we're working with external experts to find early indicators of failure so that a maintenance visit can be triggered, and therefore reduce the likelihood of asset failure.

- **Interaction analytics** can drive improvements in contact centre customer experience while delivering tangible efficiencies that can be passed back to our customers. Advances in sentiment analysis, natural language processing and auto-scoring mean that we can use a variety of ways to improve the service and experience we provide.

- **Behavioural analytics** have the potential to make our sector more resilient and help our customers get more from their service. By expanding our current tools, we can collect more data on customer behaviours and preferences – and we're already using different trials to explore the triggers that lead to changes in behaviours. For example, encouraging customers to use the option of payment by direct debit.

Using analytics to promote water efficiency

Our 2017 water efficiency campaign, shortlisted for a Utility Week Award, was our first targeted campaign based on analysis of billing information, behaviours and the demographics of our customer base. This included ACORN socio-economic profiling, third-party data on ordering behaviour from 'Save Water Save Money', and our own customer research to understand the messages that would resonate with customers. Nearly 2,000 customers (from a base of 264,000) ordered water efficiency products as a consequence – a take-up above industry norms.

Innovating to stay adaptable

Our technology strategy needs to keep pace with rapidly changing expectations, while ensuring we do not increase costs to serve with investment that quickly becomes redundant. So we're targeting our investment in technology that is:

- **Proven –** we take an 'early majority' approach and introduce technologies when they have reached a specific stage of the innovation curve. This allows us to mitigate the risk of adopting channels that do not become popular, but make sure we adopt early enough so that we're one of the first mainstream organisations to do so. We tested this approach with customers through our research and they were supportive of this strategy as it balances cost, service and risk.

- **Scalable –** we need to ensure our technology can cope with increases in customer demand – whether resulting from incidents or long term change in behaviours. For example, our new website uses standard architecture that supports a peak of 32,500 page views per hour, however, this can be scaled up to peak at 96,000 page views per hour within 10 minutes or 128,000 within 30 minutes to manage peak changes in demand.

- **Inventive -** we're exploring opportunities to improve some of our simpler, repetitive customer processes through the use of robotics and automation. On the back of our successful proof of concept exercise (see below), we'll be investing in robotics process automation during AMP7, while ensuring we continue to provide a human experience in the areas that matter to our customers.

Using robotics to complete repetitive tasks

Over a four week trial, robotics process automation successfully replicated simple, repetitive human activity 61% of the time (and we've been able to identify why it couldn't replicate the remaining 39%). This exercise has proven the potential to automate repeat and multiple application tasks – and would mean that our customer contact teams can spend more time providing a great customer experience by focusing on the more challenging and rewarding tasks.

Helping our customers get more from their service

In our co-creation sessions, customers told us they like the idea of the service options available to them, for example contact channels and payment options, but they weren't aware of them. So to better raise awareness, they've helped us develop a plan that builds on our brand and marketing platform and uses existing touchpoints to help promote options, such as on bills, web notifications and informed messages if phone lines are busy. We'll also use the data analytics we're investing in during AMP7 to ensure that we raise awareness in an appropriate and tailored manner. And we'll involve customers in trialling engagement approaches to ensure we deliver options effectively and efficiently.

Tackling metering myths

We estimate about 60% of customers might be better off on a water meter, but through our customer co-creation workshops we identified over 20 myths customers have that make them reluctant to take up the offer. We'll be running a trial during 2018-2020 to test different types of meters and approaches to debunk some of the myths. We'll be trialling approaches such as dual billing to bring to life the benefits of water meters and we'll use this trial to design our formal roll out programme from 2020 onwards.

More for our business customers and retailers

The non-household market will continue to evolve and we need to work to innovate and improve the retailer and business customer experience.

We're a member of nearly all of the relevant non-household industry groups and are actively contributing to these to change the market for the better – and will continue to do so.

We'll also continue to drive improvement in our standard processes and service levels as well as looking for opportunities to learn from our household customer experience, particularly during incidents. For example, we'll be looking to offer to retailers and their business customers the ability to sign up to proactive message updates – which are well received by our household customers.

Future proofing our service

Predicting an unpredictable future

We've engaged with consumer experts (including from the Sustainable Consumption Institute and Sustainable Practices Research Group) to gain an understanding of future retail and consumer trends, so that we can future proof our plans.

Our research has helped us identify key trends that are expected to influence customer service in the future and assess which trends are likely to have the biggest impact on consumers' home lives, their behaviour and the brands, products and services they might choose.

We've identified five likely trends we need to consider and start to adapt to now. The below table illustrates some of the activity we've already built into our plans to adapt and ensure we are future proofed.

Responding to emerging trends

Trend	Examples of how we're adapting
Multi-channel, fast response	Expansions of communication channels, and instant response options including webchat, Twitter and Facebook
Personalisation	Increasing segmentation and tailoring of our channels and communication
Smart data use	Trialling the use of smart meters to drive data and insight to help influence customer behaviour to reduce water usage
Flexibility and control	Introducing new tools that provide greater control, including live job tracking on our website
Blending automation and the human touch	Combining greater automation in our processes, with bespoke teams to deal with complex customer issues

A more resilient service

Our strategy aims to ensure our service is agile and adaptable to our customers' expectations, while also protecting them from future shocks and stresses.

Cyber security remains one of the principal risks monitored by our Board annually as part of our enterprise risk management (ERM) and is reported on in our annual report and accounts. It's important we continue to invest to manage this constantly changing risk – and the implications for protecting our customers' data. For example, in 2016 we announced that part of the proceeds of £120m of outperformance would be reinvested to protect our customers against emerging cyber risks.

It's also important our retail business is resilient to shocks in our wholesale business. Since 2017, we've been trialling a new strategy that allows our operations to better respond in the event of a service disruption or issue that leads to sharp spikes in customer contacts. For example, our best performing customer contact agents are now being trained in multiple disciplines – billing, operations and credit management – so that we can redeploy them to where we have spikes in customer demand. And this approach is more efficient too – allowing for higher levels of resource utilisation.

15.4 MEASURING OUR CUSTOMERS' EXPERIENCE

We're proposing a combination of a new performance commitment (C-MeX) for household customers and a range of other regulatory measures to hold us to account in the non-household retailer market.

	Measure	Area
Performance commitment	C-MeX (covering both service and experience)	Residential retail
Regulatory measure	Cost to serve Operational Performance Standards Market Performance Standards	Residential retail Wholesale Wholesale

With the widening of the customer satisfaction common performance commitment to include surveys of all customers, C-MeX will ensure the experience of all our customers is represented, not just those who contact us as with SIM. We welcome this change and our strategy and overall plan will support delivery of this.

We've considered additional measures to complement C-MeX, including contacts resolved right first time, and percentage of customers agreeing that we meet their individual needs, however, we believe C-MeX's wider scope compared to its

predecessor makes this a more complete measure, capturing all the activities required to deliver this outcome, and therefore doesn't require any other performance commitments.

We also considered introducing specific performance commitments for our business customer experience, however, both the strength of market forces, retailer influence, and the existing regulatory measures provide the cross industry challenge and stretch needed to ensure customer priorities are delivered.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
C-MeX	Financial	Score	-	-	Upper quartile	Upper quartile

15.5   SERVING DEVELOPERS AND CUSTOMERS WANTING TO CONNECT

Every year we connect over 20,000 new properties and install and adopt around 100km of new water and wastewater pipes. Whether we're working with an individual self-build, a national homebuilder constructing a new housing estate or a farmer wanting a connection for a new cattle trough – we want the experience to be great and the process to be as simple and cost effective as possible.

We've worked hard to drive change across our sector and ensure that it evolves to deliver what matters most to our customers. We've achieved this through extensive engagement with our customers and key stakeholders, proactively supporting Ofwat working groups, Water UK, home building federations and self-lay forums. We've also held specific customer engagement sessions where customers have shared their key desires and differences.

Our ambition is to be a leader in the developer services market by being the easiest to deal with and value for money.

Our current performance and track record

In 2017/18 we improved in the rankings to be 1st in water and 2nd in wastewater; which we achieved by consistently meeting our service level commitments to customers. And we're continuing to drive down resolution timescales to deliver a faster, more efficient service for our customers.

Innovation in tariffs

In April 2017 we were the first water company to introduce an innovative new tariff to encourage developers to build sustainable properties which save water and reduce the amount of surface water going into the public sewer. Our scheme allows developers to receive up to a 100% discount on their charges; we've invested over £12m this AMP and so far we've given over 9,800 developer discounts.

There's been significant regulatory change this AMP and we've been actively leading and supporting this under the Water UK umbrella. For example, we've jointly led a national review of the Self-Lay Code of Practice. We're also an active member of the D-MeX working group and the Codes for Adoption Programme. And we were delighted to be recognised by the Home Builders Federation as their 2016 utility of the year.

Being easy to deal with

We've engaged with our customer base and talked to many different customers to help us understand what's important to them and their priorities. We've identified five customer types with differing customer experience and service needs – these are: one-off builders and homeowners, builders, developers, self-lay providers and NAVs.

In June 2017 we re-organised our operations to align with these customer segments, and we've developed tailored service offerings built on our understanding of each customer segment to complement the key aspects of customer service expected by all customers.

This year, we're reviewing our customer contact strategy; analysing all of our customer touch points and designing a model which serves our customers' differing needs. We're refreshing our existing website, making information easier to understand and tailoring the messages for each of our customer segments. We'll be publishing 'how to' guides in different formats to help one off developers through their journey with us. We're also exploring webchat capabilities.

The 'human touch' remains critical and throughout a customer's journey we'll be ensuring they're kept informed. For builders we'll provide the appropriate advice and support to guide them through the duration of their works – we're aware first time homeowners and small builders require different levels of guidance and support compared to well-established housing developers. For larger developers and self-lay providers we operate an account managed service with dedicated resource enabling us to build strong and effective personal relationships.

Providing value for money

Our aim is to lower costs and ensure charges are simple and predictable. Each of our customer segments has shared with

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us what value for money means to them in practical terms. For builders and homeowners it means providing transparent costs with comparable charges to other utilities. For developers, self-lay providers and NAVs it means providing a simplified charging framework and predictable charges to assist future planning.

We're currently in the process of implementing our new scheduling and construction operating model for new connection activity. This new model brings the capability in house through dedicated teams focused on consistently delivering right first time. In addition, this approach will help us to reduce the cost of a connection for our customers.

Our five year plan and performance targets

Over the next five years we want all customers to feel that they pay a fair price for the products and services they receive; and they're receiving great value for money. And to do so, we'll be:

- reducing customer journey time through improved end-to end-processes;

- investing in and promoting the use of self-serve options through an improved digital experience;

- introducing more simplified and innovative tariffs;

- increasing payment options, online support and self-service facilities;

- working in partnership with developers to pilot water efficient homes; and

- further integrating systems so that customers can more easily be supported through their journey.

And we're targeting upper quartile on D-MeX – recognising the challenge and effort that has gone into achieving our current performance, while demonstrating we can sustain it as our customers' expectations continue to grow.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
D-MeX	Financial	Score	-	-	Upper quartile	Upper quartile

And looking to the longer term

We'll continue to build flexibility and resilience, ensuring we can respond to market change and customer needs, with the following in mind:

- the government's ambitious plan to build more homes across England;

- wholesale market reform and further development of competition within the water industry; and

- further encouraging environmental protection and the promotion of sustainable solutions.

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16 A THRIVING ENVIRONMENT

We safeguard the natural resources we use, and we work in partnership to improve the rivers and habitats that provide them.
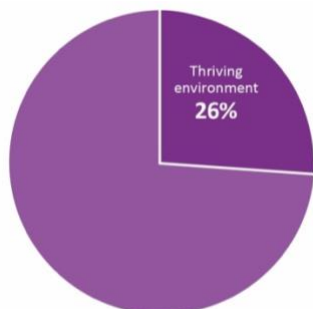
16.1 SUMMARY

In recent years, we've delivered consistently high standards on our wastewater compliance by responsibly maintaining our assets to prevent failure. We've also successfully delivered a series of environmental programmes over the last two decades to improve the quality of the rivers in our region. We're one of the best performing companies in the sector and, as a leading company, we accept we need to do more to address the growing recognition of the link between the natural environment and health and wellbeing.

We've learnt from engaging with, listening to and learning from our customers. Our customers hold two distinct perspectives: their personal interactions with local green spaces; and the wider global environment. The message from our customers is that local green spaces allow escape and relaxation, enhance health and wellbeing and are sites for spending quality time with friends and family. Customers are also concerned about the wider environment and want to protect it for future generations. We've done more than ever before to reflect these wider environmental benefits in our plan. Whenever we now take action to maintain our assets or make improvements, we'll do it in a way that seeks to maximise these wider benefits.

We're clear that ensuring compliance with regulatory standards is our responsibility and is a critical underpin to maintaining customers' trust in us. Failure to do so reduces our customers' ability to interact with the environment and drives dissatisfaction. Customers don't intuitively associate the wider environment with our activities – including biodiversity – but when they're told about this, they want us to work with partners like the Wildlife Trusts (pictured) to improve biodiversity and protect habitats. Our customers have also asked for more information on improvements we're making, so we'll keep them better informed.

In terms of river water quality, our customers initially react to how rivers look rather than the biological health of river eco-systems. But, again, once we take time to explain this, they want us to tackle the worst rivers in our region first, prioritising areas which will affect the greatest number of customers. Our customers also want us to work more in partnership with others to deliver mutually beneficial outcomes. We believe the outcomes that our customers support also align well to the government's 25-year strategy. Our plan moves more towards this way of working, and aims to minimise waste, or rather, turn it into something that can be useful.

This outcome includes £1.7bn (26%) of the totex in our plan and covers five performance commitments.

16.2 OUR CURRENT POSITION AND TRACK RECORD

Consistently delivering for the environment

We're proud of our longstanding focus on the environment. We've consistently delivered frontier performance on discharge permit compliance – the measure chosen by both Ofwat and the Environment Agency (EA) to assess asset health of our treatment works. We've also achieved 100% compliance against the satisfactory sludge disposal measure in each of the last four years. Our excellent performance has earned us the EA's 4* rating three times in the last five years – and we're one of only three companies who've achieved this.

Consistently strong discharge permit compliance (%)
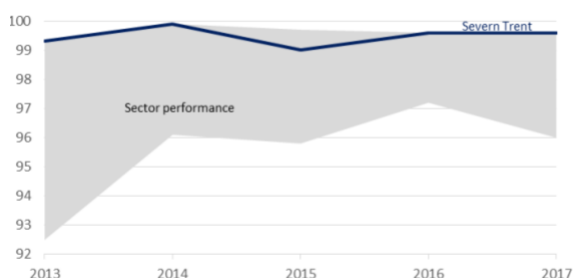
It's not been easy. We've used our natural operating circumstances as a catalyst for innovation. Being landlocked means that we've had to develop new ways to treat wastewater to meet tighter permit standards than most other companies as these are based on river dilution rather than discharging into coastal waters. We've not only met the required environmental standards, we've done so efficiently. We're one of the most efficient companies in the sector, as evidenced by Ofwat's PR14 totex assessment.

We're also at the forefront when it comes to embracing innovation to reduce our environmental impact. We saw the potential for generating energy from waste and were early adopters of new renewables technology. Early on we experienced the downside of innovation when we tried to implement new sludge drying technology. Despite the early positive signs, we had to take decisive action to stop the programme when it was clear customers would not benefit from the technology. Nonetheless, we've persevered and have found better ways of doing things. We now provide over one-fifth of the total renewable energy produced by the whole sector and we continue to increase the amount of energy we generate. As a group, we produced the equivalent of 38% of our energy needs last year and are on track to increase this to 50% by 2020.

Another example of how we're advancing our sector is the development of biological phosphate removal in our secondary treatment process. Over 50% of our customers benefit from our use of this technology which reduces costs as well as our impact on the environment. Our approach to asset health is inclusive – we've developed a performance framework and 'golden measures' that allow us visibility of our performance across all levels of the organisation. Our approach allows us to work together to find better solutions to problems and this collaborative approach extends to how we work with the EA. We work with them to develop our plans and are open when we encounter problems. We've a trusted relationship allowing us to co-design a balanced programme of future environmental requirements.

We're confident that our people, processes and technology will enable us to maintain our strong compliance position to 2020 and beyond. In terms of environmental improvements, our AMP6 programme will deliver improvements in at least 1500km of rivers in our region. We've been able to successfully use our Water Framework Directive (WFD) commitment to accommodate changes in the National Environment Programme 5 (NEP5). NEP5 was agreed 12 months after PR14, and due to additional bodies of evidence and improved river quality models being available, 15 of the original 89 schemes proposed were removed and substituted with 32 replacement projects. As a result of these changes, customers will benefit from an additional 244km of river being improved to 'Good Ecological Status' in our region, putting us on target to meet the government's 25 year objective for improving at least three quarters of our waters to good status.

We've held the Carbon Trust Standard since 2009 and we've been recertified to 2019. This achievement verifies that we have sound carbon management processes in place and are reducing absolute carbon emissions year-on-year. In fact, we've reduced our greenhouse gas (GHG) emissions by 17% since 2014 and we score in the top quartile of companies in the UK.

We expect to meet all of our AMP6 performance commitments for this outcome with the exception of carbon emissions on our water service. We've invested to reduce energy consumption used to treat and distribute water but this has been more than offset by increased volumes needed to meet commercial demand and keep customers supplied with water. We'll continue to look for ways we can reduce water into supply and we'll also look at ways to adjust the energy use of our assets to help balance the demands on the electricity grid.

Appendix A5 provides more detail on our past performance.

16.3 OUR PLAN AND HOW IT MEETS CUSTOMERS' NEEDS

We've developed our five-year plan using a range of factors, including affordability (for both today's and tomorrow's customers), sustainability and the efficacy of potential solutions to ensure that we deliver the best possible plan to meets our customers' needs. It's critical that we keep innovating to meet the needs of our customers and the environment.

Using a risk-based approach to manage our diverse asset base

We use our extensive asset maintenance data to construct life cycle cost models for a range of asset types. These models draw together repair and failure histories, asset age data and intervention costs. We apply these models to individual assets, in combination with consequence of failure assessments, to quantify: risks to service, optimum time to intervene and most suitable intervention type (reactive or proactive; repair or replace).

To maintain our high level of discharge permit compliance, we also use a suite of lead indicators (golden measures) to pick up early warning signs of permit non-compliance. These are monitored through our 'comms cell' culture and we operate an out of hours duty officer rota. More significant incidents automatically trigger a full root cause analysis involving our treatment process support specialists. Repairs to failed assets identified through these processes are tracked via an assets out of service register. More complex asset repair requirements are also logged onto our operational risk register, along with mitigation measures to ensure service is maintained while remediation work is undertaken.

Making our assets more resilient

We've invested in standby capacity and parallel treatment streams at our treatment works, and this inherently provides resilience to individual asset failures. Our works are also designed to remain compliant under worst case operating conditions of high flow and low temperature. As such, wastewater sites have very few single points of failure and can tolerate limited asset outage under normal operating conditions. Our asset health strategy is therefore heavily focused on the monitoring of works performance and delivery of quick 'fix on fail' asset repair interventions. Some proactive interventions are scheduled where the cost of failure management is high or rapid 'fix on fail' intervention is not technically feasible.

Power supplies in remote, rural areas tend to be less secure than in urban areas. Therefore, a key element of our rural strategy and implementation of innovation is the development and deployment of low energy treatment

processes that can be powered by on-site renewable sources. We're also researching technologies for urban treatment works that lessen our reliance on mains power, with the added benefit of yielding opex savings. Self-supply of electricity generated on site is another key component of our wastewater resilience approach, we now have 64 sites where we self-supply some or all, of the energy requirement.

Taking a phased approach to environmental improvements

To ensure we're on track to deliver our WFD requirements by 2027, we've carefully analysed the EA's WFD classification data and their 'reasons for not achieving good status' data to gauge our position. There is some uncertainly regarding the programme of measures that will be set out in River Basin Management Plan 3 (which won't be finalised until 2021), but working closely with the EA, we believe our proposed AMP7 programme is consistent with meeting the 2027 deadline.

Full details can be found in our wastewater quality cost adjustment claim in Appendix A8.

Understanding and responding to waterbodies not achieving good status
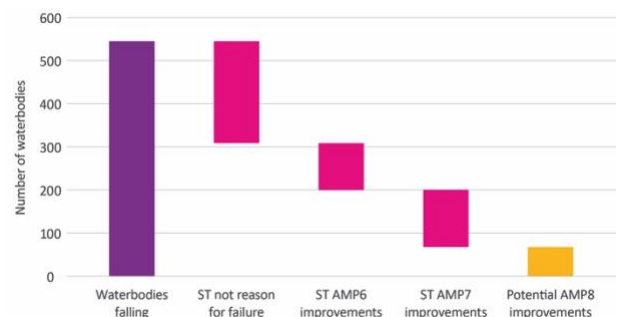
Our proposals are based on unambiguous evidence of a failure to meet WFD standards, which is clearly attributable to our actions or activities. We've checked this with data to show that it would be fair and proportionate to contribute to resolving the failure in 2020-25. This blend of collaboration, negotiation and constructive challenge has produced a final WINEP that is cost beneficial, affordable and satisfies our collective objectives and obligations.

Leveraging the benefits of a river catchment solution

We've always looked to create synergies between environmental improvements and maintenance needs. We're using data and modelling to review – at a catchment level – the needs and capabilities of all existing assets in a catchment before considering options to deliver improvement. Each catchment is unique, with a range of sewage treatment works of differing asset type, size, condition, compatibility with nutrient removal, and capacity to meet future demand. This requires knowledge and expertise to design a solution which delivers improvements while identifying and reducing risks.

And it's not just looking at sewage treatment capability – our catchment approach looks across the value chain. As population centres have grown, a number of our sewerage systems now have very little spatial separation between them. This will open up opportunities to more actively manage our wastewater collection and treatment systems, especially where there is a mismatch between hydraulic and biological treatment capacity - or there are specific environmental requirements to fulfil. We're also looking at interactions with our raw water resources.

Solutions that improve wellbeing for our communities

We've also worked hard to find synergies between the improvements we're making to meet WFD needs and other environmental benefits including improvements to:

- river quality within public amenity areas and visitor attractions;
- downstream Biodiversity Action Plan Priority Habitat areas and other protected areas, for example Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC); and
- areas of social deprivation and low social mobility.

Exploring the wider benefits of improving river ecology – Clumber Park

We need to make WFD improvements at three sewage treatment works to remove phosphate in an upstream river. Taking a wider view, we've been able to create a programme which reflects that we are working in a popular amenity area in the East Midlands and on a river which flows through several SSSIs and visitor attractions. Our plan takes into account these benefits and the enhancement to an area of low social mobility.

Protected areas benefitting	Public amenities	Visitor numbers	Biodiversity	Societal
Welbeck Lake SSSI Clumber Park SSSI Hollinhill and Markland Grips SSSI Cresswell Crags SSSI and Scheduled Ancient Monument	Clumber Country Park Cresswell Crags Visitor Centre Welbeck Abbey Robin Hood Way Long Distance Trail	645,000 pa 50,000 pa	Extensive areas of downstream Priority Habitat:- Wood pasture and parkland floodplain grazing marsh	Area of low social mobility* (Bolsover and Bassetlaw parliamentary constituencies) *Sutton Trust data

Enriching the biodiversity in our region

We're committing to deliver habitat restoration and improvement work across 1,090 hectares in our region – more than 14 times our 2015-20 commitment.

This will include two projects around the Derwent Valley reservoirs' catchment area. The moorland peat bogs in the area have been degraded by the combined effects of artificial drainage and industrial pollution, causing the loss of the natural sphagnum moss population. Loss of this moss creates areas of bare peat, which erodes rapidly and is susceptible to drying, increasing the risk of wildfires. We will be working with partner organisations through the Moors for the Future partnership to deliver restoration work on moorland in 2020-25. We'll also be working with the Clough Woodlands project,

a multi-agency project to restore native broadleaf woodland along the fast-flowing upland streams and surrounding steep sided valleys, termed 'cloughs', across the Peak District National Park.

We'll continue working in partnership through our Catchment Based Approach (CaBA) to deliver projects at the local community level that benefit the environment and contribute towards the UK government's 25-year plan. As responsible landowners – the Severn Trent group is a sizeable corporate landowner in England and Wales - we'll look to identify land that is surplus to operational requirements as this could provide valuable opportunities for enhancing biodiversity.

We've also identified a small number of aquatic SSSIs that contain elevated levels of phosphate in lake sediments. We've committed to undertake research work at one of these sites in 2020-25 to trial technologies that can prevent accumulated phosphate from adversely affecting the delicate ecology of these habitats. The results of this work will help us design future aquatic habitat restoration projects.

Managing risks which arise from the bioresources price control

We plan to close our licensed hazardous waste landfill site at Minworth sewage treatment works. This site was used for the disposal of ash from our sewage sludge incinerator facility at Coleshill. This was 'mothballed' in 2008 as sludge quality at Minworth had improved making land disposal safe and efficient. We've taken a risk-based approach following commissioning of our Advanced Anaerobic Digestion (AAD) Plant at Minworth to safely close the site. Guidance from the EA requires that obsolete landfill facilities must be capped to prevent the ingress of rain water which could produce hazardous leachate with potential to pollute the wider environment.

Embracing market opportunities in bioresources

We intend to continue our roll out of AAD, building upon the capacity delivered at Minworth and Strongford in AMP6. Three new AAD sludge treatment plants are planned:

- Finham (Coventry) – delivering growth and opening up the South East of our region to trading;

- Stoke Bardolph (Nottingham) – consolidating lower performing sites and opening up the North East of the region to trading; and

- Netheridge (Gloucester) – consolidating sites, improving quality of biosolids and opening up the South West for potential trading opportunities.

With the sludge market becoming competitive from 2020, we're already exploring opportunities to import sludge from neighbouring companies. Our position bordering seven

wastewater treatment companies (including Hafren Dyfrdwy), means that we are ideally placed to engage in this new market. May 2018 saw the start of a six month trial to import sludge from Yorkshire Water into our Worksop treatment facility in North Nottinghamshire. The imported sludge originates from several of Yorkshire Water's sewage works that are closer to our Worksop facility than one of their own sludge digestion sites.

Yorkshire Water sludge tanker arriving at our Worksop sewage treatment works

Taking responsible action to ensure our asset base meets future needs

Our future vision is to be operating a set of assets that make a positive difference to the environment and deliver our part in meeting the government's 25 year strategic objectives. We expect to have addressed all our WFD reasons for failure, where it is cost beneficial to do so, and enhanced biodiversity within the areas that we operate. In order to implement this vision, we'll review how our wastewater treatment asset base is configured to ensure we have optimised the fit between assets, location and discharge points. These assessments will include:

- catchment level river quality modelling;

- a review and optimisation of existing asset capacity to minimise investment needs;

- a review of site relocation and works consolidation options, including partial sewerage catchment transfers (to better match load to existing capacity);

- opportunities for effluent discharge point relocations to reduce environmental impact;

- the implementation of new, more efficient technologies; and

- moving towards urban or rural systems.

Case studies on our rural and urban strategies are included in Appendix A7.

This long-term strategy will take many decades to fully implement to ensure it is affordable. To target resources in the most optimal way, we will ensure that there is a long-term plan in place for every site and tailor asset maintenance

activities accordingly. Ultimately, this could open the possibility for local communities to go off grid where the economics allow – a potentially exciting market opportunity if environmental standards can be protected.

Investing to maximise the benefits of a circular economy for the longer term

We want to extract maximum value from the sewage and sludge that we treat by generating products that can be recycled. We already recycle 100% of our sewage sludge to farmland for beneficial reuse, the phosphate content of which equates to approximately 25,000 tonnes of inorganic phosphate fertilizer that would otherwise be sourced from non-renewable sources. We operate our sludge treatment centres to maximise biogas generation, which is used both for electricity generation and direct injection back into the gas grid network. At Coleshill sewage treatment works, we operate a plant that cleans and recycles the grit that we remove at sewage works across our region and our works at Nottingham incorporates a phosphate recovery stream.

Our strategy includes investing in anaerobic sewage treatment – a process which significantly reduces both energy demand and sludge production compared to traditional processes – to test whether our treatment plants could be transformed from energy and resource-consuming facilities to production plants and bio-refineries. This process is used at full scale in the tropics but not in temperate climates. We've secured £453k funding from the EU's Horizon 2020 Innovation Fund to build a large scale demonstration plant at our Spernal test site as part of a suite of trials looking at how we could turn waste into valuable product. We are participating in over £34m of externally funded projects (mainly from EU resource recovery programmes) working at the forefront of research across Europe to develop new technologies and products, such as making proteins from wastewater.

Tighter effluent quality standards required to deliver the WFD, coupled with demand and climate change pressures on raw water resource availability, could make effluent reuse a more economically viable proposition. We're currently researching the approaches taken worldwide for the beneficial reuse of treated effluent to identify practices and technologies that will be appropriate for future deployment in the UK. This will be combined with our learning from technology trials such as those undertaken as part of the chemicals investigation programme. This will also tie into future investigations into the emerging issues of microplastics, pharmaceutical residues and anti-microbial resistance – implementation of enhanced treatment technologies to address these issues also has the potential to be compatible with beneficial reuse.

Our plan has been built to respond to customer and stakeholder needs

The plan we've summarised above responds to what we've learnt from engaging with, listening to and learning from our customers, and the EA which acts to safeguard the environment. The range of insight we've used to understand our customers' needs is explained in more detail in Appendix A1, with the key elements summarised below:

We've synthesised our insight into four areas which our plan responds to

What we heard	How we're responding
Our customers have a fundamental expectation that permit compliance standards will be met.	We're already industry leading on permit compliance with a five year average of 99.48%, but will strive to secure higher levels of compliance by systematically monitoring and managing risks and having a stretching target of 100% compliance.
Customers support the improvements to river water quality (but expect us to prioritise, their communities, and areas where they interact with the environment).	Incorporating wider benefits (quantitative and qualitative) into our prioritisation for WFD improvements (see Clumber Park case study above).
Poor aesthetic river water quality can lead to dissatisfaction.	Broadening our approach to volunteering (where 22% of Severn Trent employees are involved in the first quarter and 40% over the next 12 months) in the community and working with other partners to address aesthetics (also see Chapter 17: A positive difference).
Customers want more information on what we are doing to improve the biodiversity of our region.	Extending activity such as, understanding where our assets interact and having emergency response plans in place, to improve biodiversity and improving how the results are measured, reported and shared with customers.

The EA and Natural England have provided further guidance through their Water Industry Strategic Environmental Requirements (WISER) publication. We've worked closely with them to understand their expectations and priorities.

Similarly, we've also engaged with Wildlife Trusts and representatives of Blueprint for Water (a coalition of 16 leading environmental and fishery NGOs) to discuss their expectations, especially regarding activities that relate to our

biodiversity performance commitment. Many of the discussions with Natural England have focused around the interventions required to deliver favourable conservation status at SSSIs and SACs.

Our customers' needs are also reflected in the government's 25-year environment plan. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach that puts the environment first. There are 10 far reaching goals – including an objective to improve at least three quarters of our waters to be as close to their natural state as soon as is practicable – underpinned by six key policy areas.

We plan to take action in the six key policy areas to protect the environment

Feature	Impact for Severn Trent
Using and managing land sustainably	We'll explore opportunities to build on our engagement with farmers to incentivise biodiversity-friendly interventions within our 'farming for water' programme, and our investment in AAD treatment will allow us to create a higher quality biosolids product for use as a substitute for fertiliser. We'll also investigate opportunities to expand farming for water to replace 'end of pipe' sewage works improvements with offsetting schemes that will deliver greater environmental benefits.
Recovering nature and enhancing the beauty of landscapes	We'll work with partner organisations to deliver an extensive landscape restoration programme in the moorland and clough woodland areas around our Derwent Valley reservoirs. We'll also deliver an extensive programme of sewage treatment improvements as part of a multi-sector approach, to bring rivers in our region up to good ecological status - building on our expertise in low phosphorus technologies through our unique test sites.
Connecting people with the environment to improve health and wellbeing	We'll engage with CaBA partnerships across our region to support local scale projects and volunteer initiatives to help communities engage with, and enhance, their local environments. We'll also connect Severn Trent to the community through its volunteering and rural works strategy.
Increasing resource efficiency, and reducing pollution and waste	We'll continue to enhance our sewer network monitoring programme to drive down pollution incidents. And the roll out of our effluent factory model for large, urban sewage works to optimise operation, will drive down energy and chemical usage. We'll continue to work at the forefront of technology with the development of products of the future.
Securing clean, productive and biologically diverse seas and oceans	As a landlocked company, we have limited scope to directly improve coastal waters. We do, however, operate entirely within the catchments of two of the largest rivers in England, so the Severn and Humber estuaries are benefitting indirectly from our river quality enhancement programmes. Our plan will enhance up to 2,100km more in AMP7, an increase from the 1,500km delivered in AMP6.
Protecting and improving the global environment	We'll continue to expand our renewable energy generation through the provision of more advanced anaerobic digestion facilities. This will enable us to progress from self-generating 38% of our total energy needs to a target of 50% by 2020.

Our detailed enhancement cases, including the case for environmental improvements, is in Appendix 10 and more of our work on markets and our approach to innovation is in Appendices A6 and A7 respectively.

16.4 THE COMMITMENTS WE'RE MAKING

Our plan for ensuring that we have a 'thriving environment' has, at its heart, a deep understanding of customers' needs, views and desires, and an honest assessment of our performance, both good and bad. This provides a strong basis on which to build a comprehensive range of initiatives that, in combination, offer best value for money for customers. We're committed to implementing it and delivering for customers the performance that they have asked for. We've designed the following performance commitments to hold us to account for the improvements we've promised to our customers, and track progress towards our outcomes. Our approach to selecting commitments and framework for setting targets (including why they are stretching) is explained in Chapter 9.

Treatment works compliance

This measure aligns with the definition of the Environmental Performance Assessment which monitors compliance with environmental permits at both water and wastewater treatment works. Our target is always to achieve 100% compliance with our environmental permits. We're the industry leaders in this measure.

Our focus for this measure has been to set an underperformance penalty deadband at an appropriate level that both affords us some protection against failures that are outside our control, as well as challenging us to maintain our performance at 99% or above. This is a stretching target for the industry, as only two companies have managed to average above 99% compliance over the last five years. (See table in section 16.2). No company has ever been 100% compliant.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Treatment works compliance	Penalty only	Percentage	99.61	99.61	100	100

Bioresources – satisfactory sludge use and disposal

Ensuring satisfactory treatment and disposal of our biosolids products is essential to build trust with those who use our biosolids as a valuable resource. Compliance is overseen by the EA as part of the Environmental Performance Assessment

and ensures the requirements of the Sludge Use in Agriculture Regulations are met.

Historically we've maintained a strong performance in this area meeting 100% compliance nearly every year. Our forecast position will be to maintain 100% compliance in each year of the next AMP.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Satisfactory sludge use and disposal	Penalty only	Percentage	100	100	100	100

Biodiversity

This performance commitment is an evolution of our AMP6 commitment. This required us to deliver a net improvement in biodiversity to 75 hectares between 2015 and 2020, focused on Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs).

Our customers have encouraged us to expand the scope of our commitment. Specifically its coverage has increased to

cover a wider range of sites that would benefit from biodiversity action plans, not just SSSIs and SACs. This includes activity that is part of WINEP, our catchment management programme and bespoke activities on our operational sites that may not be directly accessible to our customers. Our stretching commitment for AMP7 will deliver a net improvement to a further 1,090 hectares, while continuing to maintain the improvements delivered in AMP6.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Biodiversity (water)	Financial	Hectares	-	0	952.6	Based on WINEP
Biodiversity (waste)	Financial	Hectares	-	0	138	Based on WINEP

Water Framework Directive

The design of our Water Framework Directive measure allows for changes in scope from the final WINEP without the need for formal regulatory approval from Ofwat. Our targets for 2025 are based on the current view of our WINEP requirements to ensure we comply with all statutory obligations and have been balanced with our customers' views. This will require further deployment of our novel phosphorus removal technologies to enhance 2,100km of river length which is a proportionate increase from the 1,500km delivered in AMP6 (this reflects the full WINEP programme).

We're proposing to use a real options mechanism for this commitment, which is explained in Appendix A8: Securing cost efficiency.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Improvements in WFD criteria	Financial	Number of points	-	0	211	Based on WINEP

17 A POSITIVE DIFFERENCE

While we focus on providing a consistent, reliable and affordable service to customers, we know our ability to positively impact our communities extends much further.

17.1 SUMMARY

Just because we're a large company doesn't mean we can't have a local focus. The extent of our resources, and the unique nature of what we do – a service that literally flows right through communities – means that we have lots of opportunities to make a difference at a local level. Our contribution to local communities already extends beyond essential water and wastewater services. Now, with our customers' support, we want to do even more. We'll use the resources we have in their broadest sense – our people, our knowledge, our land, our supply chain and our networks – to make changes that will add up to a bigger difference for our communities.

We asked our stakeholders to identify the key issues affecting our region in the next 25 years. Then we looked at those that could affect us too and how we could tackle them. Over the next five years, we'll be focusing our efforts on three areas in particular:

- promoting wellbeing;

- creating greener, more sustainable places for enjoyment; and

- supporting social mobility.

And we've created a suite of commitments with which we can measure and hold ourselves to account to deliver an even broader contribution to our community. These commitments are spread across our value chain, so we've explained them in more detail in Chapters 10-16 and summarised them here.

We're also going to do even more by creating a community dividend, which includes 1% of profits, towards water-related projects that make a real difference in our communities. This is also explained in Chapter 18: A company you can trust.

The cornerstone of this outcome is an education programme. Focusing mainly on primary school children, we want to inspire a generation to think differently about water (and wastewater), to look after their health and to explore the potential of a great career in the water industry.

Chapter 18: A company you can trust, explains more about our role as a responsible company.

The cost of delivering this outcome is accommodated within our base plan. It includes one dedicated performance commitment.

Service now - Water	Service now - Retail	Resilience	Community
–	–	–	1
Service now - Wastewater	Asset health	Environment	Responsible, efficient investment
–	–	–	–

17.2 OUR CURRENT POSITION AND TRACK RECORD

We've a strong track record of contributing to the communities that we serve. Examples of our contribution to date include:

- 38% of our energy from renewable sources (including regulated and non-regulated activities);

- two days' paid leave for volunteering for every employee, currently with 40% uptake;

- the only water company included in the first two social mobility indices and the highest ranked UK utility;

- 32 suppliers signed up to our sustainable supply chain charter which aims to support sustainability and contribute to our communities (including volunteering time, tackling modern slavery and reducing embedded carbon in construction design);

- for every £1 spent on catchment management, we generate between £2 and £7 in wider environmental benefits; and

- annual donations of £3.5m to the Severn Trent Trust Fund to support our customers in severe hardship, generating £2.62 of wider benefits for every £1 spent.

In our 2015-20 plan, our principal focus for this outcome was an education programme on sewer blockages to reduce nuisance and disruption in our communities and improvements in water efficiency and usage. We introduced a performance commitment that measured the number of customers reached. Following a slow start, we're now on track to exceed our cumulative target of 700,000 customers across the AMP, and have engaged with over 200,000 customers in 2017/18 alone.

We'll continue to focus on education for the next five years, but have increased our ambition by concentrating on behavioural change (rather than absolute numbers) among our next generation of customers – using new, innovative tools that we've co-designed with students, their teachers and public health bodies.

17.3 OUR PLAN AND HOW IT MEETS OUR CUSTOMERS' NEEDS

Over the next five years we're going to target changes across our value chain that together add up to a bigger difference for our communities.

What our customers and stakeholders told us

More than just water and sewerage services

Our customers appreciate having a better understanding of our role in achieving societal and environmental goals, ones that go beyond our 'conventional' services. But this support is qualified – they believe that making a broader contribution to society or the environment should never distract us from delivering what they see as our core functions. Nor should it incur significant additional cost.

Education is a reoccurring theme in all our research. Our customers see it as a way of engaging with our service (and changing how they use our product), and it resonates strongly as a way to demonstrate our commitment to our broader societal and environmental responsibilities.

Engaging with children is very strongly supported as children are perceived to be more amenable to change and adults can be reached via children, through 'pester power'.

What our customers told us

What we heard	How we're responding
We should make a broader societal and environmental contribution, but not at significant cost.	Taking opportunities across our value chain to make incremental changes that will make a positive difference.
	Using our resources – in their broadest sense – to help tackle the issues that we share with other stakeholders in our region.
	Introducing a new suite of performance commitments to reflect these changes and protect our customers' contribution (e.g. social tariffs and education ambition)
	Creating a new community dividend from 1% of profits that will go towards projects that will make a real difference in our communities.

What we heard	How we're responding
Our customers are often unaware of the wider contribution we, and they, make.	Extending the integrated approach to annual reporting that we use for our Severn Trent Plc annual report and accounts to our annual performance report – to focus on both performance and our wider contribution. Helping our customers to be active, not passive, with a real impact on the services they pay for.
Any increase in education is welcome (and important to change behaviours).	Expanding our education programme for all our customers, with a focus on inspiring a generation of future customers.

Understanding our region from the perspective of other stakeholders

Many of our future challenges and opportunities are shared by other stakeholders in our region. We asked these stakeholders – including local authorities, environmental NGOs, and consumer support bodies – about the issues they saw as having a significant impact on their organisation and our region over the next 25 years. 100 stakeholders responded, of which 59% were local authorities.

Stakeholders consistently told us that the issue they expect to have the greatest impact is health and wellbeing. They believe that providing access to outdoor spaces is key to health and wellbeing, and emphasise the importance of employment. Low levels of health and wellbeing are recognised as placing financial and other strains on services and infrastructure, leading to a downward spiral of complex problems.

Stakeholders identified infrastructure provision and capacity, flooding, climate change and resilient, sustainable and green urban areas as having an impact. Population growth and urbanisation, especially 'concreting over' natural drainage, are seen as challenges, both for wellbeing and the management of flooding. Stakeholders also identified a need to leave a lasting legacy of infrastructure for future generations, to guard against flooding and climate change.

So it's clear that we share many interests with our customers and stakeholders. We've looked at those we have most scope to influence and decided to focus our efforts in three areas:

- promoting wellbeing;
- creating greener, more sustainable places for enjoyment; and
- supporting social mobility.

The contribution we'll make in the next five years

Over the next five years we're going to target changes that together add up to a big difference. We've looked across our value chain to find opportunities to:

- change how we deliver our service;
- inspire and engage our customers; and
- use and focus our broader assets in different ways.

Our new performance commitments, and existing activities at a glance

38% energy generated from renewable sources* (2017/18)

40km of riverbanks cleared up through employee volunteering (2017/18)

32 community pledges from supply chain partners

4m visits to our reservoirs each year

16 catchment schemes with farmers to prevent pollution of raw water

360 properties protected from flooding through community collaboration

2,100km of river ecology improved

£0.6m of new natural capital created through 'green communities' flooding schemes

Water is collected · Water is cleaned · Clean water is distributed · Customers enjoy our services · Wastewater is collected · Wastewater is cleaned · Water is recycled to the environment

174 apprenticeships **101** graduate jobs (2015-17)

1,000 jobs offered in social mobility coldspots (15-17)

£3.5m trust fund donations annually, 2.62 social ROI

Land freed for development for equivalent of **1,000** houses (2015-20)

Proactive support for **500** schools to check for lead on their internal pipework

155,250 students commit to changing their water use

Biodiversity and habitats improvements on equivalent to **1,500** football pitches

47% more struggling customers supported to pay their bills

- New or more ambitious, community focused performance commitments in our plan
- Areas we're already working on and will continue to
- * Includes non-regulated activities

Changing how we deliver our service

Where our customers are making a direct contribution (for example, by subsidising our social tariff), or we're making a change that relates directly to their service provision, we've included performance commitments to ensure that we deliver. These are summarised below – and also described in more detail under the corresponding outcome later in our plan.

Performance commitment	Area	Outcome
Although we're already improving 75 hectares of Sites of Special Scientific Interest (SSSIs) in the current plan, we recognise that using our wider landholdings (not just protected areas) and working with local communities, means we can do much more to boost **biodiversity** in our region, creating social amenity value and associated wellbeing benefits. We'll improve 1,090 hectares of habitats.	• Promoting well-being • Creating greener, more sustainable places	A thriving environment
We're committed to fulfilling our obligations under the **Water Framework Directive** and improving the ecology of a further 2,100km of rivers in our region. But our investment also has the potential to have wider benefits – including benefitting the biodiversity and appearance of local recreation areas downstream.	• Promoting well-being • Creating greener, more sustainable places	A thriving environment

Performance commitment	Area	Outcome
Over the current period we've developed an approach to working in partnership with other flooding stakeholders. We'll use the technical and coordination expertise gained to further extend this approach with our **collaborative flood resilience** and **sewer flooding in public areas** performance commitments.	• Creating greener, more sustainable places	Wastewater safely taken away
We're also changing how we tackle some flooding issues – our new **green communities** commitment captures the amount of natural and social capital value that we create for local communities through the construction of sustainable drainage and water management features.	• Creating greener, more sustainable places	Wastewater safely taken away
In 2015 we introduced a package of support for our **financially vulnerable** customers. Our new commitment – with the support of our customers – will help 47% more customers who are struggling with their bills.	• Promoting well-being	A service for everyone
Our **farming for water** performance commitment builds on our catchment management approach to protect our raw water sources. A more sustainable approach than traditional treatment solutions, it uses catchment management to also deliver wider environmental and resilience benefits.	• Creating greener, more sustainable places	Good to drink
We use phosphate dosing in our water treatment processes to mitigate the health risk of **lead** pipes for customers, and we replace lead pipes on our network. However, this doesn't tackle lead pipes on customers' properties. We're introducing a new performance commitment, aimed at our next generation of customers, where we'll proactively inspect **schools** for lead pipes and offer support and advice to resolve any issues.	• Promoting well-being	Good to drink

Inspiring and engaging our customers

Our research shows that our customers want to be actively engaged in our business and place great value on education – they believe that we have a responsibility to educate customers about the water cycle, water usage and scarcity, water efficiency, using sewers with care, and the health benefits of drinking tap water.

We're focusing on young people because UKWIR's 2009 report 'Estimating the water savings from baseline water efficiency activities' found that the highest change of behaviour factor (18%), across a range of activities was from those relating to schools and the next generation of customers.

Working with teachers, and using virtual reality and role play activities, we've designed a new schools programme, to accommodate various styles of learning, which will immerse primary age school children in a Severn Trent world. We've created mobile experiences to make our education offer fully accessible, whether in playgrounds or, for those schools that can't accommodate our vehicles, in local public spaces. Through this programme, we'll be introducing a new message on hydration, working closely with health professionals to tackle issues such as obesity, and promoting the health and wellbeing benefits of tap water over fizzy drinks.

Using and focusing our broader assets in different ways

Supporting health and wellbeing

We know that many of our customers have a special relationship with our visitor experience sites, sharing our appreciation for these unique places. We already welcome around four million visitors per year – and now we want to build a deeper relationship with visitors by developing our offer to provide enjoyable activities which are available to everybody.

20,000 hours of volunteering from dedicated community volunteers

Our visitor sites are a great resource for our communities. Our ranger team lovingly cares for a number of public access sites across the Severn Trent region, managing biodiversity and the natural environment, looking after acres of woodlands and forests, and wildlife habitats. The ranger team is supported by a group of dedicated volunteers, who have contributed over 20,000 working hours in the past year. Many of our volunteers have been with us for over 10 years – they turn up every week, in all weathers to support the rangers by laying new pathways and maintaining the traditional skills of hedge-laying, as well as creating new habitats for declining species.

We want to extend our existing volunteer programme by working with local GPs for referrals, and by offering more opportunities for sporting activities in partnership with others. Inactivity is a key health risk and exercise is proven to reduce the risk of numerous health concerns. For example, it can cut the risk of depression by up to 30% and the risk of type 2 diabetes by 40%.

Creating greener, more sustainable spaces

Our performance commitments will help us to create greener, more sustainable spaces in our communities, but we also have another asset we can use – our people.

Our successful volunteering scheme, Community Champions, has gone from strength to strength, with over 40% of our employees getting involved in the first year. The scheme is designed to complement our Water Framework Directive driven performance commitment by cleaning up 40km of riverside environments across our region. Through our scheme we offer every employee two paid volunteering days – totalling the equivalent of 50 full time employees.

And if we can't make active use of our land, we ensure that the benefit is shared with our communities. In 2017 we announced our intention to sell 1,200 hectares of land we no longer use. This could allow for the development of up to of 1,000 houses.

Championing social mobility in our region, our sector and the UK

Around a third of government's social mobility 'cold spots' are in our region; that's more than any other water company. As an employer of over 5,750 people, we have a significant opportunity to improve social mobility as well as contributing to the resilience of our region by developing skills.

We believe that being an inclusive employer is essential. Diversity brings different ideas and perspectives which improve how we work as a company and enable us to understand and meet the needs of the communities we serve.

Approximately 33% of our 2016/17 apprenticeship scheme intake came from social mobility 'cold spots' within our region and at least one third of schools targeted for our apprenticeship scheme are in those areas. We've removed the requirement to state exam grades and university attended from our graduate scheme applications to remove potential barriers and have already successfully increased our intake of students from non-Russell Group Universities.

We've also made a significant change to our recruitment process for new talent, moving from competency based questions to 'strengths-based'. This change in focus allows us to highlight talented candidates who might not have had the breadth of experience or support in job applications that others have benefitted from.

We're ambitious that through our recruitment processes we can do even more to support social mobility. We're a founding member of the social mobility pledge: socialmobilitypledge.org. This pledge represents our commitment as an employer to go even further, and will focus on three key areas:

- **Partnership -** we'll partner with schools or colleges to provide coaching through quality careers advice, enrichment experience and/or mentoring to people from disadvantaged backgrounds or circumstances.

- **Access -** we'll provide structured work experience and/or apprenticeship opportunities to people from disadvantaged backgrounds or circumstances.

- **Recruitment** - we'll adopt open employee recruitment practices which promote a level playing field for people from disadvantaged backgrounds or circumstances.

Ranked 20th overall, we're also the only water company to feature in the Social Mobility Index and the highest placed utility company.

Once employed, we also know that our people not only drive our business, but also become part of the skills base in our region. To build on this, we're reinvesting outperformance achieved in this AMP in a technical academy, a centre of excellence that will enable us to have the most technically

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skilled workforce in the industry. Borrowing from world-wide examples, including Singapore, we aim to create a sector-leading assessment and coaching practice for water and waste competencies.

A global outlook

We believe that our responsibility extends beyond the bounds of our geographic region. For example, we've been a long term supporter of WaterAid since its inception in 1981 - in fact we raised over half a million pounds for the charity over the last two years, which is the equivalent to over 23,000 people being provided with clean water. We believe our continuing partnership with WaterAid can make a significant impact to the global priority to provide clean water and sanitation to those most in need. Over the last four years, we've extended our charitable activity to include Comic Relief and Sports Relief, for whom we provide fundraising call centres.

We've also been signatories of the UN Global Compact since 2004, and are committed to contributing to the UN's sustainable development goals (SDGs).

Our organisation and this business plan are aligned to the UN's sustainable development goals...

1 NO POVERTY

Targeting water poverty with a challenging performance commitment to reduce the percentage of customers who find their bills unaffordable by 47%.

4 QUALITY EDUCATION

An ambitious schools programme, bringing to life the world of water, with an educational experience co-created with teacher and school children. Committed to developing new talent through our award winning graduate and apprentice schemes.

5 GENDER EQUALITY

A gender pay gap of just 2.4% and a strong record of women in senior executive and non-executive roles.

6 CLEAN WATER AND SANITATION

Our most fundamental activity – see our good to drink and water always there outcomes - with £0.5 million raised for WaterAid in the last two years – helping to provide clean water and sanitation for 23,000 people worldwide.

7 AFFORDABLE AND CLEAN ENERGY

38% of energy generated from renewable sources (regulated and non-regulated companies) on track for 50% by 2020. We are also committed to electrifying our fleet.

8 DECENT WORK AND ECONOMIC GROWTH

Committed to tackling social mobility coldspots in our region. Creating a technical centre of excellence in our region. A zero tolerance approach to modern slavery, working closely with charity Hope For Justice to eradicate it in our business and supply chain.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Double the funding for innovation in this five year period, with an open innovation approach that nurtures the best innovative ideas worldwide.

10 REDUCED INEQUALITIES

Increasing our BAME representation with 15% of apprentices, 21% of new starters and 34% of graduate roles.

11 SUSTAINABLE CITIES AND COMMUNITIES

Creating new green spaces and £0.6m of natural capital in urban areas with our new green communities commitment.

13 CLIMATE ACTION

Reducing our carbon emissions year on year and we have held the Carbon Trust Standard since 2009 in recognition of this achievement and our carbon management processes.

15 LIFE ON LAND

Committing to the equivalent of 1,500 football pitches of biodiversity improvements.

Giving more back with a community dividend

As well as all the activities and performance commitments detailed above, we want to go a step further and create a new fund, a community dividend building on our existing employee volunteering and Trust Fund donations plus 1% of our profits. Working with an advisory board, including representation from our stakeholders and customers, we want to make a real difference in our communities by building a lasting legacy, helping our most vulnerable customers, enhancing the environment and building social infrastructure.

More details on our community dividend, our customer dividend and dividends for investors are included in our Chapter 18: A company you can trust.

17.4 THE COMMITMENTS WE'RE MAKING

Our performance commitments are designed to hold us to account – ensuring that we deliver the positive difference we've promised to our customers, and make good progress towards our outcomes. Some of the performance commitments that contribute to this outcome (for example, green communities) also contribute to other outcomes (for example, wastewater safely taken away) – and we've explained them in more detail under each respective outcome earlier. For this outcome, we're also proposing a further performance commitment relating to our education programme, using a measure which is bespoke to us.

Our AMP6 customer education programme has given us much greater insight into how to inspire our customers to change their water and sewer use. And given the extra focus we're placing on education in the coming five years, we want to retain a measure in this area, but also to evolve and develop it, to make it even more stretching.

Our current performance commitment has a cumulative target of engaging 700,000 people over the five years, with around 575,000 engaged via schools activities. UKWIR's 2009[1]study of conversion rates for water efficiency activities suggests that 18% of these 575,000 students should have committed to changing their behaviours (103,500). The current commitment focuses on inputs (the number of people receiving 20 minutes of face to face training) and covers the full spectrum of our education activities including, for example, working with fast food outlets or customers in blockage hotspots.

Compared to our existing commitment, our new performance commitment 'inspiring our customers to use water wisely' has a much greater focus on schools (although not exclusively, given the 'pester power' potential of school children to influence their families' behaviours when they return home). In addition, it uses outputs that measure the number of people who commit to change, rather than number of people reached – making it more stretching to deliver. For example, we've stretched ourselves to increase the number of commitments to behavioural change by 50% (155,250). At 27%, this would be a higher conversion factor than any of the activities in UKWIR's report.

PROPOSED TARGET	Incentive type	Unit	Current	2020 forecast	2025 target	2045 target
Inspiring our customers to use water wisely	Financial	Number	-	0	155,250 (cumulative)	Ongoing

[1] Estimating the water saving from baseline water efficiency activities (UKWIR, 2009)

18 A COMPANY YOU CAN TRUST

Because a better service and lower bills alone aren't enough.

18.1 SUMMARY

It's our vision to be the most trusted company in the sector, and while delivering a great service is vital to this, we know our customers expect more. They rightly want us to treat them as individuals, especially when things go wrong; they also expect us to play a part in local communities and society. But even then, if we are to earn customer trust and confidence in what we do, we must go further and prove that we're a company that does the right things, for the right reasons, and that our customers' interests are at the forefront of everything we do.

The latter is critical to addressing the concerns some customers have with business today and why re-nationalisation has resonated with them. Our deliberative research on this issue has helped us to better understand what it means to be a socially responsible public utility from our customers' perspectives and what drives the scepticism some customers have towards 'big businesses'. One message came across very clearly – that our customers perceive irresponsible companies to be those that pursue profit above all else. And while those that we asked didn't readily think of Severn Trent in this way, to earn our customers' trust we need

to continually prove that, while profit is important to help our company function, it isn't the reason that we all come to work.

This outcome focuses on four pillars that are essential to earning our customers' trust:

- our Board's leadership and governance, and their commitment to acting fairly to all our stakeholders;

- our culture, values, and behaviours – whereby every employee takes accountability for doing the right thing;

- engaging with our customers to build a stronger mutual understanding of each other; and

- aligning incentives for investors, customers and our people.

And it concludes with the proof of our intent – that everyone receives their fair share of our success. We've not created any performance commitments for this outcome, but instead have created a new community dividend.

18.2 BOARD ACCOUNTABILITY FOR OUR PURPOSE, CULTURE AND VALUES

Our Board sets our strategy and is responsible for ensuring that our culture and values support the privileged role we play as a largely monopoly service provider of an essential public service.

Defining our purpose in a way that motivates our people

We believe that a company united by a social purpose will ultimately deliver more for all its stakeholders. So in 2015 we spent time developing a new 'strategic framework' that looked far beyond being a company that keeps its customers

happy and makes money for its investors, and better brought to life what we actually do – much more so than our existing 'being the best' mantra.

The final framework took over three months to develop, through many iterations and following extensive consultation with our people. But what we learned from this period of consultation was important:

- the real sense that our people come to work **to serve** our customers and communities;

- the fact that they wanted to ensure that generations to come will benefit from what we do today, just as we were benefitting from the foresight of our predecessors – **creating a legacy**; and that
- **earning the trust** of the people we serve should be our real aspiration, not 'being the best'.

By redefining our purpose in this way, we also wanted to recognise the importance of establishing and nurturing the right culture, supported by the right behavioural values. These values are driven from the very top of our organisation and they're captured in our strategic framework, which includes our purpose.

Our strategic framework

Our purpose	To serve our communities and build a lasting water legacy				
Our vision	By 2020 to be the most trusted water company delivering an outstanding customer experience, the best value service and environmental leadership				
Our strategy	Transforming service today, driving growth, and shaping our industry for tomorrow for the mutual benefit of our customers, communities and investors				
How we do it	Embed customers at the heart of all we do	Drive operational excellence and continuous innovation	Invest responsibly for sustainable growth	Change the market for the better	Create an awesome place to work
Our markets	Wholesale operations and engineering	Household customer services	Business retail and operating services	Green energy	New water markets
Our values	We put our customers first	We are passionate about what we do	We act with integrity	We protect our environment	We are inspired to create an awesome company

Good corporate governance is part of our 'contract' that underpins public trust

Our Board is also responsible for making sure that the necessary financial, technical and human resources are in place to meet our licence conditions, other legal obligations and strategic objectives.

Our governance structure explains the respective authorities and matters reserved to our Board, its committees and to the executive. We're also very clear about the matters reserved to our Plc holding company so that the licensed holder, Severn Trent Water, has meaningful control of its business, with freedom to set all aspects of its strategy.

Our governance framework includes a Charter of Expectations, which is published on our website. This charter articulates our expectations of the Board and all of the key roles within it, including key competencies and behaviours. There's an explicit division of responsibilities between the independent Chairman, who is responsible for running the Board, and the Chief Executive who is responsible for running the business.

Composition

Our Board consists of eight members, six of whom are independent, as prescribed by the criteria set out in the UK Corporate Governance Code. Our directors are recruited using an independent agency which has signed up to our voluntary Code of Conduct on gender and BAME diversity, and best practice. The structure, size and composition of the Board is kept under review by the Nominations Committee to ensure that it has a wide range of skills, knowledge, experience, and diversity.

Our current Board members bring a wide range of different areas of expertise: from international and regulated businesses; to financial and general management; and from the oil and gas industry to the insurance, soft drinks, automotive and healthcare sectors.

While we've made great strides in promoting female representation on our Board and Executive Committee (37.5% and 40% respectively), the Board remains focused on promoting broader diversity and creating an inclusive and diverse organisation in line with the Parker and McGregor-Smith reviews. We were the joint highest ranking FTSE 100 company (for the proportion of women on Boards) in the first Hampton-Alexander review of FTSE women leaders (2016).

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Performance reviews

Every year, the performance of the Board and of each individual director against these requirements is reviewed and disclosed in detail in our governance report – and their performance is a key factor in deciding whether directors are proposed for re-election. The continuing independence of our non-executive directors is also specifically assessed as part of this review.

Every third year, the performance review is carried out by an independent third party. The assessment of Board effectiveness is not a tick box exercise. This year, we agreed, for example that some of our directors who were not members of the Treasury Committee needed more training on the financing of our business.

The conclusion of the last independent review, carried out by Manchester Square Partners in 2018, was that:

> "The Board provides strong leadership and support to the business. All Directors have a passion for the business and there is a sense of creating a legacy for those who come after us."

Severn Trent governance framework

Board of Directors

Responsible and accountable for the long term success of the Severn Trent Group; ensuring Severn Trent delivers the Group's strategic objectives whilst operating to the highest standards of corporate governance in meeting its obligations to all stakeholders.

Board Committees

Nominations Committee

Keeps the structure, size, composition and succession needs of the Board under review and assists the Board on conflicts of interest and independence issues.

Audit Committee

Assists the Board in discharging its responsibilities for the integrity of the Company's financial statements, the assessment of the effectiveness of the systems of Internal Control, Risk Management and scrutinises the work of the Internal and External Auditors. It also reviews the adequacy of the Company's whistleblowing arrangements.

Corporate Responsibility

Committee Provides guidance and direction to the Company's Corporate Responsibility and Sustainability programme based on Severn Trent's values and reviews the Group's non-financial risks and opportunities.

Remuneration Committee

Determines the Company's policy on the remuneration of Executive Directors, other members of the Executive Committee and the Chairman of the Board.

Treasury Committee*

Provides oversight of treasury activities in implementing the policies, funding and treasury risk management plan including: the measurement and management of risks in respect of interest rates; funding; counterparty credit; liquidity and treasury operations; funding proposals; relationship with rating agencies; debt investor relations; bank relationship management; and treasury internal controls.

Severn Trent Executive Committee ('STEC')

Oversees the development and execution of Group strategy, with accountability for achieving financial and operational performance.

CEO – Liv Garfield

Delegated responsibility for the development and implementation of strategy and overall commercial objectives, and responsible for the day-to-day management of the business and the communication of Board agreed objectives to employees.

Executive Sub-Committee

Disclosure Committee

Executive Sub-Committee overseeing Severn Trent's compliance with its disclosure obligations, considering the materiality, accuracy, reliability and timeliness of information disclosed and assessment of assurance received.

Governance Framework Foundations

- Matters Reserved to the Board
- Terms of Reference for Board Committees
- Charter of Expectations

- Doing the Right Thing – the Severn Trent Way
- Group Authorisation Arrangements
- Conflicts of Interest review

- Board strategy days
- Training
- Board Effectiveness Review
- Policies and procedures
- Diversity/independence

Corporate Governance Code

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Holding ourselves to account to *all* stakeholders

We've adopted the UK Corporate Governance Code as it applies to FTSE 100 listed companies. However, given our responsibilities as a private company providing a public service, and the privileged role we play in improving communities and protecting our environment, we intend to go beyond the UK Corporate Governance Code by providing more detail in our annual performance report to show how our social purpose is at the forefront of every decision, right across Severn Trent, by:

- putting our customers at the heart of everything we do;
- evaluating the likely consequences of our decisions for the longer term;
- understanding the interests of employees;
- taking into account the need to foster relationships with suppliers and others;
- appreciating the impact of our operations on the environment and our communities; and
- ensuring that we adhere to the very best standards of business conduct, to maintain a good reputation.

The annual performance report will also include an explanation of how we've acted fairly to *all our stakeholders* - while the law only requires that we act fairly to our *shareholders*.

Listening to the voice of stakeholders

Every year, the Board assesses whether our culture matches our social purpose. To make this assessment, the Board draws on insight from across the business and wider community. For example, the Chair of our Water Forum, the Chair of our regional Consumer Council for Water (CCWater) Committee, the Chief Inspector of the Drinking Water Inspectorate (DWI) and Directors of the Environment Agency (EA) are regularly invited to meet with the Board and share their views. This, combined with their own attendance at customer research sessions, allows Board members to hear first-hand how we're responding to the expectations of customers and wider society.

The Board also ensures that our employees' voice is heard, through channels including independent surveys, our employee forum and our quarterly company forum (both include trades unions), and regular operational site visits.

Taking positive action

Where the Board identifies issues, it takes corrective action. In the early-mid 2000s Severn Trent's well known problems with misreporting caused the Board to lead a significant journey of cultural change. While our overall governance structures were in place there was a lack of Board leadership - and in practice governance was not working effectively.

We created a unified Board – in agreement with Ofwat – to govern Seven Trent Plc and Severn Trent Water – as clearly the existing governance arrangements had failed. The Board had become too far removed for the core business and the separate governance of the Severn Trent Water Board had been weak compared to that exercised at the Plc level. While the Severn Trent Water Board included independent non-executive directors, they had proven to be ineffective in that capacity.

And more recently the Board has also led other interventions, for example:

- In 2015 the Chief Inspector of the DWI told the Board that she did not think that we were listening hard enough to its concerns – the Board oversaw the transformation of our culture and management processes as well as investment of over £50m in water quality initiatives – contributing to a 12% reduction in water quality complaints in 2017.
- Recognising the need to strengthen our corporate and financial resilience, the Board established a Treasury Committee in 2015 to oversee our treasury operations and detailed assessments of our financial viability.
- In response to continued variability in customer experience, the Board modified the remuneration framework and introduced a new measure of a 15% reduction in customer complaints for the 2018/19 annual bonus scheme.

18.3	EMBEDDING THE RIGHT CULTURE AND VALUES

Our code of conduct is no longer a dry corporate document, but a way of operating.

Doing the right thing quite rightly starts at the top of the company, but it's also the responsibility of every single person at Severn Trent. We're all accountable for demonstrating our values every day, in everything we do. It's important to us that

everybody who places their trust in us understands that we will consistently be 'Doing the Right Thing – the Severn Trent way', the title of our Code of Conduct.

Every day our people have to make choices about what they do and how they do it. Most of the time it is clear what the right thing to do is, whether it is about doing what's safe,

doing the right thing for customers, doing what is right ethically – and indeed what is right legally.

But sometimes it's not so clear, and Doing the Right Thing – the Severn Trent way, by detailing the principles we work by, helps to guide our people through those grey areas when there are no legal obligations or hard rules in place. Given our history, we're acutely conscious of the importance of our behaviours – and we're determined not to be complacent in any way.

So we've firmly embedded the code and our values in our business. Extensive workshops were held right across the business to give people the confidence not to tolerate breaches in health and safety or reporting – and to create the real sense that people should not feel compelled to do anything that they felt was inappropriate.

For our wider community, we also seek to ensure we set the right example, for example by:

- helping the Staffordshire Fire Service fight the recent Moorlands fires;

- hosting Midlands Diversity events for the CBI; and

- providing training on the menopause to 50+ other organisations.

We also want to be recognised as a role model for the water sector by setting the right example in terms of behaviours. In recent times we've supported this aim by:

- deploying our incident team to help Affinity Water manage a major incident in 2016;

- playing an active role in the provision of mutual aid – particularly given our geographic location;

- providing a UV disinfection unit to United Utilities during its Franklaw event; and

- helping to drive best practice in relation to water quality (at the DWI's request, in the case of Southern Water) – and we have just been asked by the EA to support those companies achieving 2* status in their environmental performance assessment.

18.4   ENGAGING WITH CUSTOMERS TO BUILD UNDERSTANDING AND TRUST

Our industry has long worked on the premise that we can have a 'trusted silent partner' relationship with our customers. But with rapid changes in how our customers engage with their other service providers, and with scrutiny on our industry that typically only tells one part of a much wider story, it's difficult to see how this could be sustainable.

As we've engaged with our customers throughout the development of this plan, they've given us some very clear messages about their expectations for the functional aspects of the service we provide. But through hours of deliberative research, we've also heard something more nuanced from them – that the bigger picture of what we do, the reasons we do it, and the contribution our customers themselves make via their bills, is often lost. This suggests we have huge untapped potential to create value for our customers, and the encouragement we take from our conversations with customers is that they'd like this to change as much as we would.

It's important that we try and change this relationship in a balanced way. It is clear that, for many customers, as a company we are expected to operate 'at arm's length' on a day-to-day basis – none of us are usually interested in self-serving communications from the companies we buy services from. But we can help our customers to get more from their service and to get a better sense of value for what they pay for, by providing them with the right information, at the right time, in a way that works for them.

Our plan will go a long way to changing this. For example, we are significantly expanding our education programme, which will engage and inspire the next generation of water users. We are also building on our successes on behavioural change in other areas of our business, including both commercial and household customers in sewer blockage hotspots. We've also established a 15,000 online customer community panel, Tap Chat, to engage on a broad range of topics, from managing risk to saving water, helping us to 'test before we change'.

However, we are not waiting until 2020 to respond. This summer we launched our most extensive campaign to respond to our customers' appetite to learn more about water and to engender a sense of shared responsibility for making the very most of it. This campaign, Wonderful on Tap, includes social media, outdoor media and our first TV adverts for over a decade.

We cannot earn trust if we only engage when we want to talk

Our engagement should not be limited to the price review. Every single contact and touchpoint is an opportunity to learn more about our customers and listen to what they're telling us. We've built a number of formal and informal channels across all levels of the business, from our Board to operational teams to engage with customers.

Our formal channels include our own Voice of the Customer programme, which uses a number of channels including our 'rant and rave' survey Pipe Up. This survey is sent to every customer after they contact us by phone or email, so we can better understand their experience and improve our performance. We also use this tool following the completion of a job – and after incidents, so that we can gain better insight into our performance.

In addition, we track our customers' perceptions across a range of metrics on a quarterly basis:

- trustworthiness – how trustworthy we are to our customers;

- trust in drinking water – the extent to which customers trust the drinking water we provide;

- value for money – how customers rate the water and sewerage services they receive from us in terms of value for money;

- affordability – the extent to which customers agree that their water and sewerage charges are affordable; and

- overall satisfaction – overall customer satisfaction with Severn Trent.

Our performance across these metrics is illustrated in the following graph.

Customer perception trends – four-quarter moving average
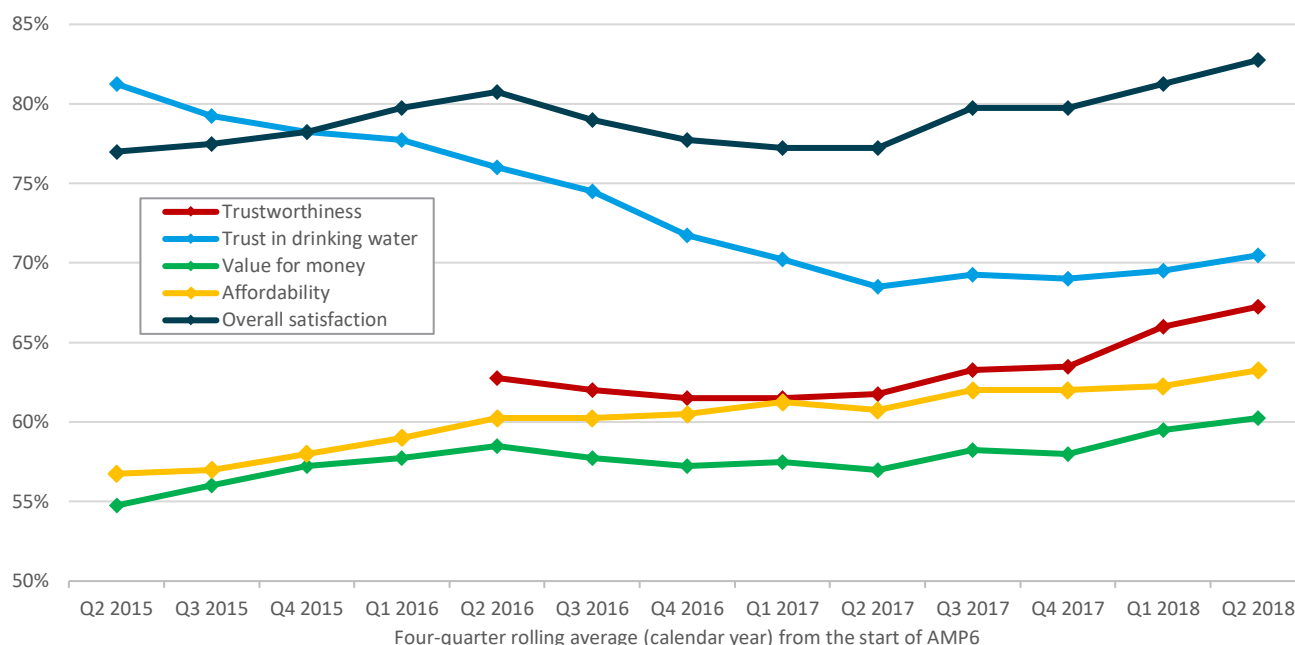
This insight shapes the decisions we make. For example, the tracker shows that, since the start of AMP6, we've improved our performance on all measures – apart from trust in

drinking water, despite a year-on-year reduction in drinking water complaints. We responded by launching our Wonderful on Tap campaign.

18.5   ALIGNING INCENTIVES – PUTTING CUSTOMERS FIRST

The fourth pillar of being a company you can trust is ensuring that we align the incentives of investors, customers and our employees so that we focus on the things that matter most to our customers.

We do this by:

- aligning our employee and executive remuneration to customers' interests; and

- embracing the ODI framework to align investor and customer interests.

All employees share in the success when we deliver for customers

To realise the full benefit of the ODI regime, it's critical that our remuneration framework, for *every* employee, is directly linked to customer performance.

In 2015, we introduced a company-wide bonus scheme which makes sure that all employees share in and receive recognition for the successes of the company. The scheme aligns our entire workforce behind common objectives and is based on performance against four measures – ODIs, customer experience, health and safety, and profit.

In the first three years of this AMP we spent £35m on employee bonuses, and we're projecting total spend of £60m by 2020. The ongoing success of this scheme in driving better customer outcomes means that we intend to retain it in AMP7.

Our executive remuneration is transparent and focused on the right outcomes

Our deliberative research with customers confirmed that executive pay is an emotive issue – particularly if it is perceived as unjustified.

Our remuneration policy and outcomes are amongst the most transparent in our sector. Every year we publish the details of executive remuneration, including total remuneration and performance against target. Our two performance schemes – the annual bonus and long term incentive plan (LTIP) – align the interests of our executive with those of customers and the long term success of the organisation.

Our annual bonus scheme currently comprises six components – for the most recent year, less than half of the bonus was based on profitability (47%), with the remainder being against customer ODIs (20%), the health, safety and wellbeing of our people (8%) customer experience (8%), (customer orientated) personal objectives (7%) and non-regulated performance (10%). From any executive bonus awarded, 50% of the total value in any year is awarded in shares but only given to the executive three years later.

Our long-term incentive plan is designed to capture the core drivers of performance – totex, ODIs and financing costs. It's based on RoRE performance against the base return over three years. To reinforce the long-term nature of this incentive, awards are made in shares after the three year period, with a further holding period of two years thereafter before they can be sold, even when an executive has left the company.

We recently identified an opportunity to further improve the long term incentive plan by setting stretch targets based on delivering upper quartile RoRE performance across the sector. This change, along with our wider executive remuneration, was approved by shareholders at our public Annual General Meeting on 18 July. We note the following comments from one of our investors, Ashley Hamilton Claxton, Head of Responsible Investment at Royal London Asset Management:

> "We are voting in favour of Severn Trent's executive pay this year. We had positive engagement with the company on changes to pay and we are pleased that the Board was responsive to our feedback. While we recognise that pay in the water utilities sector is a divisive issue, and the sector has some way to go to restore stakeholder confidence, Severn Trent has struck the right balance between pay and performance. We are confident that the management team is well positioned to address recent concerns expressed by the regulator, Ofwat, about customer service during this winter's extreme weather conditions."

The long term nature of our remuneration framework is underpinned by a requirement that the CEO must hold the equivalent value of 300% of salary in shares, and the CFO 200%. This strengthens the link between executive remuneration and the long term performance of the company. Both performance schemes operate with malus and clawback provisions, meaning that any award already made can be taken back if new information comes to light.

Our remuneration framework aligns to our strategic framework

Strategic priorities		Embed customers at the heart of what we do	Drive operational excellence and continuous innovation	Investing responsibly for sustainable growth	Change the market for the better	Create an awesome place to work
Annual bonus scheme	Profit before interest and tax		✓	✓		
	Customer ODIs	✓	✓			
	Health and safety		✓			✓
	Customer complaints	✓				
	Personal objectives	✓	✓	✓	✓	✓
Long Term Incentive Plan	Return on Regulated Equity (RoRE)	✓	✓	✓		

Embracing ODIs

At PR14, we embraced the ODI regime more than any other company. We adopted strong in-period incentives and limited the use of dead-bands, caps and collars which would otherwise undermine the incentive to deliver for customers. Consequently, we have the highest powered incentives in the sector – when we've delivered stretching performance we've been rewarded, and similarly, when we haven't delivered to our customer expectations we've been penalised.

We recognise that sometimes there are grey areas around how incentives should be applied. Which is why it's important that our values and behaviours help us work to the spirit, and not just the letter, of the framework. For example: on leakage, we've only counted reductions in real leakage, despite the option of including improvements associated with better data; and we did not take any of our ODI reward that we had earned in 2015/16 for interruptions to supply (£1m), given our customers had experienced two significant incidents during that period.

18.6 FAIRNESS, BALANCING, AND SHARING LONG TERM SUCCESS

The four pillars discussed above help promote a culture that earns the trust of our customers. But showing our intent is not enough, we must also prove it by ensuring everyone enjoys their fair share of our success.

A track record of fair and balanced decision making

In the current climate, concerns are increasingly raised about some companies' tax policies, executive remuneration, high levels of debt and dividends. We pride ourselves on our track record across these areas. We do not operate any offshore tax facilities and our executive remuneration policy is amongst the most transparent in the sector, with annual public reporting and a very strong link to customer outcomes.

With regard to concerns about the levels of debt held by some companies – particularly in light of recent high profile corporate failures such as Carillion – our position is clear. We place great importance on having a strong equity cushion, which is critical to maintaining financial resilience. This is why we have always operated at the notional level and have publicly advocated the need for a sustainable approach to financing in our 'Changing course through sustainable financing' report (2012).

We've not engineered higher returns through mechanisms such as securitised structures, shareholder loans or highly geared structure. Instead, our returns reflect outperformance on costs, services and financing, all of which ultimately benefit customers through lower bills and/or higher service levels. And when we outperform, we've also demonstrated a willingness to reinvest rewards on behalf of customers. For example, we've reinvested around £220m of totex efficiencies this AMP and a similar amount in the previous AMP.

AMP7 dividend policy

Our dividend policy is based on our understanding that in order to deliver successful outcomes, all parties must share in success. This means customers benefiting from lower bills and better services, investors earning a reasonable return on the £4bn they've contributed, and employees being rewarded for their hard work.

We've long considered the factors identified by Ofwat in its PR19 methodology when setting our dividend. For example, we share outperformance through lower bills and additional investment, reward employees and share the benefits with investors. And we've been able to do this while maintaining our gearing and delivering strong financial resilience.

Our new dividend policy builds on this approach - but also introduces a new community dividend.

Our purpose is to serve our customers and communities

Over the past three years, we've made significant progress in serving our customers – by reducing costs, investing in extra services and supporting lower bills for the future. For example, customers experience 6,000 fewer sewer flooding incidents today compared to 2015.

Despite this, we want to do more to truly serve our communities.

We operate across some of the most deprived regions in the UK. Many of our customers struggle to pay their bills. As one of the largest companies in the region, we've both the tools and the opportunity to make a genuine difference.

That's why we've established a new community dividend. Funded from our investors, this will run alongside our customer dividend, which shares the benefits of outperformance. Our aim is to make a real difference in our communities by building a lasting legacy, helping our most vulnerable customers, enhancing the environment and building social infrastructure.

Comprising employee volunteering, donations to the Severn Trent Trust Fund and 1% of profits, this community dividend could be worth around £7m a year.

We're establishing an advisory board that will include representatives from charities, government and business – and importantly, our customers themselves. This group will help inform how our contributions can maximise the positive impact on the community and to encourage other bodies, notably business and government, to match our funding.

"I think that it's great that they want to give some of the profits back, it shows they're thinking about people in the community."

(Customer, Mansfield)

To support our new community dividend, we'll provide much greater transparency about how we deliver for all our stakeholders. This includes adopting four core principles that guide how we make decisions about dividends.

- **Dividends will be fair and balanced** – customers should be able to see and understand how our dividend policy supports them – through both the sharing of outperformance and greater transparency. The community will benefit through greater focus on improving outcomes for vulnerable customers, the environment and social amenities. Investors should earn a reasonable return on the £4bn they contribute so that we can continue to make improvements to our services, consistent with the 5% base return identified by Ofwat.

- **Dividends will be transparent** – our annual performance report will explain how our dividend is consistent with our commitments.

- **Dividends should promote continued outperformance** – it is in all parties' interests that we continue to outperform so we reduce bills and improve service levels. Our dividend policy will benefit customers, employees will feel rewarded and importantly investors will continue to challenge us to deliver the best long term result.

- **Dividends will support appropriate gearing** – for example, if we geared to a high level (70%) – although we have no plans to do so - we would share financing benefits from this structure with customers.

Our Board will consider paying dividends following our half year and full year results. In considering the dividend, the Board will have regard to:

- our dividend principles;

- performance across our obligations and customer ODIs; and

- results of our financial viability assessment, which takes into account scenarios such as increasing investment to manage large incidents.

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An attractive business for investors

The investment climate has changed. And shares in Severn Trent will only be considered an attractive proposition if we're recognised as a fair and balanced business that's sustainable for the longer term.

Many of our investors support and actively promote the need for fairness and balance. For example, Larry Fink, Chairman of BlackRock, our largest shareholder, recently wrote the following to our CEO, Liv Garfield:

> "Society is demanding that companies, both public and private, serve a social purpose. To prosper over time, every company must not only deliver financial performance, but also show how it makes a positive contribution to society. Companies must benefit all of their stakeholders, including shareholders, employees, customers, and the communities in which they operate."

Like customers, employees and broader society, shareholders today expect companies such as Severn Trent to be a positive influence in the lives of communities. We believe that our plan for PR19 demonstrates a fair and balanced approach to decision making that will help us deliver on these expectations.

Read more about how we're balancing the interests of our stakeholders in Chapter 22: Aligning risk and return.

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19   ACCOUNTING FOR PAST PERFORMANCE

We're committed to learning from our past performance – building on our successes and taking action where we need to improve – so we can keep delivering better outcomes for our customers in the future.

In this chapter we provide an overview of our performance in 2017/18, explain how we've reached our forecast positions for the close of the AMP, and give an early view of the impact of operating conditions in recent weeks (July and August 2018).

More detail on the points in this chapter is included in Appendix A5: Accounting for past performance, and our Annual Performance Reports.

19.1   A GOOD START TO AMP6

Every year we report on progress in our Annual Performance Report, so our customers and stakeholders alike can track how we're performing against the commitments we made in our 2015-20 plan.

As reported in our Annual Performance Report for 2018, we've made a good start to AMP6. The following chart summarises our 45 performance commitments into the eight areas explained in Chapter 9: Delivering outcomes for customers, and shows the strong performance we'd delivered in most areas in 2017/18.

Summary of performance in 2017/18

Some good improvements for customers

We made some good improvements for customers during 2017/18 – we've improved the quality of the water they received, reduced the risk of sewer flooding to their homes and gardens, and we improved the environment they live and work in. We've also worked with customers and stakeholders on building a greener future and helped our most financially vulnerable customers who were struggling to pay their bills.

But more to do

We recognised that some aspects of our performance were disappointing, particularly on our water service. This included supply interruptions and leakage, both of which suffered as a result of the freeze/thaw event in March 2018 (which is discussed further in Chapter 8: Securing long term resilience). Another area of frustration was the number of water treatment sites where coliforms were detected which rose from five to eight in 2017. We set out in our Annual Performance Report the steps we would take to improve our performance over the remainder of AMP6.

Embracing both rewards and penalties

We've been fully supportive of the incentives framework created by Ofwat. It provides a clear link between the levels of service we provide and the amount we charge our customers, and has encouraged us to think differently about how we work and to develop a sharper focus than ever on improving customer service.

We set ourselves more ambitious targets than most of our peers which, when coupled with the fact that we have material in-period revenue based incentives, means any failure to deliver results in higher and more immediate penalties than others. This is certainly evident when looking at the penalty we incurred for our 2017/18 supply interruptions

performance – it was significantly more than any other company would have paid for the same performance.

It is right that where we haven't met our commitments, we accept the penalty which returns money to our customers and re-focus our efforts to improve. The incentives framework has ultimately resulted in improvements across many areas of service for our customers, reflected in a net reward of around £120m to date (post tax). We've proactively volunteered to smooth the taking of the rewards to avoid extreme bill volatility.

19.2 FORECASTING PERFORMANCE FOR THE REMAINDER OF AMP6

We submitted a view of our expected performance for 2018/19 and 2019/20 – the final two years of this AMP – to Ofwat in July 2018. This formed part of our PR14 reconciliation submission and included forecasts for all 45 performance commitments for Severn Trent as well as the 11 performance commitments for Dee Valley Water that are relevant in Chester.

Our forecasts were overseen by our internal governance processes, which included scrutiny of delivery plans for each performance commitment at our weekly cross-company executive level oversight meetings. This established process has also been used to review performance during the prolonged hot weather this summer, and has proved critical in understanding and co-ordinating our response. We've triggered a number of activities including accelerating investment, establishing a focused incident team and suspending some routine activities to enable operational response to be prioritised. These activities are having an impact.

Given our commitment to transparency, we've highlighted below those metrics which have been materially impacted by the operating conditions in recent weeks. We've not updated the data tables given the risk of changing audited data at this late stage of the PR19 process.

WA1: Asset strategy – coliforms

We initially forecast five water treatment works failing their coliform limits for the calendar year 2018 against a regulatory target of less than six. Our performance across the summer has been disappointing, partly due to resources being redirected to support the hot weather action plan.

At the time of submission we have now recorded seven failing sites, failing our regulatory target and incurring a penalty of at least £926,000.

WB4: Number of minutes customers go without supply

Our performance commitment of 8.6 minutes is stretching and exceeded the upper quartile target of 12 minutes set at PR14. We were confident that we had plans in place to achieve our regulatory target of 9.4 minutes for 2018/19 and this was supported by our performance in the early part of the year (we were tracking at less than 2 minutes to the middle of June). We've had a difficult summer period with three large bursts, but we're aiming to return to our earlier trajectory for the remainder of the year. By doing so, we estimate that 2018/19 performance could be around 16 minutes.

SC6: Serious pollution incidents

We forecast two serious pollution incidents which was in line with our performance commitment. At the time of submission we have experienced four serious pollution incidents meaning we have missed our commitment. There is no financial penalty for missing this commitment.

Update on other performance commitments

The table overleaf identifies other commitments where our performance is likely to be impacted but the current impacts are less material and recovery plans are in place to limit the impact.

Performance commitments impacted

Performance Commitment	July Submission	September Submission	Reason
WA4: Catchment Management	21	18	The hot weather over the summer has significantly impacted the farming community and we expect this to impact on the level of positive engagement we've undertaken throughout 2018/19. As such we consider it prudent to revise our forecast to 18.
WB6: Asset Stewardship – Mains Bursts	5,394	5,800 – 6,500	As part of our recovery plans to limit the impact of the hot weather we have increased our find and fix activity to increase the water available for use. The revised position remains within the final determination target.
SC2: Category 3 pollution incidents	266	280 – 310	The hot, dry weather intensifies the impact of pollution incidents. Our current view is that performance is likely to be stable for category 3 incidents, well ahead of the target of 374. Category 4 incidents are likely to deteriorate below our target of 182 as discharges have a greater impact.
SC8: Category 4 pollution incidents	182	250 to 275	

2015-20 true-up

With our July 2018 submission we provided Ofwat with a draft of our appendix – Accounting for past performance – which detailed the impacts of the licence variation and summarised the adjustments required for Severn Trent to true-up the 2015-2020 period.

Summary of adjustments for Severn Trent England

Performance Commitment	RCV	Revenue
ODI	-	120.4
SIM	-	(18.9)
Totex Sharing	(111.4)	4.0
WRFIM	-	(35.1)
Retail True-Up	-	1.2
Land	(19.6)	-
PR09 Legacy	(141.1)	(5.6)

More detailed information on the impact of our change in licence, the reconciliation of financial true-ups such as the wholesale revenue incentive forecast mechanism, our approach to service incentive mechanism penalties, and details on the Birmingham Resilience Programme can be found in Appendix A5: Accounting for past performance.

20 SECURING COST EFFICIENCY

We've a proven track record in delivering sustainable efficiency. We know efficiency comes from finding new ways of doing things, making the right risk-based decisions based on high quality information, using commercial expertise drawn from other sectors, and making sure we secure a high quality outcome. Working with our stakeholders and suppliers is key – as is constantly challenging ourselves against a wide range of benchmarks.

In this chapter we provide an overview of how we're building on our strong AMP6 performance to deliver 13% efficiency in our PR19 wholesale plan and around 10% on our 2025 retail cost to serve. We'll explain how work is already underway on securing the right trajectory to achieve these ambitious targets.

20.1 AMP6 HAS PROVIDED A GOOD PLATFORM FOR SUCCESS

We're fully supportive of the incentive environment created by Ofwat. The clear link between the levels of service we provide, the efficiency of our delivery and the amount we charge our customers has encouraged us to think differently about how we work. It's encouraged us to develop a sharper focus on improving customer service and efficiency in a way we can sustain.

The efficiency we've delivered in AMP6 has enabled us to reinvest in our services

We included over £400m efficiency in our PR14 plan (representing a 7% saving on our AMP5 cost base), with around £390m in the wholesale price controls. We knew we'd need to do things differently to achieve the required cost savings including:

- removing waste from our processes through the application of well-established approaches and tools such as lean manufacturing and Six Sigma;

- taking the full benefit of investments made in AMP5 including SAP (our Enterprise Resource Planning system);

- using smarter technology to reduce waste by proactively identifying potential issues before they became problems;

- becoming more energy efficient and generating more of our own energy; and

- working with our supply chain partners to identify innovative solutions.

Having adopted this mindset throughout the company and our supply chain, we're set to deliver a further £480m of cost savings. These have been achieved by delayering the organisational structure across the whole company, driving further contracting efficiencies on our capital programme, identifying new ways of doing things to operate more effectively and making more of the totex framework to identify optimal solutions.

The £870m AMP6 efficiency reported in the Annual Report and Accounts (ARA) compares how we have performed relative to our AMP5 costs at an appointee level. This has enabled us to be more responsive in dealing with issues as they have arisen, for example we've been able to reinvest in our assets to achieve the levels of performance we committed to our customers.

After adjusting for the above reinvestment, efficiencies already baked into our PR14 plan and further efficiencies applied by Ofwat, the forecast outperformance against our wholesale plan is £480m. This means we're on track to deliver around 3% outperformance. Within this, we expect wastewater will outperform by around 12% while water will be 7% above the final determination. While we've driven efficiencies in both services, we've recognised the need to make more service delivery improvements on our water service.

Excluding depreciation, which is the result of the additional investment we've made to improve customer service, we have cemented our upper quartile (UQ) position in retail. We entered AMP6 in a mid-ranking position and we're on track to generate 15% efficiency by 2020 (on a like-for-like basis with our 2015 average cost to serve). Management of bad debt has been a key focus and strong performing area for us for a number of years through constant effort and investment.

20.2   BUILDING EFFICIENCY INTO OUR AMP7 PLAN

Our PR19 plan across the wholesale price controls reflects an efficiency of 13%. Within this, on botex (base operating expenditure, above and below ground maintenance), we are projecting to deliver an 8% real terms cost reduction on the efficient benchmarks set by Ofwat as part of the PR14 process. Our wholesale efficiency will need to offset 6% real price cost pressures from increases in energy prices, rates and construction labour costs driven by the demand for skilled workers from a number of large scale projects such as HS2.

Our wholesale botex delivers an 8% real terms cost saving against the PR14 benchmark

At PR14, Ofwat developed a set of econometric benchmarking models in order to derive a baseline view of efficient costs for each company. Ofwat used the results of this modelling to apply a tough efficiency challenge, setting its baseline view of costs in line with UQ performance across the sector.

For PR19, we've cross-checked the scale of planned efficiency improvements against the PR14 benchmarks for efficient cost. For base totex - which accounts for more than 60% of our total expenditure – we are proposing a level that is 8% lower in real terms than the efficient benchmark Ofwat identified at PR14 across wholesale water and wastewater services.

This is a substantial improvement, and we think the scale of the reduction is reflective of the levels of drive and ambition we continue to apply to improving our cost efficiency. In practice, though, this understates the extent of the efficiency gains that our PR19 plan provides. The substantial cost efficiency improvements in our PR19 plan sit alongside much more stretching performance commitments we're delivering for our customers. Given this, the comparison with PR14 efficient benchmarks provides a very conservative view of the improvements in value for money for our customers that our PR19 plan achieves.

Our PR19 efficiency is in line with Ofwat expectations

Ofwat has been working with KPMG to look at the potential for further efficiency savings within the sector. KPMG presented to an industry workshop in March 2018, suggesting a headline efficiency challenge of between 1% and 3.7% per annum for PR19.

Our wholesale efficiency of 13% (2.6% per annum) is well within this range. Even after allowing for real price effects of 6%, the net efficiency of 7% remains within the range – and this is before we factor in the impact of moving from RPI to CPIH inflation. The latter is being used for PR19 which effectively results in efficiency values appearing to be lower than in PR14 by around 1.7% per annum.

## 20.3   USING EXTERNAL BENCHMARKS TO SET OUR AMP7 EFFICIENCY

This section includes detailed information about the benchmarking of our costs. Because we're currently running a competitive tender process for our main supply chain partners for the next AMP, we've redacted this information to ensure we don't compromise either the integrity of the process or the value that we can secure for our customers.

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20.4   USING DIFFERENT LEVERS TO DELIVER AMP7 EFFICIENCY

Our AMP6 experience has shown us that there is no 'silver bullet' to delivering efficiency. We'll continue to use a number of levers to drive efficiency to deliver sustainable cost reduction. Each of these is explained in more detail below.
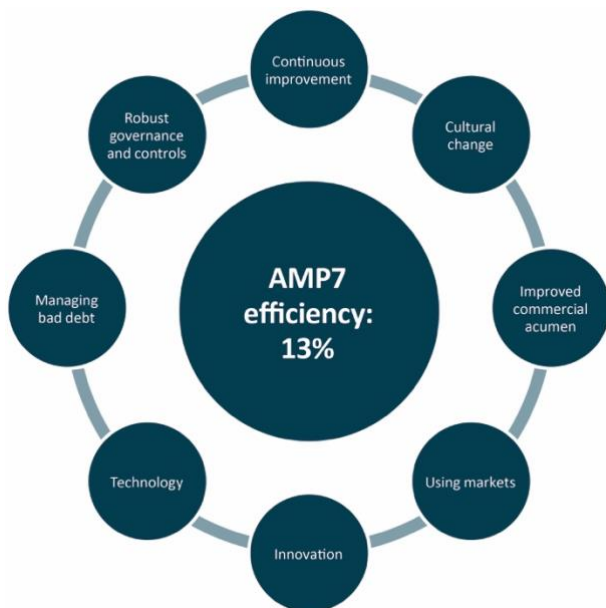
- customer segmentation through increased analytics will enable tailored customer journeys with appropriate payment channels of choice. Communications can be focused on certain segments ensuring customers receive only relevant communications;

- multi-skilling our contact centre employees means that customers will be able to discuss all enquires with one person rather than being passed between departments;

- committing to being an early majority adopter of new payment and contact channels will ensure customers can use new channels once established, i.e. without the teething problems that can come with new technology;

- working towards paperless billing and communications where it is a customer preference; and

- Automated Meter Reading (AMR) meters to be installed to future-proof against technology improvements and to deliver improvements around high usage alerts to customers.

Continuous improvement

Continuous improvement is a key part of our efficiency delivery framework across all of our price controls. To deliver sustainable cost reduction we need a consistent approach for improving on current performance and this will continue into AMP7.

Within the retail price control, our customers have told us that we achieve the appropriate balance between cost and service. To make significant reductions in cost to serve would involve activities such as off-shoring our contact centre or forcing mandatory self-service, neither of which our customers want. As such we will focus on a continuous improvement approach to customer experience in the following areas:

- through better online services more customers will be able to web self-serve (where they wish to) and our multi-lingual customers will be able to access online translations of bills and notices;

- new technology and automation of our back office activities will improve our customer experience by reducing handoffs and increasing the speed of customer resolution;

Within our wholesale price controls our continuous improvement activity focuses on five key areas.

1. Energy is such a significant proportion of our overhead base that it will continue to be a high priority area. Energy prices are forecast to rise by around 45% in AMP7 so this is an area where we can make significant savings. We plan to deliver efficiencies of over £80m through a combination of hedging, capital investments and incremental efficiency improvements at our treatment works.

    We are investing around £14m in a number of spend to save schemes which will deliver in excess of £5m per annum in AMP7. We'll continue to develop further spend to save schemes to support our AMP7 delivery. We invest in proactive maintenance and control of our most energy-intensive assets such as pumps and blowers – which keeps operating costs down and improves resilience at the same time. We will continue to invest in energy generation and on schemes that reduce energy consumption.

    We're also evaluating schemes that will expand our thermal hydrolysis process capability in bioresources, deploy energy storage technology to store cheaper electricity and move our vehicle fleet to electric vehicles.

We'll continue to take advantage of financial incentives provided by our energy suppliers and the National Grid. This includes reducing demand during the highest cost periods, carrying out fast frequency response and providing reserve generation capability.

2. We've introduced the concept of factory thinking for our wastewater plants. We're already pioneering urban catchment with a flagship project near Redditch. This trial is designed to build our understanding of operational models, product recovery, enhancing resilience and carbon neutral wastewater operations. As part of this project, a pilot effluent factory at our Spernal site has already led to:

    - £80,000 opex savings per annum from optimised chemical and energy use;

    - 28 hours operator time saved each week through process automation;

    - £300,000 additional income per annum from CHP (Combined Heat and Power) generation; and

    - improved operator engagement and morale by reducing reactive work.

    In AMP7, we'll scale this approach across our larger wastewater plants.

3. We're driving further insight and analytics into our cost base. We have developed site by site cost statements that allow us to benchmark ourselves internally and continually challenge our efficiency. By reviewing our distribution operating model within our water networks we identified 11% of our work volumes were driven by repeat work and so invested in a set of processes to increase first time resolution and reduce unit cost.

4. We're focusing heavily on proactive asset management as a means to reduce the associated opex cost of failure and reactive work, and to increase the life of our assets. For example, we have found that by replacing bottom bearings in our pumps we generate savings of c500% as a proactive replacement costs of c£7,000 compared to reactive costs of £35,000. We believe that there is a £30m totex opportunity from this type of analysis in AMP7.

5. We plan to optimise our support costs in line with the benchmarking analysis described earlier.

Cultural change

In AMP6 we established a new Group Commercial team with refreshed senior leadership drawn from a wide range of sectors. The team have introduced better procurement methods and ideas that have made a large contribution to our AMP6 success. They've also helped to establish a more commercial mind-set throughout the organisation – monthly supplier reviews with the commercial team and operations

are now commonplace and a fundamental part of ensuring we maximise the value from our contracts.

The drive to deliver upper quartile operational performance and cost efficiency has been a key strategic aim which has galvanised the whole organisation. We've developed training focused on outcomes and regulatory price controls and employee communications are focused on costs and efficiency.

We've also introduced an annual 'Challenge Cup' competition where employees are invited to submit ideas for cost efficiency. This provides an opportunity for people to put forward ideas with the promise of executive sponsorship and funding to put winning concepts into action. Successful projects include boundary box clips – an innovative solution to leak repairs that removes the need for footpath excavation. We estimate that the material and time saved in the repair will deliver an annualised efficiency of £0.5m as well as providing a 'right first time' solution for the customer with minimal disruption.

More examples can be found in Appendix 7: Innovation to deliver better outcomes.

Raising the bar on our commercial and procurement capability

We've improved our commercial and procurement activities by setting up a dedicated contract management function. We've restructured and retendered all our main contracts eliminating unnecessary costs, aligning performance objectives to our customers and simplifying our processes to be more effective in our interventions.

We haven't become complacent with our improved position. We've adopted a continuous improvement approach to find ways of further reducing costs and improving customer outcomes within the contract including:

- working with suppliers to take cost out rather than supplier margin erosion. Where we have multiple contracts with the same supplier we have removed duplication and centralised activity (e.g. traffic management, planning and scheduling);

- moving to a common IT platform to improve visibility and reduce the cost of double handling, saving c£0.4m per annum;

- using gain share mechanisms to support continuous improvement projects within the contract term; and

- refining incentive mechanisms annually to ensure that we are focused on efficiency and improving customer outcomes. We will continue to do this in AMP7 and learn from other industries.

We've some strong examples where partnership working has driven efficiency and improvements for our customers. For example, we recognised the need for a more strategic

relationship within our sewage commercial model contracts and so consolidated from two suppliers to one. The new partnership allowed technology changes and investment that has delivered £5m efficiency per annum, plus value for our customers in the shape of pollution reductions of 20%, internal flooding by 31%, external flooding by 28% and sewer blockages by 32%. Through close collaboration we have continued to evolve the contract to ensure that the supplier is incentivised to continually improve customer outcomes.

From a retail perspective, our partnerships with Local Resilience Forums (LRFs) have allowed us to provide the highest level of support to our vulnerable customers. During AMP7 we are extending our partnership working to charities and expert organisations to allow us to share information, receive advice and support vulnerable customers efficiently. For example we are already starting to work with a local deaf charity to develop our incident communications in sign language. We believe these creative solutions are a differentiator for us.

We've worked hard in AMP6 to collaborate with our suppliers to reduce their overheads in the servicing of our contracts and have done this in a responsible manner. For example, we've looked to offer improved payment terms and procure materials on behalf of suppliers to leverage our working capital and buying power where cash flow is an issue. We'll continue to reduce overheads within the supply chain in AMP7 through system investments and automation, improved ways of working and reduced cost of failure.

In AMP7 we'll use all of our experience from AMP6 and build on it. We'll continue to do things such as driving standard products so that we can design once and use many times, batching, collaborative planning and lean processes. Capital batching specifically presents a large opportunity to explore in AMP7. For example, we've batched work on rapid gravity filters (RGF) and have reduced the refurbishment time by 50% from c.30 days to c.15 days. Significant scope remains for more opportunities like this in AMP7.

We'll build on our learnings around smart programming. In AMP6 we have co-ordinated large programmes to allow sharing and more effective utilisation of similar specialist resources and equipment.

We are establishing a new supply chain for Year 5 of AMP6 and the whole of AMP7. The supply chain for delivery of c£2.5bn of capital investment in AMP7 is currently being secured through a commercial tendering process aligned to our AMP7 strategy. We'll also change the way we deliver larger capital schemes by moving to more in-house design, which will give us more control over efficiency through innovation and thoughtful design. We also believe it will enable us to design for outcomes more closely. We'll absorb the set up costs in AMP6 for our customers to enjoy the associated AMP7 savings.

We're changing the way we work with the supply chain, so that we work with a combination of tier 1 and tier 2 suppliers. We believe this will allow us better access to innovation deep in the supply chain and the ability to contract directly with the experts we need. This is a more complex operating model but we believe that in addition to innovation benefits, it will also spread supply chain risk for us.

We're also investing in our systems to give us additional control and visibility of our capital programme, as well as an improved understanding of our costs and the costs within our supply chain. We recognise the risk associated with the large scale change of replacing contract partners and have a rigorous governance process from our Board down, to ensure that risks are managed and mitigated effectively.

Use of markets

Where possible we use existing available markets to both minimise risk and drive efficiency. From an energy perspective we have a good track record of outperforming the market forward curves. We've partnered with an external energy specialist to strike the right balance between locking out risk and strategically managing our open forward positions to deliver savings vs the market. Based on the 2016/17 industry recent data share, our analysis demonstrates that we achieve the lowest £/Mwh within the sector.

We currently have limited exposure to commodity movements within our procurement contracts. Moving into AMP7 we're building knowledge and expertise of specific commodity markets that impact our unit rates and are using this to find more innovative ways to hedge risk and cost increases.

In terms of new markets, as described in the next chapter, we are strong supporters of a market for bioresources. The creation of the new bioresources price control at PR19 paves the way for market driven efficiency and innovation through better information, asset utilisation, capital allocation and improved operational efficiency.

Over the last three years our performance in anaerobic digestion and renewable energy production has been sector leading. In the 2017/18 Annual Performance Report we are ranked upper quartile for treatment costs and for overall sludge processing efficiency against other water and wastewater companies.

We've moved quickly to separate bioresources into its own operating unit in AMP6. We believe that moving early will allow us to capitalise on our current capabilities quickly. We plan to grow our bioresources activities by leveraging our core competencies, acquiring existing assets or constructing new assets, and participating in any combination of design, build, finance operate and maintain solutions for less efficient companies.

Innovation

Innovation is an integral part of our efficiency delivery method and is reinforced in our culture as an objective within our strategic framework. As described in the next chapter we have looked outside our sector to build what we believe is a best-in-class innovation model.

We commissioned a global benchmarking exercise to capture how leading companies (including Pfizer and Philips) approach innovation. We subsequently adopted a model that includes a team with specialist innovation management roles and is unique within the UK water sector. Throughout AMP6 we've delivered both cost efficiencies and customer improvements through leveraging innovation.

A good example of recent innovation delivery is a package plant installed at Stratford Milcote sewage treatment works in 2018. This creative solution delivered 40% in capital cost efficiencies as well as reducing operational costs by over 20% through reduced power and polymer usage. As well as introducing innovation that delivers cost efficiency, we've also initiated a number of innovations to meet compliance changes under the Water Framework Directive. We've introduced a number of innovations across secondary treatment and phosphate removal that deliver the outcomes we require in the most cost efficient way.

Moving into AMP7, we'll continue to introduce new technology and innovation and scale up our successful pilots from the current AMP.

Technology

We're delivering a variety of technology solutions across our price controls that when scaled in AMP7 will be a key part of our efficiency programme.

We're developing our data analytics capability to become a truly insight driven organisation and we are using advanced analytics in a number of areas of our business. We're currently piloting leakage analytics which will enable us to find leaks up to 70% faster than our legacy leakage find processes (based on two counties). The pilot has also shown the potential to reduce the time taken to find the exact location from an average of two days to as little as two hours. We'll be rolling this out to the rest of the organisation over the coming months to maximise the opportunity in AMP7.

Data analytics are also targeted at improving our customer outcomes. For example the introduction of operational decision management on combined sewer overflows has reduced the number of pollutions by 10 per annum.

In support of our water and wastewater price controls our planning and scheduling department is rolling out a technology called Sitemate. This has increased fieldworker productivity by creating efficiencies in the job workflow process. As a direct result we have saved 20 minutes per inspection job through improved traffic management planning.

Within retail we have implemented a Customer Management Portal that has consolidated information from multiple systems onto one screen and subsequently reduced operational call handling time from eight to five minutes per call.

In AMP7 we'll scale successful technology pilots and continue to deploy technology to reduce cost and improve the service we provide to our customers.

Continued focus on managing bad debt

We currently deliver upper quartile bad debt performance while maintaining upper quartile bad debt cost to serve. We have achieved this by being innovative in our approach, for example tailoring our communication with customers depending on their stage in the credit journey.

In the next AMP we'll focus on getting more from the system and the data investments we have made in the current AMP. For example, undertaking predictive analytics on our credit reference agency data share that will:

- improve the data we hold on our customers;
- identify early warning signs of problem payers; and
- tailor our collection approach to different customer segments.

Our investment in an outbound dialler solution which uses credit reference agency data will also allow us to be more effective and efficient in our targeting.

Ofwat expects water companies to show ambitious targets for efficiency, in line with best in class companies for delivering a given activity/service. This means we are not only compared to other water companies, but our benchmark should include other utilities and construction companies.

In particular for retail costs, Ofwat has instructed and distributed a market analysis from PwC that compares different sectors. An example of the findings are in the following table, updated with an additional column to show our latest performance.

Example	Water	Energy	Telecoms	Council Tax	Severn Trent
Bad debt as % of Revenue (%)	3.2	1.5	0.8	0.8	2.2
Days of sale outstanding (DSO)	39	29	30	10	47
Doubtful debt as % of Net Debtors (%)	86	23		n/a	77

We believe we compare favourably to the water industry figures provided by PwC, but we cannot ignore Ofwat's challenge in relation to the performance of other industries. It is worth noting that the water industry presents some unique challenges compared to that of energy and telecoms:

- the water industry regulatory framework gives the same weighting to all customers, so the customer service levels given to customers who won't pay, must be the same as the levels given to paying customers. Water companies are likely to prioritise service to all customers over debt collection routes, compared to other businesses that have no incentive to prioritise customer service to poor payers as they will not want to retain these customers;

- water supply cannot be turned off. While the energy industry can legally turn off their supply, this is unusual, but they can and do put poor payers on pre-paid meters; and

- the water industry is obligated to supply and bill everyone, whereas the telecoms industry is under no such obligation, and won't supply without payment.

While we acknowledge that these characteristics make achieving the levels of bad debt performance observed in the energy and telecoms industries challenging, we're implementing a variety of activities to improve our debt performance in AMP7. These include:

- recognising that the water industry is significantly behind on leveraging technology, we'll continue to build on the good improvements we have made in this area in AMP6. For example, the new web self-serve option which improves customer experience as well as improving collection rates;

- encouraging measured customers to pay by monthly direct debit in advance to spread the cost of their bill which also mitigates the debt risk to us; and

- using an outbound dialler solution to improve routine collections and field collections for late stage recovery.

We're also currently running a trial on 'Mobi-pay' which is a service that sends an SMS or an email to customers reminding them to pay their bill. The messages also include a unique web link for customers to make a payment. Over the first 10 weeks of the trial we saw a 43% response rate. This reduced the requirement for mail or phone call reminders to customers, if this success continues it will be rolled out further. We will also investigate using this solution to deliver different campaigns, for example messaging customers once they have missed a payment when on their payment plan, with the aim of further reducing bad debt.

Governance

We've a robust governance process that underpins our operational performance management process and financial outcomes, including efficiency delivery. Our Chief Engineer and Group Commercial functions ensure that our operating units are operating and deploying assets to agreed standards and are delivering using the most efficient solutions and supply chain.

Operational and financial performance is challenged and controlled at every level of the organisation and this rigour is also extended to regular reviews with our supply chain partners. These processes are essential to ensure that we embed and sustain efficiency within our organisation.

Within our capital delivery function, the governance that underpins our capital investment decision making is an essential part of our efficiency delivery model. For AMP7 this process has helped reprioritise investment, delivering both savings while also ensuring we can respond to new information and more innovative solutions.

Our approach starts by verifying the need for investment from a detailed understanding of business needs and a clear view of prioritised business objectives. It is in the early stages of the decision making process where our approach realises most value.
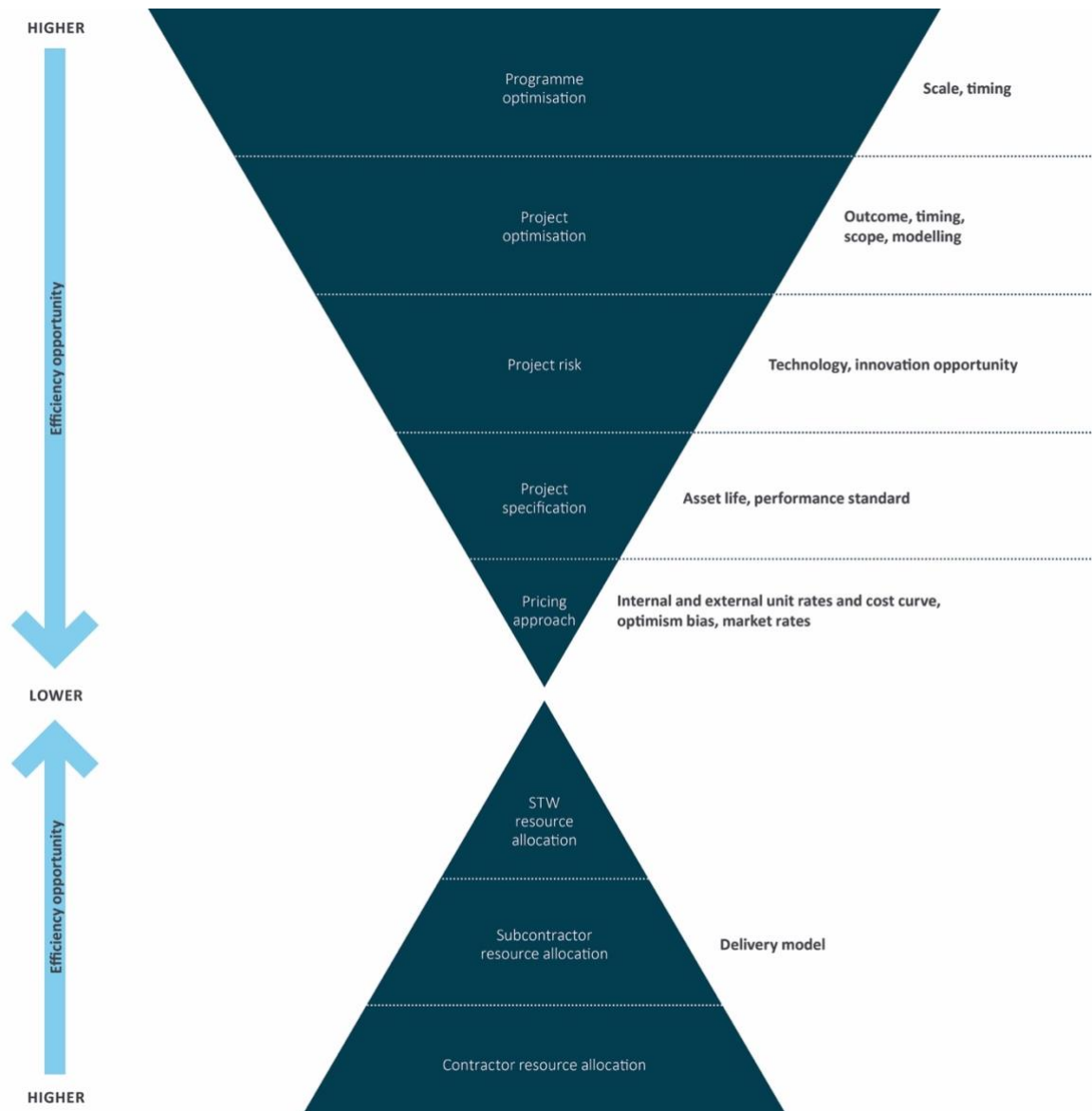
There are diminishing returns as we move through optimisation, specification and pricing. In practice we have realised a significant level of efficiency through following this disciplined, structured approach. Examples include:

- applying the approach and learnings from the Birmingham Resilience Programme we have negated the need for £50m of investment at one of our large water treatment works in Worcestershire;

- working with the EA and reducing the scale of investment needed on the Supply Demand Balance programme by more than £100m. We challenged our approach on numerous water bodies and confirmed with the EA that we will only invest at sites where there is a strong body of evidence to suggest our activities are having a detrimental impact on the environment. We have secured the agreement of the EA to deliver these; and

- similarly, working with the EA and reducing the scale of investment on the wastewater environmental programme by more than £500m.

Earlier this year, we approved £35m of feasibility investment to ensure a practical and efficient AMP7 delivery profile. Our analysis showed that this early investment could reduce the adverse impact from 'roller-coaster' investment as well as reducing delivery risks.

Further detail, including benchmarking studies, can be found in Appendices A8: Securing cost efficiency, A6: Embracing markets and A7: Innovation to deliver better outcomes.

21 MARKETS AND INNOVATION

In a world of rapid change and uncertainty, the use of markets and innovation to deliver step changes in services to customers and society is imperative, particularly by a sector that has not always been associated with embracing either.

Severn Trent has led the sector for some time in promoting the use of markets where they can be of benefit in delivering better services to customers. In the current period we've made a step change in our approach to innovation, doubling our investment, recruiting a dedicated team designed by leading consultants, and creating a culture that inspires our people to innovate. In the next five years we'll continue this transformation by embracing the opportunities created by further liberalisation of our value chain, and by using innovation to help us to deliver challenging performance improvements and more resilient services, all while making bills lower.

We don't see markets or innovation as an end in themselves, but as a vital component in delivering:

- higher standards and levels of service;
- step changes in efficiency, helping to keep bills lower;
- multiple benefits in our communities; and
- adaptable responses to future challenges and opportunities.

So throughout chapters 10 to 18, we've provided a number of examples of how we're driving the adoption of innovation and markets to deliver the outcomes that our customers want.

In this chapter we explain how we're embracing the opportunity of **markets** in:

- water resources (including catchments); and
- bioresources; as well as
- using direct procurement for customers (DPC).

And we go on to explain how we've made a step change during AMP6 (ready for AMP7) to embed **innovation** in our company with:

- a new innovation framework, expert team and governance structure;
- an 'anyone can innovate' culture that generates ideas;
- tools to find and nurture those ideas; and
- an innovation strategy that looks to 2045 and beyond.

We discuss void and gap properties, one of Ofwat's tests in relation to targeted controls, markets and innovation, in Chapter 10: The lowest possible bills.

21.1 EMBRACING MARKETS TO CREATE VALUE

We've tried for a number of years to lead the sector's thinking in relation to the adoption of markets where they can add value for customers. With the introduction of new markets in this period, we want to be at the forefront of these opportunities, and make sure we contribute to their success.

We're starting the 2020-25 period with an active track record in markets:

- we've supported the proposed licence changes in 2007 to give Ofwat more flexibility to create separate price caps and introduce competition, when the majority of the sector opposed it;

- our 'Changing Course' publication series which commenced in 2010 has long advocated water trading as a feasible way to introduce greater competition and market forces to the sector;
- we've championed the commercialisation of the bioresources value chain through deregulation and competition and we've already started test trades with Yorkshire Water; and
- we were active in supporting the establishment of the non-household retail market opening in 2017 by forming the Water Plus joint venture with United Utilities in 2016.

Our thought leadership series strongly advocates markets

April 2010

- Introduces water trading

June 2011

- Water trading

September 2015

- Water trading
- Bioresources
- Ecosystems service market
- Catchment system operator

November 2017
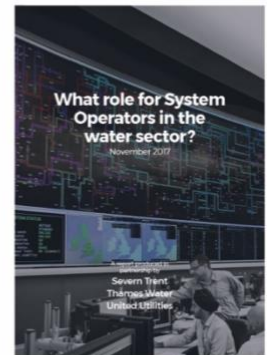
- System operator

In this section, we explain how we're continuing to embrace markets to drive value for our customers from water resources and bioresources. We also show how we plan to use DPC to deliver effective solutions that are both market driven and customer focused.

Shaping a new approach to water resources

We undertook a large scale piece of work in 2008 to consider where competition and markets could drive better outcomes for customers. One of the critical things we learnt was that water trading could be a feasible, sustainable and economically viable model for water supply. While we are well placed geographically to participate in moving water to the south and east (where during dry years there are predicted supply deficits of up to 600Ml/day by 2040), water trading is more likely to occur through raw water supplies rather than the potable supply network. This means we may not be substantial beneficiaries of water trading in financial terms; nevertheless, we're committed to making it a reality.

We explain how we've calculated our regulatory capital value for water resources in Appendix A6: Embracing markets.

A market to help reduce supply/demand deficits

Climate change and population growth are placing greater pressure on water resources. Unsustainable abstraction of water resources and its consequential impact on the natural environment also present a very real risk in some parts of the country, including our region. A traded market is a key option to help address these challenges by facilitating better water resource allocation, more sustainable abstraction and increasing resilience. It would mean that scarce resources could be optimised at national, regional and local catchment levels.

A collaborative approach to existing resources

We're very supportive of a more collaborative approach to water resources planning in order to develop more innovative, efficient and environmentally sustainable options for the benefit of customers, communities and the environment.

We're already active participants in a number of neighbouring water company planning initiatives through Water Resources East (WRE), Water Resources North (WRN), Water Resource South East (WRSE) and West Country Water Resources (WCWR) working groups – and we've undertaken a number of activities to support the development of water trading. We're also active members of the steering committee for Water UK's Water Resources Long Term Planning Framework.

To further drive collaboration, we established a partnership with United Utilities and Thames Water, and set up two working groups focused on resource availability, resource development options, the environmental impact of proposed Water Resources Management Plan (WRMP) schemes and river regulation issues. The River Severn Working Group supports River Severn strategic planning issues and includes key stakeholders including environmental regulators. A similar group focused on the River Trent was established with Anglian Water.

Through collaborative working with United Utilities in 2016-2017, we identified joint water resource options and developed proposals for a Severn to Thames interconnector allowing water from the North-West to be transferred south, displacing the need for some abstraction on the River Severn and augmenting additional resource available in the Severn Trent region, which together could have been made available for transfer to the River Thames. These options could offer resilience and best value not just for Thames Water and other companies in the South East, but also our own customers.

While we've identified some barriers to trading, we'll continue to progress the issues with practical proposals. We recognise that progression to trading has not been as swift as we had hoped for. A number of positive regulatory changes have been made, including changes proposed in our 2011 'Changing course through water trading' report e.g. enhancing the WRMP process and improving incentives – though these have not fully realised the opportunities we anticipated and there is still more to be done.

Given the national strategic importance of the Severn to Thames transfer scheme, as recognised by the National Infrastructure Commission report 'Preparing for a drier future', we remain committed to ensuring that momentum is maintained. We'll continue to work on the appropriate technical and environmental aspects in AMP7 in partnership with United Utilities and Thames Water, irrespective of

whether the scheme is included in Thames Water's final WRMP – to help move forward the overall trading agenda.

We explain the real option mechanism we've proposed to make progress on a Severn to Thames transfer a practical reality in Appendix A8: Securing cost efficiency.

Using the WRMP process to deliver greater water trading

In developing our WRMP, we've taken a progressive view on imports and exports and have proactively investigated third party bi-lateral opportunities forming part of our overall best value plan. We've used a three stage approach to identify options for both potential imports into our region and exports to help meet neighbouring companies' future needs. We started the process assessing potential third party import options alongside our own internal supply and demand side options in December 2016.

Three stage approach to identifying third party water resource options for WRPM19

Our draft WRMP included several potential options to increase trading of water between Severn Trent and neighbouring companies. These options were shared between companies for consideration in their draft WRMP thinking. Now that all companies' draft WRMPs have been published, it has become clear that there are water trading options included in other plans that don't fully align to our draft WRMP. We've followed up with all companies involved and, while we are disappointed that our active discussions have not generated a new trade within our final WRMP, we have built a strong platform for developing future solutions. We remain committed to the concept of water trading and will continue to work hard to develop viable water transfers.

Adopting a multi-sector approach to resources

Maintaining our supply demand balance requires us to look beyond the water sector for potential trading opportunities. We're collaborating with third parties in other sectors to develop the best value, most innovative and most

environmentally sustainable options. We have had a number of productive and engaging third party discussions and interest has been high:

- Canal & River Trust – three options identified;
- Coal Authority – innovative reclaimed mine water options;
- energy sector – licence transfer/seasonal sharing options;
- agricultural sector – trade in Idle and Torne catchment; and
- wider industry – number of trades with abstraction licence holders.

Appendix A6: Embracing markets, includes more information on the trades to neighbours and multi-sector opportunities.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

Developing a fair and transparent bidding process

We're committed to ensuring our water resources procurement process is transparent and non-discriminatory, and we are firmly committed to creating a level playing field against which all bids are measured. This ensures third parties are not disadvantaged.

Our water resource procurement governance comprises three key components:

- market information (portal);
- bid assessment framework; and
- trading and procurement code.

We've submitted our water resource zone (WRZ) level data to the market information portal, setting out our supply/demand balance projections to 2045. We welcome the input of water companies and other third parties to identify and share new, innovative, cost effective and environmentally sustainable resource options with us.

Our bid assessment framework (BAF) supersedes the three stage approach and sets out how we assess solutions for consideration into our plan and is our commitment to transparent and non-discriminatory procurement; the process seeks to deliver confidence to third parties that there is no bias against external solutions. All bids are assessed against four key principles to ensure the highest standards are upheld.

A bid assessment framework based on four key principles

Transparency	Equality	Proportionality	Simplicity
All bidders have visibility of the award criteria and decision-based rules for solution selection	Everyone has an equal opportunity competing for contracts, including when bidding against our own options	Measures third parties need to take to deliver successful bids are not beyond what is absolutely necessary	Our framework is straightforward, reducing the bidding costs for third parties

A separate water resources procurement team oversees the third party bidding process. This team will not have been involved in any pre-tender engagement with either third party bidders or the development of our own in-house solutions. Its purpose is to ensure that appropriate governance procedures are observed to maintain compliance with competition law.

A structured process for bidding into our WRMP plan

The end-to-end process we follow for bidding into our WRMP is set out below. Our full bid assessment framework is included in Appendix A6: Embracing markets.

A structured process
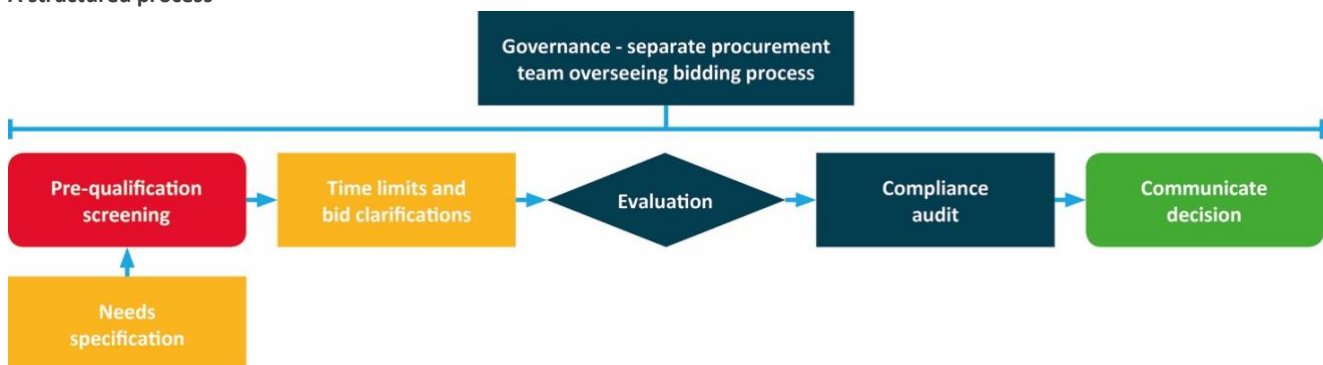
Commitment to a clear trading and procurement code

We shared our Ofwat approved trading and procurement code with the market in November 2017. The code clarifies the policies, principles and requirements we will apply when other water companies and third parties enter into trades with us and is based on Ofwat guidance. It covers transparency and audit, contract durations, ending trades, assessing costs, relationship with the WRMP, economically rational trades, and environmentally rational trades.

While the code is optional, it further reinforces our commitment to collaborating with third parties in assessing water resources, demand management and leakage services.

Our detailed trading and procurement code is included in Appendix A6: Embracing markets.

We're addressing trading barriers

We've identified three main barriers to trading, and continue to work with regulators, customers and other stakeholders to progress with proposals to address these issues.

Tackling barriers to trading

Trading barriers	Reasons	How we are addressing
Environmental and river regulation issues	Water availability, ecological impact, flood risk, losses and WFD compliance. Confidence that inputs to the system can be reliably abstracted downstream.	Joint working through River Severn Working Group.
Incumbent customer acceptability	Customers' perception their service levels will fall and water may be needed in their region.	Joint customer research on water trading attitudes.
Regulatory and commercial issues	Uncertainty on operational areas of trades including interconnectors and delivery and management of assets.	Published 'What role for a system operator' to help overcome barriers and contribute to the national debate.

We'll protect customers against risks

We've a statutory obligation to plan how we'll manage our water resources over the long term, through supply-side and demand-side investments. To ensure customers are protected from the risk of over-building capacity in the future, we've developed a forward-looking long-term risk-sharing mechanism which can be applied to applicable schemes.

A role for a system operator

Our recent experiences with the Severn to Thames transfer scheme suggest alternative approaches may need to be considered to help enable widespread water trading opportunities. We've not stood still in our thinking about how to develop a viable trading market and the role a system operator type arrangements may play.

System operators seek to achieve network coordination efficiencies. Such arrangements are prevalent in the energy and other infrastructure sectors and are the subject of continued debate. In November 2017 we published the report 'What role for system operators in the water sector?' which we developed in collaboration with United Utilities and Thames Water. It sets out our thoughts on how a system operator could aid the creation of regional interconnection capacity, enabling the co-ordination of inter-regional trades covering multiple water companies.

For example, we're exploring the co-ordination of trades from United Utilities to Severn Trent to Anglian Water to Affinity Water, rather than relying on multiple bilateral contracts. A system operator would also enable better demand forecasting, the development of future trades and management of interconnection capacity, therefore improving resilience and security of supply for our customers in the longer term.

The report was a proof of concept for how a system operator might be an effective solution to inter-regional trade co-ordination. Building on our thinking in 'What role for system operators?' we're exploring whether there is value in developing alternative models for water transfers. For example, is a more centralist approach worthy of consideration and is there a role for a national level system operator?

Our report 'What role for system operators in the water sector?' is available on our website at: severntrent.com.

Local level catchment schemes

To help facilitate a trading market at a regional and national level, we first need to ensure that catchment level water resources are protected. This in turn requires collaborative, co-ordinated partnership work at both strategic – i.e. national and regional, as well as at the local, sub-catchment level.

We're already actively involved in Defra's catchment based approach (CaBA) – as participants in 14 catchments and as the lead partner in the Tame, Achor and Mease catchment. This partnership approach to tackling catchment issues at source by working with agriculture, industry, NGOs, and central and local government, moves us closer to developing markets for paid ecosystem services. We'll continue our commitment to working through CaBA during the next five years – given its effectiveness, we intend it to be the primary method through which we deliver catchment based activities and better exploit the potential for match funding – giving our customers a bigger benefit for every pound spent.

Trialling a range of innovative schemes

We pride ourselves on our ambitious approach to catchment management. We've considered a range of schemes and will be trialling the reverse auction platform EnTrade in autumn 2018. EnTrade is an online auction, which allows buyers of environmental services to purchase them in a simple way at a price set by farmers, which may complement our incentive based STEPS scheme. Our schemes are designed so that we only fund 50% of any farm infrastructure or product substitution cost, with the farmer providing the match funding. This ensures we gain the farmer's long term buy-in and the desired behavioural change needed to deliver water quality improvements – in addition to achieving greater value for our customers due to the lower unit cost.

Our approach to catchment management for 2020-25 will continue to push the boundaries of what can be achieved. Our performance commitment of 16 schemes will shift our focus from an inputs based measure of engagement with farmers, to outcomes by seeking to measure the impact of changes in agricultural practices and behaviours on drinking water quality risks. The proposed schemes will also deliver multiple benefits including greater resilience, and wider environmental improvements.

Ensuring the bioresources market becomes a reality

We are strong supporters of a market for bioresources and our 2015 publication, 'Charting a sustainable course' promoted the removal of the regulatory barriers preventing the unbundling of bioresource services to enable greater innovation and value for customers. We believe the creation of a bioresources market paves the way for efficiency and innovation through better information, asset utilisation, capital allocation and improved operational efficiency. We want to be market leaders by 2025.

We intend to capitalise on the opportunities the new market presents, take trading opportunities that extend beyond raw sludge to different parts of the bioresources value chain, and create greater value for both our customers and those outside our region in the process. Achieving the lowest cost to treat will be a key enabler for our strategy, and we're striving to do this through a combination of innovative technology, improved methods of working, and the development of a wide network of trading partners beyond the wastewater sector.

Developing the right foundations to compete

We're starting from a good position. Over the last two years our performance in anaerobic digestion and renewable energy production has been sector leading. In companies' 2017/18 Annual Performance Reports, we're ranked upper quartile for treatment cost and overall sludge processing efficiency – a position that we've consistently maintained for a number of years. This efficiency, in addition to our central location bordering seven wastewater companies, means we're well placed to make the most of a new bioresources market. There is no place for complacency, however, and we intend to drive the market to deliver future benefits. Those who are less efficient will inevitably benefit from the market – reducing their costs by working with efficient operators such as ourselves, to drive overall efficiency, and ultimately lower bills for all customers.

To cement our commitment to making the market work, in April 2018 we split our bioresources activities from wholesale wastewater to create a separate bioresources business. We're already making positive progress, having trialled our new operating model in the Staffordshire region, and the separate focus is allowing early identification and rectification of process inefficiencies.

But we're not standing still. To further ready ourselves, we are:

- **Improving volume data** of the sludge treated across our sites – we're spending £1.6m improving our measurement capability and investing in metering to accurately measure sludge volumes which will further develop our capacity forecasting capabilities to enable trading across multiple time horizons.

- **Increasing granular cost information** for sludge trading prices – we'll be accounting at operational site level to provide more granularity and clarity on cost, in addition to improved visibility of volumes treated, capacity and utilisation. This will enable us to understand where it is economically beneficial to trade with others.

- **Ensuring correct application of competition law** – our methodologies have been independently reviewed to ensure compliance with competition law.

- **Investing in people and management** – we're committed to implementing a leaner management approach to improve performance and reduce operating costs.

We've appointed a new leadership team, are supporting our people with additional training and empowering them to operate as a small and agile business would.

- **Building a strategy to compete** – while we're positioning ourselves as net importers, we also recognise potential export opportunities at some locations. We continue to model using available, albeit incomplete, neighbouring transportation distance and treatment cost information to determine which trades are likely to be imports or exports. We anticipate trading opportunities will become more material as assets reach the end of their economic life and other companies look to tender for their replacement – and will be ready for this.

And we're already engaging in the evolving market – we've shared information in line with Ofwat's templates. We've already engaged with our neighbours and commenced a series of short-term, trial trades with Yorkshire Water to help understand key operational and logistical requirements for each company/site. Along with improving demand forecasting, this will enable us to identify longer term import and export options, which will not only offer greater mutual resilience but also minimises the risk of unnecessary construction to create capacity.

A long term plan to create value from the bioresources market

During AMP6 we constructed substantial new thermal hydrolysis process (THP) assets (a form of advanced anaerobic digestion) at our Minworth and Strongford sites. This investment has already created efficiencies by reducing the number of sites in our portfolio, lowering costs to operate, lowering tankering and transportation requirements, and increasing renewable energy production – as well as increasing capacity and improving the quality of our biosolids.

For AMP7 we will be continuing our investment in new capital assets including three new advanced anaerobic digestion hubs. Like our THP sites, these sites will facilitate additional biogas generation for conversion into renewable energy (which can be injected into the gas grid) and increase the proportion of *enhanced* biosolids produced – a better product for our end customers. Our AMP6 THP plants will increase the production of enhanced quality biosolids from 0% to 39% by 2020, and by 2025, 83% of our biosolids will be enhanced quality.

Where sites are outside the range of the THP hubs, our asset enhancement programme will seek best value options to treat. Proposed investment here will be prioritised on delivering improved financial performance through cost reductions, trading opportunities and improving our regulatory performance.

Improving transportation and recycling costs

We're striving to reduce transportation and recycling costs in line with our top quartile performance in treatment. Costs are being reduced through depot consolidation, increased tanker utilisation and changing working practices. The new advanced anaerobic digestion hubs are expected to further reduce such costs through to 2025.

Exports may form part of our best value plan

We recognise the benefits of exporting waste where we may be less efficient or comparatively less efficient. Under these circumstances, we will explore opportunities to use both existing water companies' and new entrants' sludge treatment centres.

And where we're not the most cost efficient across all parts of the value chain, we'll seek to trade with the lowest cost provider for that part of the value chain to ensure best value for our customers, for example, we may treat sludge produced by Dwr Cymru while sending sludge to Anglian Water for disposal.

Taking further market opportunities

Beyond the trading market, we plan to grow our bioresources activities by leveraging our core competencies and acquiring existing assets or constructing new assets, or participating in any combination of design, build, finance operate and maintain (DBFOM) solutions for less efficient companies.

Furthermore, while current legislation means that we're unable to co-digest other organic waste (e.g. food, crop residue and garden waste) with sewage, these adjacent market opportunities may well open within the useful life of our assets. We're preparing our capabilities so that we're well positioned to capitalise on any future changes in legislation to deliver further benefits to our customers through more efficient digestion.

Supported by innovation horizon scanning

Although we're currently focused on advanced anaerobic digestion, the next 20 years could see technologies such as gasification and pyrolysis becoming more prevalent. These have the potential to increase energy recovery and reduce the volume of material recycled to land, leading to improved environmental and financial performance.

We're now actively evaluating a number of these technologies as part of our future plans:

- **Pyrolysis / gasification / hydro thermal carbonisation (HTC)** – highly likely to materialise within the next 10 years, these technologies could potentially enable smaller, more remote sites to deliver higher energy outputs. The final solid is a high chemical potential biochar that can either be further recycled or is a significantly lower volume to dispose to land.

- **Bio-refinery** – the extraction of high value materials from sewage during its physio-chemical treatment. Techniques using algae and chemical inhibition appear promising. The extraction of lipids, acids and cellulosic materials are of potential commercial value.

- **Ammonia extraction** – new technology for product disposal or extraction will significantly reduce our £/TDS.

- **Hydrogen economy / fuel cells** – the relatively low efficiency of standard combustion means that hydrogen fuel cells are potentially an interesting opportunity.

Determining the right time to invest will be key to exploiting the best value for our customers – so we'll continue to research, explore and develop the opportunities as they advance.

Approach to direct procurement for customers

DPC presents a viable alternative to traditional procurement models, creating value for customers by driving competitive funding, innovation and efficiency.

We're supportive of the use of DPC where it benefits customers. We've developed a transparent, repeatable framework, with specialist advice from an expert third party, to assess which major projects would create better value for customers if they were delivered through DPC. All projects with a whole life totex of £80m or greater have been assessed using this approach.

A robust DPC assessment framework

We've considered the key areas of Ofwat's guidance on what constitutes a DPC project:

- **Totex greater than £100m** – all projects greater than £100m totex are included in our analysis. To ensure comprehensive coverage, we've applied a lower threshold of £80m.

- **Project type** – by considering whether initiatives are sufficiently discrete, we can gauge their potential as attractive counterparty investment. As part of this assessment, we've looked at the extent to which projects are integrated within our networks, the complexity of their interfaces and/or operation. We've also looked at the projects' technical risks across their lifecycle.

- **Value for money for customers** – we focus on delivering maximum customer value. During the tender process, we considered factors where DPC could erode value, e.g. project specific risk factors, the extent to which innovation can drive further customer benefit and other indirect benefits.

- **Customer engagement** – all projects that we considered have been presented for recommendation to our CCG for feedback and challenge.

We've developed a five stage DPC assessment framework, and assessed all projects meeting the key criteria against it:

Stage	Approach
Stage 1 – technical methodology	We developed a methodology to assess the suitability of projects for DPC via a series of workshops with internal experts (procurement specialists, engineers and asset managers) and external expert economists.
Stage 2 – project identification	We identified all PR19 projects and programmes with a totex greater than £80m across our value chain (excluding bioresources).
Stage 3 – technical assessment	We applied size, discreteness and risk tests to each project to understand its potential independence from our core operations and hence its relative attractiveness to counterparties.
Stage 4 – cost benefit analysis	We assessed the economic attractiveness of technically appropriate projects using cost benefit analysis based on HM Treasury's five case model approach. This allows objective cost benefit assessment of DPC against our AMP6 procurement approach.
Stage 5 – assurance and Board sign-off	Three lines of assurance include an assessment by an independent third party (Jacobs) to ensure robustness of approach and process, before Board engagement and sign-off.

Stages two, three and four of our approach are set out in more detail in the next diagram.

Overview of approach for stages two, three and four of DPC process
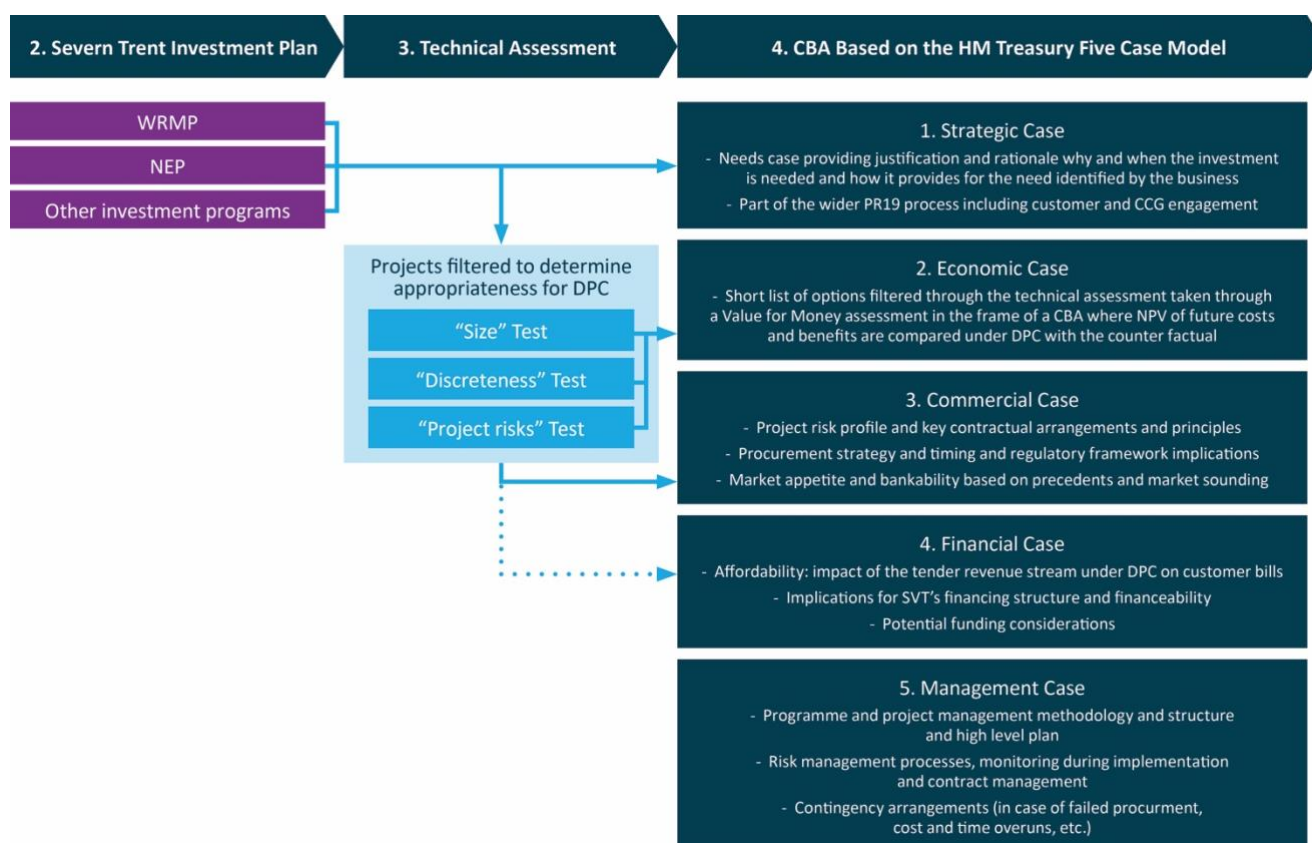
A thorough assessment of projects

Our simple initial assessment at stage 2 quickly identified 11 projects and programmes of work with totex greater than £80m in our PR19 investment plan and WRMP19. At stage 3, project expenditure was analysed in more detail, with 25 year plus construction expenditure discounted to present values (using the social time preference discount rate as specified in HM Government Green Book guidance). We excluded schemes not selected in our draft WRMP.

Four projects progressed to the discreteness test, three of which were schemes in our draft WRMP.

There was also one water trading project involving an export to Anglian Water. Each of these projects was assessed using qualitative criteria to determine its 'discreteness' and its likely project risks from original outline scheme design information and discussions with asset management teams. Three projects failed the discreteness test due to being disaggregated across many sites or because they were highly integrated within existing processes, with the one scheme – a raw water scheme in the East Midlands – passing all tests. The outcome of the test is set out in the next table.

Outcome of discreteness analysis

Criteria	Scheme A - East Midlands Raw Water Storage		Scheme B - Derbyshire WTW Expansion		Scheme C - Enhanced Metering Programme		Scheme D - Transfer to Anglian	
	Score	Rationale	Score	Rationale	Score	Rationale	Score	Rationale
Asset location	H	Standalone asset with limited integration with wider network	L	Highly integrated with SVT's ongoing operation at the site	L	Large number of meters highly integrated and SVT's existing assets and network	L	Multi-staged scheme with construction having impact on ongoing SVT and AWS operation
Interfaces	H	A number of interfaces but considered relatively simple	M	A number of physical and informational interfaces with SVT	L	Significant physical and informational interfaces required between a number of parties	L	Physical and informational interfaces with SVT and AWS introduces complexity
Process	M	Some ongoing coordination with wider network required	L	High degree of coordination with wider network and existing assets required	M	Operation of meter requires coordination with other SVT functions, but only relates to informational coordination	M	Ongoing coordination required between DPC, AWS and SVT to balance flows across the network
Impact on service delivery	M	Impact of WTW failure could impact quality but this risk is thought to be manageable	L	Asset failure would have significant and direct impact on SVT's customers	H	Impact on service delivery expected to be minimal with potentially some implications for SIM rewards/penalties	M	Asset failure likely to impact AWS customers only however back up supplies available
Flexibility	M	Operational is potentially scalable in response to changing requirements	M	Scalable and adaptable if needs change over time	L	Risk of smart meter technology becoming redundant given relative infancy of the market	L	Transfer not scalable over time with limited alternative uses of the asset
Control	M	Ongoing and frequent coordination required with SVT network	L	Frequent and ongoing interaction required between wider network and existing WTW	L	Large number of ongoing interactions needed between smart meters, SVT and communication provider	M	Regular coordination required between DPC, SVT and AWS
Overall score	14		8		9		9	

Progressed to project risks tests

Delivering future value for customers through adopting DPC

The East Midlands raw water storage scheme is a project to develop a raw water storage facility and construct a new water treatment works by 2031. The scheme is one of 19 that form part of our response to climate change, uncertainty and potential AMP8 environmental programmes. The East Midlands project demonstrated a high level of discreteness due to the physical location of assets and single interface with the wider network. Any risk of failure impacting our customers would of course be addressed through a contractual agreement.

The outcome of our value for money cost benefit analysis at stage 4 indicated that delivering the East Midlands raw water storage scheme through DPC could result in increased benefits for customers compared to our in-house approach. The present value cost is estimated at £116m through DPC, compared to £122m for traditional in-house procurement. This reduced cost is largely driven by assumed capex and opex efficiencies, and lower financing. These advantages, however, are partly off-set by incremental costs associated with procurement and management of a DPC contract.

We analysed key sensitivities to better understand the value for money case, including testing the rate of depreciation and residual value at the end of the concession period, financing costs, level of capex and opex efficiency compared to a base case in-house delivery, and contract tenure.

High level planning assumption of proposed DPC scheme

Abstraction point	River Soar
Deployable output benefit	45Ml/day
Construction period	8 years
Notional operational start for modelling purposes	2028
Capex spend	£40m (AMP7), £126m (AMP8)
Price control	Network+ (60%), Water Resources (40%)

The sensitivity analysis indicated that DPC drives better value for customers unless:

- DPC yields the same or lower levels of capex and opex efficiency than traditional procurement routes;

- DPC bidders seek an internal rate of return at or greater than 12%; and/or

- bidders seek to recover the capital cost of the asset over the contract tenure (20 years) rather than over a longer period or the economic life of the asset (up to 80 years).

A mechanism to protect customers

Given the uncertainty regarding the pace and scale of deployable output reduction and the irreversibility of the proposed supply side scheme, we're proposing to include an option in our plan that gives us the right but not obligation to deliver the scheme. Delivery would be dependent on clear triggers being met – and is akin to a financial option.

We'll progress initial feasibility work on 19 water resource schemes in AMP7 and only commit to full delivery once we

can show that the risk to deployable output is being realised. This ensures customers are protected, because we will not be paying for schemes that may not be needed.

Furthermore, we intend to use the AMP7 period to identify lower cost supply and demand side options that may defer the need for this large scale investment. We're therefore adopting a twin track approach combining:

- an early tender process, going to the market for innovative options to provide 45Ml/day to the East Midland location and test the market appetite for DPC; and

- early feasibility for the East Midlands raw water storage scheme that will enable a late DPC process should the early process not provide a better option and the uncertainty mechanism is triggered.

If neither elements of the twin track approach delivers the best value for customers, we will progress the scheme in-house.

21.2 DRIVING INNOVATION TO DELIVER BETTER OUTCOMES

Innovation is an integral part of what we do. It's locked into our strategic framework as an objective to 'drive operational excellence and continuous innovation' and underpins how we will achieve our core purpose to serve our customers and communities. We know that during AMP7, innovation must be at the forefront of everything we do, as we seek to deliver a stretching suite of performance commitments, while keeping bills lower.

We believe innovation can be anything from the small ideas for change that improve our everyday service but can add up to being game-changing, to the big disruptive ideas that truly revolutionise what we do – making some activities redundant, and introducing entirely new ones.

Innovation is already evident in every area of our business, examples of which include:

- **Our technology** – we invested in new treatment technologies to improve the quality of our biosolids – creating a better product for the new market, a better source of renewable energy and reduce our carbon footprint.

- **Our processes** – we used the proceeds from outperformance to introduce a new, specially trained care and assistance team that provides bespoke support to our customers with specific needs.

- **Our people** – we de-layered management in our organisation and empowered all our people to strive to make things better for our customers every day.

- **Our relationships** – we retendered our major supply contracts so there's a clear line of sight from customers' priorities to our incentives (ODIs) and our supply chain's performance.

- **Our business models** – we restructured part of our company into a joint venture to create a competitive offering for customers in the new retail market.

In this section, we explain:

- the innovation infrastructure we introduced for AMP6;

- the source of the ideas that drive change;

- the tools we use to capture and nurture those ideas; and

- how our innovation strategy is looking to AMP7, 2045 and beyond.

Appendix A6 showcases some of the innovations that are making a difference to our business. Chapters 10-18 include shorter case studies in the context of the outcomes that they're helping to deliver.

An ambitious step change in innovation for AMP6

We've a long track record of innovation within the water industry. Like most water companies, since privatisation in 1989 we've had a dedicated research and development team. But in AMP6 we decided to make a step change to take the opportunities of an outcomes based regulatory framework.

Doubling our investment in innovation

As a sign of our commitment to be the sector's leader in innovation, we've more than doubled our totex investment from circa £20m in AMP5 to £42m in AMP6 and we believe our proposed investment spend this AMP will be one of the largest in the sector (based on available information in companies' annual report and accounts).

Embracing greater freedom to innovate

Our 2010 'Changing Course' report, which preceded the 2011 Cave Review, articulated the need for greater innovation in the sector. We suggested that changes in economic regulation – including a greater focus on outcomes and more flexibility for companies to deliver them – would help.

Since the introduction of Ofwat's outcomes based incentives framework at the 2014 price review, we've embraced the opportunities provided by this new approach and thought differently about how to deliver performance.

We took risks with innovation early in this AMP in order to deliver rapid improvements. For example, three months into 2014/15 we had a run rate of sewer flooding incidents that would equate to a £45m penalty. We reversed this trend by taking a new approach to how we used our data and by engaging with our customers in blockage 'hotspots'– some 84,000 in our first year. This more proactive approach resulted in a 31% reduction in internal and 28% reduction in external sewer flooding for our customers.

It means we've been able to create a virtuous cycle of innovation. Outperformance (generated from across our company) gives us more freedom to take risks with innovation, which, if it delivers better outcomes, in turn generates more outperformance. So our customers benefit from better service, an improved environment and a more sustainable company – while their bills remain the lowest in the country.

Global benchmarking

In 2015 we looked outside our sector to build what we believe is a best-in-class innovation model. We commissioned a global benchmarking exercise to capture how leading companies (including companies like Pfizer and Philips) approach innovation. We subsequently adopted a model that includes a team with specialist innovation management roles and is unique within the UK water sector. We believe, for example, that we are the only water company to have a front end innovation team that focuses solely on innovation needs and idea generation. Our central innovation team works in parallel with other innovation hubs in our business – including our customer, digital and group commercial teams.

**Five dedicated teams focused on all parts of the innovation value chain**

Front end innovation	Technical experts	Portfolio management	Innovation exploitation and governance	Smart cities and model sites
Explore current and potential future needs of the business and facilitate idea generation to meet needs and turn into portfolio projects.	Technically assess new projects to ensure the science is sound and determine trial criteria for new technologies. Collaborate with universities to deliver research to meet future business needs.	Manage the portfolio projects in the 'innovation funnel'. Work alongside the technical experts to deliver projects.	Seek to exploit the value of our innovation portfolio by creating the best commercial agreements, acquiring external funding grants. Govern the innovation team to deliver a focussed portfolio.	Trial and demonstrate new technologies to establish smart network thinking and develop a holistic view of catchment performance.

Open innovation to find the best ideas

Instead of a more traditional 'closed' approach to innovation, we adopted an open innovation model. This collaborative approach enables us to actively seek and bring innovation to the water industry from academia and other sectors. We believe it is a more efficient approach for our customers too. Open innovation allows for flow of expertise and ideas between organisations.
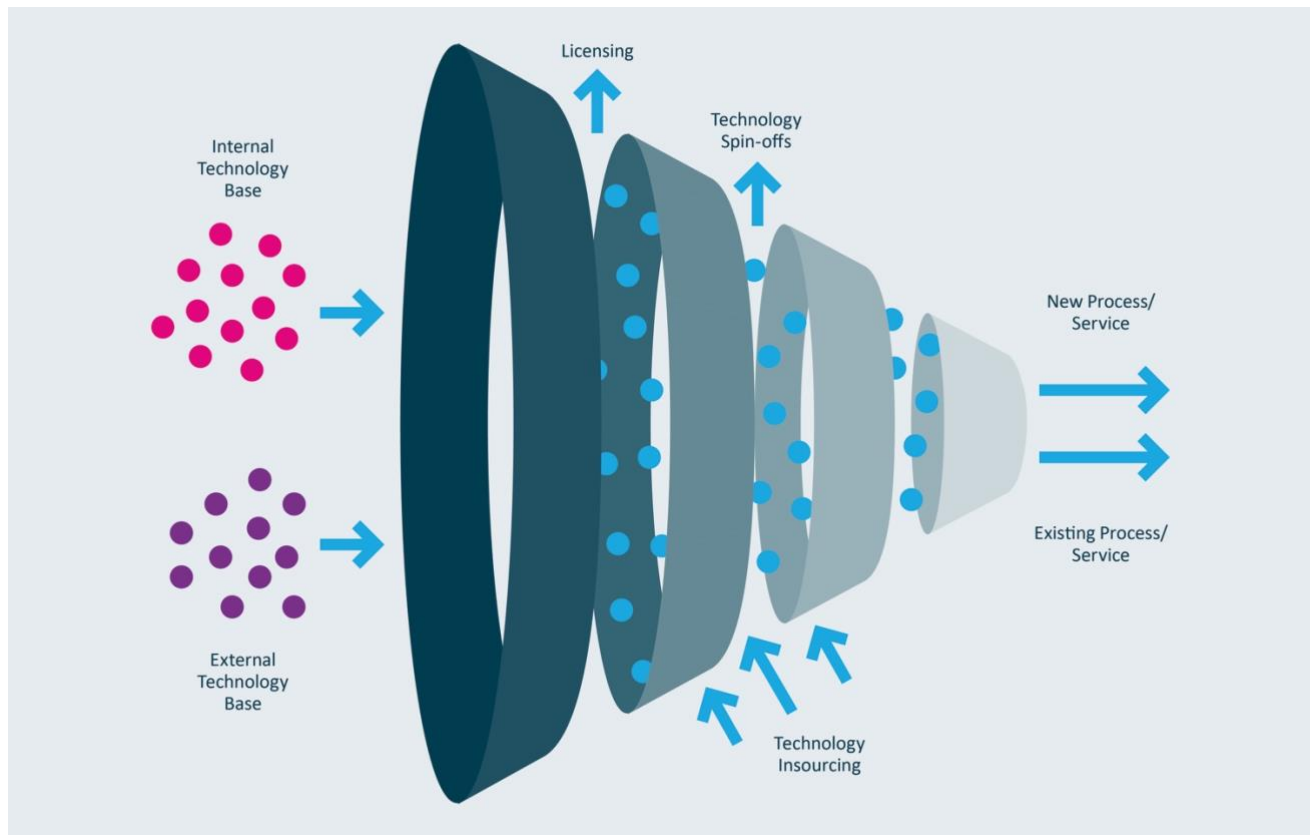
Open innovation allows the flow of expertise and intellectual property between organisations. We bring in research skills from universities or license our intellectual property to manufacturers, to enable them to deliver new goods and services into the water industry. This approach has led to many innovations including a next-generation leak detection device – the LeakFinder ST – which is protected by patent in the UK and seven other countries.

Open innovation has significantly increased the number of potential ideas and technologies we could adopt. We use a recognised Stage-Gate® process to support the evaluation, delivery and implementation of projects, underpinned by 'Bubble', a dedicated software package to manage our innovation portfolio. Bubble was selected as part of a multi-sector benchmarking exercise to help us implement a best-in-class approach to innovation. The software is vital to ensuring our extensive portfolio is effectively managed and the benefits can be tracked wherever innovation occurs across our organisation. The process has enabled us to increase our focus and reduce the number of active projects from 100 to 25 – ensuring we efficiently target our efforts on our key needs.

Focusing innovation on outcomes

We make an open call for innovation in our annually published 'needs document'. In it we set out our short and longer term needs and the gaps we need to meet through innovation. The document is structured around the outcomes in our business plan and the improvements we've committed to deliver. We don't constrain innovation to just these areas – we believe innovation should be encouraged anytime, from anyone, and anywhere it can bring benefit. However, having a central focus directly aligned to business plan outcomes ensures we're channelling innovation where it benefits our customers most.

It's from this foundation that we'll address our 2020-25 innovation challenge – delivering better service and greater resilience, while keeping bills lower.

The ideas that drive change

The ideas that fuel our innovation come from both inside and outside our company. First and foremost, we've a culture with innovation embedded at its heart.

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An 'anyone can innovate' culture

Our 'anyone can innovate' culture rocketed with a new organisational structure that de-layered five tiers of management, empowered people, and allowed for more dynamic decision making. All employees were taken offline and briefed in person about the customer culture and service changes we wanted to make. Everyone was given permission to try new approaches and, importantly for innovation, make mistakes – from which we can constructively learn.

This year we've given every employee downtime to innovate. Through 64 roadshows across our region, our Chief Executive met with over 5,500 people to inspire them to tackle two of our strategic innovation ambitions:

- reduce leakage by 15% in the next 5 years; and

- reduce the amount of water we abstract by 50% in 10 years.

Known as the 'Bike on a boat' roadshow, this event drew on the spirit of New Zealand's winning America's Cup sailing team members, who installed pedal power on their yacht as an alternative to winching sails by hand. The term is now synonymous with innovation in our organisation.

And because solid performance gives us more freedom to innovate, we've launched our innovation scouting *Bike on a boat* international fund. Through a competitive process, all our people are encouraged to apply for the opportunity to find out more about how innovation is changing the water sector and other industries across the world – to learn from them, and bring back the very best to explore further. And the ideas they found are reflected in our plan – for example, our water academy borrows from a model used in Singapore, and the effluent reuse we learned about in Namibia is shaping our strategy for our 'thriving environment' outcome.

We actively create other opportunities for our employees to generate ideas around specific business challenges. These initiatives include 'The Challenge Cup', our internal crowd sourcing platform #BrightSparks, and our 'OpenInnovation' ideas inbox.

Innovation sparked by our customers

Our customers offer us a wealth of insight every day that we can use to inspire change. Our 'voice of the customer' tool provides us with instant feedback, while our newly established customer panel Tap Chat allows us to generate and explore new ideas with over 15,000 customers.

Using an advanced analytics tool, we can connect millions of rows of data from multiple disparate data sources to gain a more granular view of our customers. This allows us to generate models that assign a cost to serve per customer type and helps to generate initiatives that improve service and increase efficiencies.

Our customer behavioural insights team focuses on using both existing and trial data to explore influences on consumer behaviour. In two recent trials, we used a data-led approach to promoting water efficiency and payment by direct debit. Both campaigns drove an increase in performance against previous marketing activity.

Using data in this way will be a critical enabler for our 2020-25 plan. It will underpin how we'll inspire behavioural change towards our sewers and water use as well as helping us to better predict when our customers may be at risk of falling into debt (so we can proactively help them) and tailoring our communications to our customers' preferences.

Innovation from, and for our, communities

We want our innovation culture to benefit our whole region, and in turn we look to draw innovative ideas from our regional stakeholders.

We introduced an innovative 'partnership working' performance commitment to support us working with other organisations to resolve flooding that could not be addressed in isolation. We've not only successfully delivered eight partnership schemes so far this AMP, we're on track to deliver our target of 21 – and we also now have a much more complete picture of flooding in our communities. We created an online sharing platform (in the form of a GIS map) to help our partner risk management authorities find crossovers between our respective priorities. This will help us to increase the opportunities for co-creation and co-delivery with our partners in AMP7 – reflected in our new collaborative flood resilience performance commitment.

We also look for innovative ideas from our communities. During 2020-25, we're committing to our biggest ever five-year leakage reduction of 15%. To hunt for new ideas in 2017 we hosted three events over four days at the Coventry and Warwickshire Business Festival – an Expo, a Design Sprint and a Hackathon – focusing on solving leakage. We attracted 174 participants from 53 organisations who donated 1253 expert hours. Three trials are currently under consideration together with exploratory work on five technologies from the Expo. And we're progressing seven ideas generated from the Design Sprint and Hackathon.

Incentivising innovation in our supply chain

There's huge potential to both incentivise innovation from our supply chain, and innovate in how we construct commercial contracts.

In the current period we restructured and retendered all of our significant contracts to eliminate unnecessary costs, aligning performance objectives to our strategy and simplifying our processes to be more effective in our interventions. This includes our sewerage commercial model, chemicals, IS telecoms and facilities management.

As part of our sewerage commercial model, we revised incentive arrangements to better align with our ODI framework. Our earlier arrangement led suppliers to be both risk averse and inflate rates to protect themselves from worst case scenarios. Removing this allowed base costs to be reduced in line with the supplier's risk incurred. And a replacement incentive mechanism was introduced, aligned to the new ODIs to reward good performance. The incentive is funded from the total saving in base costs following framework re-negotiation and not from additional revenue from customers as a result of ODI outperformance.

We also know that changes in external markets could mean that standing still with our commercial contracts could compromise our future efficiency. So ready for 2020-25, we're retendering our supply chain contracts. This process, which included creating seven potential future worlds to test operating models against, is designed to ensure that our partnership with our major suppliers continues to deliver the best possible value for money as we deliver our next plan.

Chapter 20: Securing cost efficiency explains more about our new 'one supply chain' procurement process.

The power of data

We're constantly evolving, using technology to become a truly insight driven organisation. Our information and data transformation programme is working towards an ultimate goal of teams using self-service (rather than a central business information team) as a matter of course to make decisions, drive efficiency and performance and support innovation. This includes collaborating externally to push the boundaries of the value we can get from our data.

The programme undertakes proof of value exercises as it progresses to ensure we're investing our customers' money well. Its first exercise focused on leakage. Working with a strategic partner in advanced analytics, we've created a model that uses 24 algorithms and 2.7 billion rows of existing operational data to identify the characteristics of our pipes – e.g. age, repair history, changes in flow and pressure – that lead to leaks. By applying these algorithms to our network to predict where issues could arise, the trial (based on two counties) has been able to reduce leakage detection time by around 70%.

Adapting innovation from other sectors

Part of the ethos of an open innovation approach is that we should seek to learn from others. This might include, for

example, developments in the competitive non-household retail market which could be relevant to household customers. But we also look further afield. Many of the issues faced by the water industry are also common to other sectors. Therefore, we actively seek relevant innovations from other sectors and work closely with technology providers to adapt their products to meet our needs. A recent example of this is how we've used a pollution control technology from the petro-chemical industry to remove blockages caused by fats, oils and grease in our sewers.

Development of innovation from idea to product can be an expensive and extended process, with many small innovators relying on grant funding. We play an active part in this process and support SMEs with grant applications. By partnering with us, they're able to gain valuable insight into the technical issues and the market for their technology, which is a key step to secure funding.

We also work with SMEs in our supply chain to help us commercialise our in-house innovation, which in many cases also adds value to their existing product range.

A global outlook

We undertake global benchmarking and visit other parts of the world to understand how organisations are dealing with significant global challenges, such as climate change and water scarcity. A recent visit to Singapore, for example, has strongly influenced our thinking on metering, leakage and how we could increase the technical skills of our workforce with a centre of excellence for learning. It has also helped us build global collaborative networks in Asia, Australia and the US.

We exchange information with utilities from outside the UK who are recognised as leaders in adopting innovation – including utilities in the US and the Netherlands – and research organisations such as the Dutch Water R&D network and the North America based Water Research Foundation. And currently, we believe we are the only UK water company to subscribe to BlueTech Research, which provides an evaluation and benchmarking service for technologies from around the world.

The tools we use

We're always expanding the toolkit we use to find and develop innovative ideas.

Adopting a start-up mentality for digital technology

We believe our approach to technology innovation is truly unique in the water sector. Our digital technology innovation team uses a lean startup approach with small company agility. Using the principles behind Eric Ries' publication 'The Lean Startup', the team focuses on being less wasteful to find great ideas (and filter out the not so great).

Supported by Atkins and Fluxx, we use their digital incubator toolkit to rapidly develop and validate our new business ideas. The process is exceptionally quick, allowing ideas to be taken from experiment to learnings, then validation of learnings –

all in the space of a week. At the end of the week a video and email are shared with selected employees, including the executive committee and our Chief Executive, to fast track ideas that show promise.

Creating an Uber for leaks?
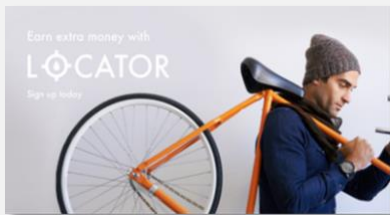
Working with the Atkins Digital Incubator, the Leak Locator project sought to test the customer desirability, business viability and technical feasibility of a new 'Uber for Leaks' service to address our leakage challenge. By setting up a pay-per-leak gig economy platform, we aimed to get the information required to build a job more quickly than the current average of 48 hours.

The project was our first to use a lean startup "Build, Measure, Learn" approach. Each week we ran a new experiment to iteratively deliver value and insight about how a scaled-up service could work. In the spirit of Lean, we didn't invest in any technology up front and instead used free online tools such as Facebook Messenger and PayPal to test desirability and feasibility.

We found that students were particularly interested in signing up for the service – we signed up 42 in a single week-long sprint. We ran several live iterations through Facebook Messenger and established that the most effective way to reduce time taken to a leak is to stagger payments depending on time taken to reach the leak location.

The final live test involved building a critical mass of users in a small area to understand how a future service would work at scale. Using staggered payments and the ability to rapidly notify multiple users to a new leak, we reduced time taken to attend a leak to an average of 1 hour 9 minutes.

One of our most challenging performance commitments this AMP and continuing into the next is reducing the time it takes to respond to leaks. To help with this challenge, our digital innovation team has begun trialling video calls, with willing customers, to identify leaks. We receive around 40,000 calls relating to leakage each year – but it is often difficult to identify the issue over the phone, meaning a visit from a technician is needed. Video calls between our customers and technicians could raise jobs more swiftly because we're able to identify the issue faster. Initial results look promising – 80% of customers were willing to take a video call – resulting in around three-quarters of these not requiring a visit. We've also received great feedback from customers – with 75% giving us a 5* score for interaction.

Finding the best ideas from our people

As we undertook our customer engagement programme for this plan, we consistently heard from our customers that we can make their days run a little better by reducing problems that cause irritation or inconvenience. Our people are full of great ideas about how to improve service, but with over 5,500 employees it can be challenging to find these ideas and make sure they get the right traction – so that the best ones are

explored and implemented. We use campaigns to draw these ideas out and give them proper focus.

The Challenge Cup, is our annual competition for our people to submit business cases for their innovative ideas. The best ideas are allocated a sponsor from the senior leadership team who works closely with the employee to develop and implement their idea across our business.

This competition has already delivered significant benefits. The winner of the 2016 competition 'The Third Eye Drones' has saved over £0.75m by using drones to inspect assets in hazardous or inaccessible places. This innovation has reduced the cost and safety risks associated with asset inspections, and implementation has led us to create an in-house team to fly these drones.

In addition to asset inspections, we've also found new opportunities, including the provision of aerial video footage of land for disposal prior to auction. This simple initiative typically increases land sale price by 20% – so our customers realise more value from it.

Our 2017 winners are showing equal promise

Celebrating individual thinking – we nurture innovation from our front line

Some of our very best ideas come from the people who meet and serve our customers every day. Our annual **Challenge Cup** provides the opportunity for any of our people to put forward their ideas with the promise of executive sponsorship and funding to put winning concepts into action. Our 2017 winners:

Who: Distribution operatives, Nottingham

Idea: No disruption leak repair – using a new to the market material to fix smaller leaks without requiring excavation.

Who: Operations manager, Staverton

Idea: Controlled bursting discs – installing calibrated weak spots on our network to find bursts quicker and minimise customer disruption.

Who: Team manager, Shropshire

Idea: Better pumping rules for waste – fitting timers on pumping stations to reduce activity during peak energy cost times.

Our internal crowdsourcing campaigns **#BrightSparks**, is a simple, yet effective concept. Using our social networking platform Yammer, we pose innovation challenges, sponsored by a business area, requesting ideas to improve efficiency and customer service. Employees' ideas are triaged and then reviewed by business experts. **#BrightSparks** focuses our people on fixing service issues and driving efficiency

#PumpEnergy– with energy being one of our biggest costs we tapped into our colleagues' knowledge and expertise to crowd-source ideas on how we could pump our water more energy efficiently, resulting in a number of exciting new ideas for our innovation portfolio.

→ **112** engaged users **13** shortlisted **42** ideas posted **3** finalists

#NoDig – we want to minimise customer disruption, safety impact and cost by looking for new and innovative ways to avoid digging into the ground. We have generated some new innovation projects and improvement ideas for our asset creation teams.

→ **86** engaged users **10** shortlisted **44** ideas posted **5** finalists

#PipeCleaners – we sought ideas on how to efficiently maintain a clean distribution network whilst maintaining water supply. Our employees shared many thoughts and creative ideas which we are funnelling down.

→ **88** engaged users **10** shortlisted **40** ideas posted **5** finalists

Beyond our targeted campaigns, we also encourage employees to email ideas to our innovation team. This increases the total number of ideas for evaluation by 25%. The email address is also available to people externally so anybody can easily share an innovative idea with us.

Sponsoring academic research

The cost of research and access to live water company assets can be significant barriers for some suppliers. We therefore support research within universities.

PART 1:
AN OVERVIEW OF OUR PLAN

PART 2:
DESIGNING BETTER OUTCOMES

PART 3:
DELIVERING BETTER OUTCOMES

PART 4:
FINANCING, EFFICIENCY AND INNOVATION

This approach has led to a number of successful advances and product developments, and in many cases we're able to incorporate the outputs of academic research into our business processes without product development. For example, we've developed a model that's able to predict the metaldehyde concentration in rivers based on weather forecasts. This allows us to manage our abstraction, improve water quality and minimise investment in new treatment processes.

We believe we're the most successfully active UK water company in the external funding arena and house the only dedicated Innovation Funding team within the UK Water Industry. Through this team we've secured £0.84m of external funding and gained access to over £34m of additional research, through Horizon 2020 and Innovate UK funded projects. Our urban wastewater strategy is an example of a how we've used significant external funding to deliver innovation.

Crowd-sourcing ideas from across the globe

While we crowd-source ideas internally, we also look beyond our organisational boundaries to discover insights, ideas and knowledge. Using intermediaries has enabled access to a worldwide network with different backgrounds, experiences, knowledge and connections.

We work with the intermediary and the project team to develop a generic innovation question, which we then put to the intermediary network. Making the problem less specific to the water industry allows the network to explore where and how other industries may have come up with solutions to solve similar problems. For example, to help inform a recent strategy discussion for our Board, we asked:

"For this study we are interested in references disclosing, near to market and currently commercially available robotic solutions, which may be of use in the identification, analysis, maintenance or repair of self-contained, difficult to access structures, which may be above or below ground"

We received 110 responses – helping to provide much broader, forward thinking insight to inform our decision making.

We're still learning about the potential of this approach but it's proving a valuable way to get new, more diverse insights, at pace.

From innovation to 'business as usual'

Our 'communities of practice' are our network of subject matter experts – within our business and supply chain – who share a passion for innovation. We've over 40 communities with around 1,500 active participants. These communities are both a source of innovation and our innovation delivery network – helping to ensure new innovations are translated into the circa 70 standards we operate to.

And to continue driving our ambition to make our workforce the most technically skilled in the industry by 2020, we're committed to creating a centre of excellence – The Severn Trent Academy.

Our centre of excellence will showcase our technical brilliance and resilience, and bring all our learning resources and assets together into one integrated community, regardless of where they sit in our structure today. The academy will help us ensure we have the right skills in place for deployment and optimisation of new technologies.

The future

We operate in a world of increasing complexity, uncertainty and rapid change. Climate change, evolving customer behaviours and disruptive technologies – to name a few – all present challenges and opportunities for our business. We need to be adaptive and agile in response.

Our five strategic ambitions to succeed in a changing world

To meet the evolving needs of our business in a rapidly changing world, we've restructured our innovation needs document around five strategic ambitions. These ambitions are the enablers of our wider company strategy – focusing on AMP7, 2045 and beyond – and endorsed by our Board. Because they're designed to inspire and challenge us, we've made them bold and ambitious.

The five ambitions also respond to our Water Forum (customer challenge group), which has challenged us to explore the potential of artificial intelligence to process data and generate real insights to serve our customers.

Our strategic ambitions focus on radical change

| Create a carbon neutral business and turn waste into products | Reduce the amount of water we abstract by 50% in 10 years | Reduce leakage by 15% in the next five years | Reduce service failures by at least 30% | Explore how AI & robotics can help automate at least 30% of our production and support services activities |

The ambitions are focused on radical change – to address the issues that challenge our sector and not only improve *how* we do what we currently do, but also fundamentally change *what* we do.

They build on the game-changing initiatives we've been working on over the last AMP. For example, we're already pioneering urban catchment with a flagship project near Redditch. This trial is designed to build our understanding of operational models, product recovery, enhancing resilience and carbon neutral wastewater operations. It's part of our ambition to create a carbon neutral business – enabled by turning all wastes into products. Our experimental effluent factory at our Spernal site has already led to:

- £80,000 opex savings per annum from optimised chemical and energy use;

- a 28 hour saving in operator time each week through process automation;

- £300,000 additional income per annum from combined heat and power (CHP) generation; and

- improved operator engagement and morale by reducing reactive work.

We know we're not alone in the challenges that face our business. So to date, we've talked to over 30 companies world-wide from Levi Strauss to NASA to learn from the experience of others who are ahead of us. This insight is helping us to build our future innovation strategy.

22   ALIGNING RISK AND RETURN

Our plan will deliver substantial customer benefits and a sustainable, fair and appropriate balance of risk and return.

In this chapter we explain our approach to financing and balancing risk and return. Our plan will provide our customers with a substantial reduction in the bills they face before inflation: average bills will fall by 5% in real terms as measured by the Consumer Price Index including some owner occupied housing costs (CPIH). On a like-for-like basis, this is more than double the size of the bill reduction provided for at PR14 before inflation. We believe that in delivering this level of bill reduction, our plan provides for a fair balance of charges over time, and does so in a financially responsible and sustainable manner.

Our approach to the balance of charges over time has been guided by three core principles, which were strongly supported by our customers during our deliberative research:

a. Each generation of customers should pay its fair share.

b. Bills should be stable over time, where possible, avoiding big fluctuations up or down.

c. The balance of charges over time should enable us to maintain a stable and low cost funding platform for investment.

These principles informed our approach in two key areas:

1. **Applying a CPIH-based approach from 2020**. The Retail Price Index (RPI) has been found to overstate inflation, and for water sector price controls it is being replaced by CPIH, which is a more reliable index. Our plan involves moving to a CPIH-based approach from 2020, consistent with the views of our customers.

2. **The balance of debt interest costs paid by current and future consumers**. The cost allowance that Ofwat provides companies to finance their investments over time has two parts:

   - an allowance for inflation is deducted from Ofwat's measure of efficient financing costs and that amount is passed on to be paid by future customers; and

   - the remainder is included in bills to be paid by current customers.

Over the years since the financial crash, interest rates have remained extremely low and this has operated to the benefit of customers, reducing the overall allowance for financing costs in three successive price reviews. It has also meant, however, that the proportion of financing costs paid by current (as opposed to future) customers has fallen significantly over time, and this can hinder our ability to access low cost financing. While it would be possible to reduce bills further at this review that would come at a cost to customers in future.

Our plan provides for a fair and appropriate balance of risk and reward across our customers, our shareholders and our employees. On ODIs, our proposed measures are marginally skewed to the downside due to the level of stretch in our plan, with a Return on Regulated Equity (RoRE) range of -3.0% and +2.6%. This is also the case for many other elements that impact RoRE. Since we are already putting forward challenging efficiencies and performance improvements, we believe a significant portion of the potentially available gains is already being passed on to customers. Overall, we have identified a RoRE range of -5.3% to +4.7%. We set out below how we arrived at this range and in Appendix A11.

We tested our business plan and the balance of charges with customers, and 85% found our plan acceptable. Customers also expressed strong support for how we were balancing charges over time and 88% favoured our proposed approach to transition to CPIH rather than having an even larger bill reduction in the short term.

More detail on our approach to risk and return is set out in Appendix A11: Aligning risk and return.

22.1   A 5% REDUCTION IN BILLS (BEFORE INFLATION)

Our plan provides for a 5% reduction in average household bills over 2020-25 before inflation. This reduction is shown below, and is after account has been taken of rewards that we are due to receive for exceeding some of our performance commitments for 2015-20. Our plan provides for a larger 5.4% reduction in bills before these rewards are considered, but we focus on the 5% reduction here as that is the change we expect our customers to experience in terms of bill levels.

Our starting point for 2020 reflects the agreed movement in prices from PR14. Against this we have included all in-period ODI penalties whilst deferring the vast majority of in-period ODI rewards into AMP7 to minimise bill volatility.

Average household bills go down by 5% in real terms under our plan (2017/18 prices)[1]
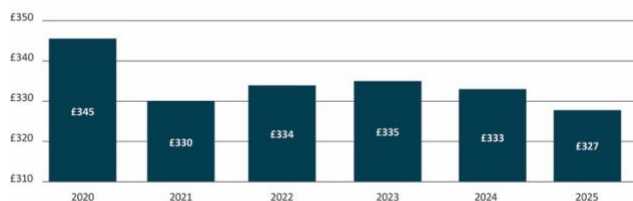
The following figure shows our forecast of the bill levels our customers would face after inflation is taken into account, and highlights how we've smoothed the profile of bills over time. It includes estimated bills to 2030, and assumes annual inflation of circa 2%, in line with the Bank of England's long-

term forecast for CPIH, the new and more reliable measure of inflation that will be used in the water sector from 2020. Given our PR19 plan, we expect the average bill that our customers face after the effects of inflation to remain below the 2018/19 industry average bill until 2030.

Forecast average household bills to 2030 after inflation
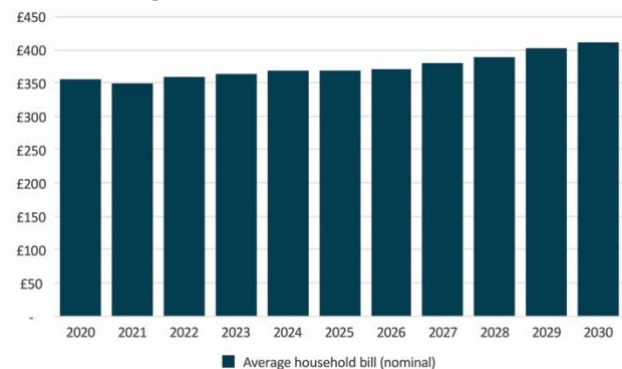
CPIH shows inflation to be lower than that measured when the Retail Price Index (RPI) – the inflation measure currently used in the water sector – is used. That means that before inflation, bill reductions look smaller when CPIH is used rather than RPI, this is important to bear in mind when comparisons with past bill reductions are being made. The 5% before inflation bill reduction provided for by our plan is equivalent to a 13% reduction when considered in RPI terms. Given this, on a like-for-like basis, our planned bill reduction for PR19 is more than double the size of the bill reduction provided for at PR14 (13% versus 4%).

Overall bill movements

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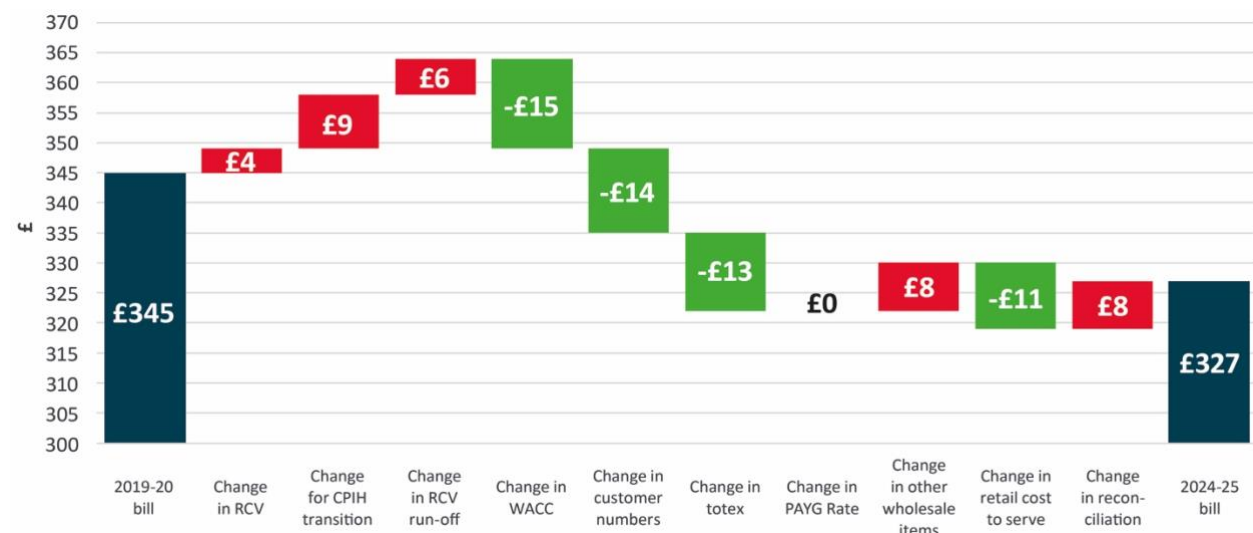
[1] The average bills in this graph are based on the conventional method – that is, the total household revenue for each service divided by the number of customers billed for that service. Using the method in the Ofwat financial model

(wholesale / billed services + allowance for combined service) lowers the average bill in each year by £3 for Severn Trent. For WaSCs with more single service customers, the impact is much larger.

The key factors driving a significant reduction in bills include the efficiency challenge we have set ourselves, the reduction in allowance for financing costs (i.e. the Weighted Average Cost of Capital (WACC)) and population growth. The transition to CPIH from 2020, and some use of Regulatory Capital Value (RCV) run-off tools to support a stable, low cost funding platform under our notional and actual structure offset these downward effects to a small extent, but were strongly supported by 88% of our customers as providing for fair charging over time, including for customers in the longer term. The implication of this approach is that our customers will continue to enjoy the lowest average combined bills in England. Our bills are on average £57 lower than the average in the sector based on 2018/19 combined bills and we expect this position to improve by even more by 2025.

22.2   A FAIR BALANCE OF CHARGES OVER TIME

The assets that we build, maintain and use to deliver water and wastewater services provide benefits to customers over many years. Because of this, the question of how to achieve a fair balance of charges over time needs to be addressed.

Our approach to this has been guided by three core principles:

a. **Each generation of customers should pay its fair share**. Because the assets used to provide water and wastewater services – reservoirs, underground pipes, treatment works etc. – can last for very long periods, we get benefit today from investments that were made (sometimes long ago) in the past, and investments that we make today can give benefits to customers long into the future. A fair balance of charging implies that the costs of assets should be spread out so that each generation pays its fair share (recognising the benefits they get). This principle is in line with the government's requirement that water charging should seek to provide intergenerational equity.

b. **Bills should be stable over time, where possible, avoiding big fluctuations up or down**. Research has consistently identified that customers value bill stability where possible, and the avoidance of bill volatility where possible. Change introduced as part of a new business plan can affect the profile of bills over time. Where possible we aim to ensure that prices are changed in ways that are sustainable so that undue bill volatility is avoided.

c. **The balance of charges over time should enable us to maintain a stable, low cost funding platform for investment**. Our costs of borrowing will depend on how our credit rating is assessed; if our credit rating deteriorates, then borrowing costs will go up. We invest more than £5bn every AMP to deliver better outcomes for customers and the environment, and maintaining a stable and resilient platform for investment allows this to be done while keeping bills low for all customers.

These principles were strongly supported by customers in our PR19 deliberative research. In particular customers felt the principles were sensible, with all of them contributing to delivering stable customer bills – their main concern: "they are about protecting the customer and being consistent in terms of bills."

When presented with the potential for a bill reduction that was greater than 5%, customers favoured our proposed approach to the balance of charges compared to a greater bill reduction. This reflected the view that our approach was financially appropriate and sensible: "It seems like the ethical and best thing to do for the customer". This was supported by quantitative research with a representative sample from our online community, with 88% of those surveyed preferring a smaller bill reduction over the next five years, but a more stable profile over time.

Our plan applies a more reliable inflation measure from 2020

Our approach to taking account of inflation has been informed by these principles. RPI has become a discredited measure that has been found to provide too high a figure for inflation. Ofwat has recognised this, and RPI is being replaced by CPIH, a more reliable inflation measure. An important question for PR19 concerns how this change from using RPI to using CPIH should be introduced.

The choice of inflation measure is important for the balance of charges over time because of how the costs of financing investments are funded. The costs of financing in part reflect inflation, and this is taken into account in the way that Ofwat funds financing costs. In particular, the allowance that is provided to reflect the costs companies face to finance their investments over time has two parts:

• An allowance for inflation is deducted from Ofwat's measure of efficient financing costs and that amount is passed on to be paid by future customers. This is done by increasing the RCV each year in line with inflation.

• The remainder is included in the bills to be paid by current customers.

Our plan involves moving to a CPIH-based approach from 2020. We think this is appropriate as it uses a reliable measure to take account of inflation when seeking to balance the costs to be paid by current as compared with future customers. An alternative would be to introduce the change from RPI to CPIH gradually, so that RPI is still used over 2020-25 but to a lesser extent each year. Ofwat has provided a mechanism for this kind of gradual approach to be used.

Moving to CPIH in this kind of gradual way may have allowed for a larger bill reduction in 2020-25 than we have included in our plan, but that would only follow because using RPI would mean that more costs would be being deferred and paid by customers in the future, meaning that future prices would be relatively higher. **The gradual approach would, therefore, involve knowingly using too high a measure of inflation as a basis for passing a higher RCV on to be paid for by future customers.**

Gradual transitions can be an important tool when new approaches are being introduced, particularly if they can help avoid sudden bill impacts. However, our plan for 2020-25 is a challenging one and involves a 5% real bill reduction. A more gradual transition to the CPIH framework would allow a larger bill reduction in 2020-25, but – as highlighted above – that would only arise because more costs are being passed onto future customers. We do not think this more gradual approach fits well with the principles we have identified. Indeed, with the WACC reducing we consider the start of AMP7 to be an ideal time to transition quickly to CPIH as it results in a more stable bill profile, including importantly for customers beyond AMP7.

As we explain below, our plan involves moving to a CPIH-based approach from 2020 by increasing the run-off rate for the RPI-linked RCVs in order to offset the RPI-based uplift that would otherwise occur.

## 22.3　A SUSTAINABLE FRAMEWORK FOR FINANCING

Capital structure

The RCV is a measure of the total costs from past investments that remain to be paid off through charges at any point in time, and can be thought of as a (large) mortgage. The RCV is funded partly by shareholder equity and partly through borrowing (debt). The proportion of the RCV that is accounted for by debt is referred to as the level of 'gearing'.

Since privatisation and listing on the London Stock Exchange, we have always operated at near the notional level of gearing. For 2020-25, we intend to continue operating at close to the notional level and within a range of 57.5% to 67.5%, which provides 5% tolerance either side of our starting point, which is broadly in line with the current notional level of 62.5%.

Severn Trent average gearing compared to notional structure since AMP3

Severn Trent average gearing compared to notional structure since AMP3
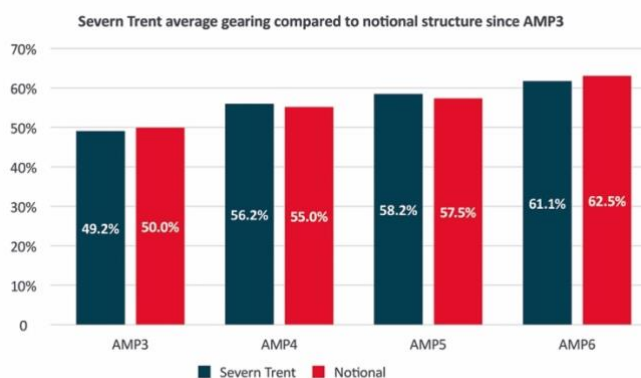
The WACC and retail margins

Our plan assumes Weighted Average Cost of Capital (WACC) and retail margin levels that are in line with Ofwat's early view as set out in its December 2017 Final Methodology.

	Nominal (%)	Real (CPIH 2%) (%)	Real (RPI 3%) (%)
Cost of equity	7.13	5.03	4.01
Cost of debt	4.36	2.32	1.33
Appointee WACC (vanilla)	5.47	3.40	2.40
Retail net margin	0.10	0.10	0.10
Wholesale WACC (vanilla)	5.37	3.30	2.30

While we have used Ofwat's early view of the WACC in our plan, we have concerns over how the cost of debt has been calculated by Europe Economics. The cost of debt is determined by three factors:

i. the assumed cost of 'embedded' debt (debt that will already have been taken out ahead of 2020);

ii. the assumed cost of new debt (debt that will be taken out during 2020-25); and;

iii. the assumed proportion of overall debt that will be accounted for by new, as opposed to embedded, debt during 2020-25.

Ofwat's early view of the WACC included the assumption that, on average during 2020-25, 30% of all debt will be 'new' and 70% 'embedded'. This assumption was in line with the view presented by Europe Economics in a report it completed for Ofwat.

We've been unable to ascertain how Europe Economics arrived at the view that 30% was appropriate. This has a material impact on the WACC calculation as, on average, the cost of new debt is likely to be significantly lower than the cost of embedded debt (as a significant portion of embedded debt will have been taken out when interest rates were higher). If too high a proportion of new debt is assumed, then, the overall cost of debt (and so the overall WACC estimate) will be inappropriately depressed.

The 30% split marks a significant change from PR14 and previous reviews, where Ofwat assumed that 25% of debt would be 'new' on average. Our forecast debt profile implies that, on average, a little under 25% of our debt will be 'new' during 2020-25 and so is consistent with the PR14 position.

Our base dividend policy

For 2020-25, we plan to have a base level of dividend that is in line with Ofwat's assessment of the return on equity, with an allowance for inflation based on CPIH stripped out. That equates to base dividend payments in line with a circa 5% RoRE. We discuss our dividend principles and sharing of outperformance in Chapter 18.

Our target credit rating

For our PR19 plan, our target credit rating is BBB+/Baa1, consistent with Ofwat's approach to the notional company and how it is setting the cost of new debt (using a 50:50 mix of A and BBB iBoxx indices for non-financial companies).

We're targeting a credit rating of BBB+/Baa1 because it allows us to maintain a stable, low cost, resilient funding platform for investment into the future. As a large public utility we invest over £5bn every AMP to improve services and deliver better outcomes for customers and the environment. To deliver this investment we are projecting that we will need to raise £3bn of debt in 2020-25. If our credit rating was to fall one notch, it would result in higher costs of approximately £27m in the next AMP.

Maintaining this stable, low cost funding platform is extremely important to keep bills low in our region and for customers more generally in England and Wales. This is because the cost of the debt we raise in AMP7 and future AMPs informs how the allowance for embedded debt is set in the future. Maintaining a low cost of debt helps ensure that the benchmark used in future price reviews remains low, thereby keeping bills low for all customers.

A BBB+/Baa1 rating helps to provide greater financial resilience.

We've seen recently in the case of Moody's, that rating agencies can revise their view of the water industry in a negative way quite quickly and without warning. It is therefore essential that we manage this risk by ensuring we have sufficient ratings headroom. This headroom is also important to manage other risks, for example:

- downside scenarios, whether exogenous or endogenous, which require investment; and

- times of market stress whereby BBB+/Baa1 companies will have better access to markets than weaker ones, particularly at the BBB-/Baa3 level.

22.4 PAY AS YOU GO (PAYG) AND RCV RUN-OFF RATES

PAYG rates determine the proportion of total expenditure (totex) that will be paid for by customers in the same year that the expenditure is incurred. The remaining proportion of totex (1-PAYG) is added to the RCV and paid for over a longer period. Given this, PAYG rates have a significant impact on the balance of charges over time. The average PAYG rates that we use in our plan for wholesale water and wastewater are set out in the following figure and the basis upon which we arrived at these PAYG rates is also described.

Average PAYG rates are stable when compared against PR14
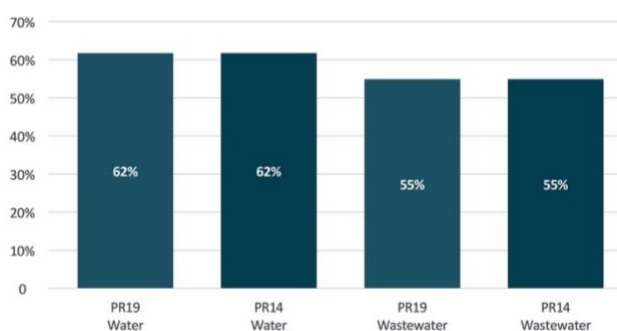
RCV run-off rates determine the proportion of the RCV that is 'paid down' each year, and so affect the size of the RCV that is passed on to future customers at the end of the 2020-25 price control period. The average RCV run-off rates that we use in our plan for wholesale water and wastewater are set out in the following figure. Our average RCV run-off rates for wholesale water are a little higher, and for wholesale waste are a little lower, than the levels that applied at PR14. However, we use the RCV run-off rate in our PR19 plan as a 'lever' to apply our transition to a CPIH-based approach from 2020, and this results in higher run-off rates being applied to RPI-linked RCV. The basis upon which we arrived at these RCV run-off rates is described later.

Run-off rates compared to PR14
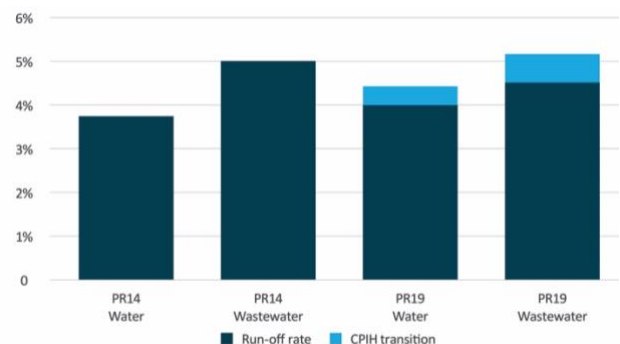
PAYG rates

Our assessment of PAYG rates (in line with our approach at PR14) is based on the extent to which totex can be expected to be accounted for by:

- **operating expenditure (opex)** – the day-to-day costs that we incur when delivering water and wastewater services; and,

- **Infrastructure Renewals Expenditure (IRE)** – the costs of maintaining our underground assets to an appropriate level to underpin service provision.

In arriving at our view of an appropriate PAYG rate for this plan, we started by considering our PAYG rates for PR14, and by examining how the proportion of totex accounted for by opex + IRE over time has compared with those rates over time. This comparison is summarised below.

PR14 PAYG rates compared with outturn levels of opex + IRE as a percentage of totex

	Wholesale water (%)	Wholesale wastewater (%)
PR14 PAYG levels	62.1	55.0
(opex + IRE) as % of totex:		
AMP6 to date	58.3	57.7
AMP 5	77.2	59.3
AMP 4	78.6	57.1
Average AMPs 4-6	71.4	58.0

We took these comparisons as our starting point, as they help provide a view on how stable or otherwise the structure of costs has been over time. This is relevant, as under a totex framework, while PAYG rates would be expected to reflect the underlying structure of costs (in order to provide for a fair balance of charge between current and future customers), it is not obvious that they should be set equal to the view on the likely percentage of totex accounted for by opex + IRE in a given year. **Rather, we would expect PAYG rates to broadly reflect the structure of costs over time, but to remain**

relatively stable, and to be adjusted only in response to relatively clear and significant changes to that structure. That is, we would expect PAYG rates to be reflective of – but not mechanistically linked to – measures of the structure of costs over time.

For wholesale wastewater, the percentage of totex accounted for by opex + IRE has been relatively stable over the past 10-15 years, and has been a few percentage points above the 55% PAYG figure used at PR14. Our totex forecasts for 2020-25 show an expectation that opex + IRE will account for around 50% of wholesale wastewater totex. Despite this difference, we consider it appropriate to continue to use the PAYG rate of 55% that applied for PR14.

In arriving at this view, we have taken account of the inevitable uncertainties associated with forecasting the structure of costs. **This is illustrated by the fact that our initial forecast of the proportion of wholesale wastewater totex accounted for by opex + IRE in our PR14 plan was similar to that implied by our PR19 totex forecasts, but has turned out to be well below the proportion observed in the AMP so far** (which as shown in the earlier table is circa 58%, whereas in the PR14 plan we forecast 49%).

The fact that the forecast turned out to differ from what has been observed is not surprising, as finding different and better ways of delivering on a plan is central to the achievement of ongoing efficiencies. It may also be that cost structure forecasting can tend to involve a degree of 'capex bias', as opportunities for efficient opex alternatives may be more difficult to identify in planning processes, and be more dependent on 'within project' initiatives.

These factors suggest to us that we should be cautious when interpreting forecasts that may suggest that a lower PAYG rate could be used. Applying a lower rate benefits current customers by reducing the contribution they make to totex through their bills. As this benefit would be secured by passing a higher proportion of costs onto future customers, we think it appropriate to only look to crystallise such a benefit when there has been a clearly identifiable and significant shift in cost structures. We consider this approach to PAYG rates to be consistent with the principles for fair charging over time that we highlighted above (as it aims to ensure that each generation pays its fair share, and to provide a relatively stable way of setting PAYG rates over time).

For wholesale water, the figures on the percentage of totex accounted for by opex + IRE are more varied. Over AMP4 and AMP5, opex + IRE accounted for around 78% of totex, around 16 percentage points above the PR14 PAYG level of 62.1%. However, the first three years of AMP6 show opex + IRE as having accounted for around 58% of totex, and our PR19 totex forecasts point to opex + IRE accounting for around 60%.

We consider it appropriate to be cautious when interpreting forecasts that may suggest that a lower PAYG rate could be used, not least because AMP6 has been a relatively unusual period in terms of the structure of costs given the scale of the Birmingham Resilience Project. We consider the continued use of a rate of around 62% to represent a reasonable and prudent approach for PR19. The evolution of opex + IRE as a percentage of totex through to the end of AMP6 and into AMP7 will inform whether an adjustment to the PR14-based levels is appropriate for PR24.

RCV run-off rates

Our approach to RCV run-off rates involved considering three key questions:

- What should be understood as the 'natural rate' for RCV run-off?

- How should our approach of applying CPIH from 2020 affect RCV run-off rates?

- Are other adjustments to RCV run-off rates appropriate in order to address financeability issues that would otherwise be likely to arise?

The 'natural rate' for RCV run-off

The concept of a 'natural rate' for RCV run-off can be understood as fitting with the key principle (highlighted above) that each generation should pay its fair share. A standard way of approaching this in relation to long-lived assets in the water sector (and indeed in a wide range of other sectors) has been through the assessment of current cost depreciation (CCD) levels, which can be thought of as the provision required to account for the value of the assets that is 'used up' in each period, where that value is calculated on some form of replacement cost basis.

In line with the approach taken at PR14, we have considered depreciation in two parts: depreciation of the opening RCV for AMP7 (which relates to the whole range of assets in place at that time covered by each price control) and depreciation of RCV additions during AMP7. For assets that are in place at the beginning of AMP7 we have taken the following approaches:

- For Water Resources assets existing at 2020, we've set the natural rate equal to 3.9%. This is in line with our forecast of CCD relative to RCV levels over AMP7 for those assets, which is relatively stable at around that level.

- For Water Network Plus assets existing at 2020, we've set the natural rate for assets existing at 2020 at 3.8%, which is the same as the rate that applies Wholesale Water at the end of AMP6. While our forecast of CCD levels identifies a reduction in CCD levels towards the end of AMP7, we do not think this justifies a reduction in the natural rate from the end-AMP6 view (which was explicitly intended to provide a sustainable long-term level). Short-term fluctuations in CCD levels are to be expected depending on the historic timing and useful lives of past investments.

From the perspective of fair charging over time, however, such fluctuations have limited relevance.

- For Wastewater Network Plus assets existing at 2020, we've set the natural rate for assets existing at 2020 at 4.5%. This is significantly lower than the run-off rate for Wholesale Wastewater of 5% that has applied throughout AMP6. In part this difference is explained by the separate consideration of bioresources (where asset lives tend to be shorter), but it also reflects that our forecast levels of CCD over AMP7 imply significantly lower rates (e.g. 4.2% in the opening year of AMP7). As was noted in relation to Water Network Plus, from the perspective of fair charging over time it is important to take a longer-term view (given the characteristics of the underlying assets). In line with this, we have based our assessment of the natural rate for AMP7 on both the AMP6 and the (forecast) AMP7 position and formed an intermediate view.

- For Bioresources assets existing at 2020, we've set the natural rate equal to 6.2%. This is in line with our forecast of CCD relative to RCV levels over AMP7 for those assets, which is relatively stable at around that level.

PR19 natural run-off rates for assets existing at 2020 compared with PR14 – Wholesale Water
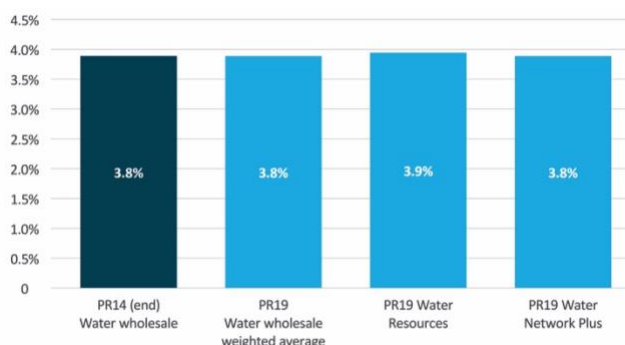
PR19 natural run-off rates for assets existing at 2020 compared with PR14 – Wholesale Wastewater
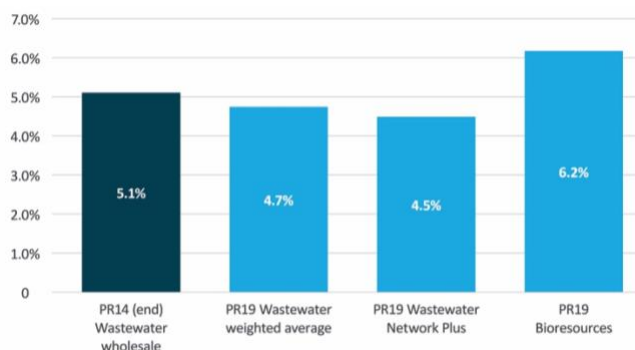
For RCV additions during PR19, we have set the natural rate equal to our assessment of CCD as a percentage of the accumulated level of RCV additions for the relevant year.

PR19 average natural rates for RCV additions	
Water Resources	6.2%
Water Network Plus	4.5%
Wastewater Network Plus	4.4%
Bioresources	5.2%

Our RCV run-off rates provide a means of applying CPIH indexation from 2020

Applying CPIH from 2020 means that the annual adjustment to the RCV to reflect inflation is based on CPIH. The mechanics of the approach that Ofwat intends to put in place involves 50% of the opening RCV being indexed to CPIH, and the other 50% indexed to RPI. As all RCV additions will be indexed to CPIH under Ofwat's approach, the proportion of the RCV that is indexed to RPI should decline over 2020-25.

In order to apply CPIH-only indexation from 2020, the 'wedge' between RPI and CPIH needs to be unwound for those proportions of the RCV that are subject to RPI indexation under Ofwat's approach. Increasing the RCV run-off rate provides a means of doing this, as the upward effect that RPI (relative to CPIH) indexation has on the RCV can be offset by the downward effect that a higher run-off rate has. In line with this, we've increased run-off rates for the RPI-linked part of the RCVs to reflect an estimate of the 'wedge'. Inflation forecasts indicate that an adjustment to the run-off rate (applied to RPI-linked RCV) of around 1.4% on average over AMP7 is appropriate.

Our RCV run-off rates address notional financeability constraints and allow us to maintain an appropriate credit rating

The RCV run-off rates in our plan are marginally higher than levels implied by the natural rate and CPIH assessments referred to above. These higher run-off rates allow us to be able to maintain an appropriate credit rating of BBB+/Baa1 (consistent with the cost of new debt being set on the basis of A/BBB).

The need for these higher run-off rates is driven by what are referred to as 'notional' company financeability constraints. These are financeability constraints that are not driven by our plans in terms of capital structure and dividend policy, as they also arise when our capital structure and dividend policy is assumed to be in line with that of the 'notional' company structure and dividend policy that Ofwat has identified as appropriate to use as a benchmark.

The underlying cause of the notional financeability constraints that we would face if lower RCV run-off rates are applied is the balance of financing costs paid by current as opposed to future customers, due to the long period of persistently low interest rates. The allowance that Ofwat provides to reflect the costs companies face to finance their investments over time has two parts:

- an allowance for inflation is deducted from Ofwat's view of efficient financing costs and that amount is passed on to be paid by future customers; and

- the remainder is included in the bills to be paid by current customers.

Persistently low interest rates have meant that the proportion of financing costs paid by current (as opposed to future) customers has fallen significantly over time, and this change undermines our ability to maintain an appropriate credit rating. For most of the debt we hold, the cash interest payments that we need to make each year include an allowance for inflation, but (in line with the approach described above) the funding that is provided from customer bills does not. The significance of this is illustrated by the following table which shows the difference between Ofwat's assessment of interest rates before and after inflation has been stripped out.

Ofwat's early view of the cost of debt for PR19 with and without inflation stripped out

	Including an allowance for inflation	With inflation stripped out using RPI	With inflation stripped out using CPIH
Cost of debt	4.36%	1.33%	2.32%

It can be seen from the table that using RPI as an inflation measure exacerbates the size of the gap between the cost of debt including inflation (that we typically have to pay) and without inflation (that is provided for in current bills). Given this, our approach of applying CPIH from 2020 goes some way to alleviating this issue, however, notional financeability issues remain.

The assessment of our (and other company) credit ratings is based on a series of credit metrics, and in order to maintain a given credit level it will be necessary to ensure that the value of the relevant credit metrics can be maintained over time within a defined range. A key thing that these metrics test for is the extent to which companies have available funds that exceed their interest payment commitments (i.e. the size of the cash 'buffer' they have to guard against cost and/or revenue variations).

Ofwat's approach to funding means that the amount provided to cover debt costs is less than our interest payments – a point acknowledged in the PR19 methodology. In Ofwat's notional company assessment at past price controls, it has been possible to maintain appropriate metrics because of the return on equity. But given the significant reduction in the cost of equity presented in Ofwat's early view of the WACC,

the size of this cash 'buffer' will be significantly diminished, and this affects credit metrics.

As set out above, our target credit rating in our PR19 plan is BBB+/Baa1. This is consistent with Ofwat's view of the appropriate credit profile for the notionally financed company when determining its approach to the cost of new debt, and with the view that companies must maintain headroom against the floor for the investment grade. We consider this to be a prudent and appropriate credit rating target to use.

In its Final Methodology for PR19, Ofwat said that in order to maintain incentives on management, it would make reconciliation adjustments relating to incentive mechanisms from previous control periods after carrying out its assessment of notional financeability. As Ofwat highlighted, this approach ensures that customers do not pay more to address financeability constraints arising from poor performance in the previous period, and similarly that the value of outperformance payments for performance against regulatory incentive mechanisms is not eroded as a result of adjustments made following the financeability assessment.

We firmly agree with Ofwat about the importance, for maintaining appropriate incentives, of adopting a pre-legacy adjustments approach to assessing notional financeability. Our plan includes an uplift to RCV run-off rates of 0.14% to address notional financeability constraints. However, this level of financeability adjustment falls some way short of being sufficient to maintain an appropriate BBB+/Baa1 credit rating on the basis of a notional assessment before legacy adjustments. We would expect to have to uplift RCV run-off rates by around 0.4% (rather than 0.14%) in order to achieve appropriate credit metrics on this pre-legacy adjustment basis.

Our plan involves not making this higher level of financeability uplifts to RCV run-off rates, but instead making use of the impact that our ODI rewards from PR14 can have on our cash position in AMP7. These rewards allow us to meet appropriate credit metric expectations while at the same time delivering a substantial real terms price reduction for our customers. We believe that this approach provides a balanced approach that dampens the extent to which it is necessary to use financeability levers to address the constraint.

Our use of some level of financeability uplift to run-off rates is consistent with the principles for providing a fair balance of charges over time, and has been strongly supported by our customers in our PR19 research. These principles explicitly recognise the importance of maintaining a stable, low cost funding platform for investment.

In our PR19 customer research we explained that we could provide a larger price reduction in 2020-25 than the 5% cut before inflation included in our plan, if the RCV was paid down at a slower rate. We identified the scale of the additional price

reduction that this may allow, and the implications of adopting this alternative approach for the profile of bills over time. 88% of a representative sample from our online panel preferred a smaller bill reduction over the next five years, but a more stable profile over time.

22.5   A STABLE PLATFORM FOR INVESTMENT

Our plan is financeable at the appointee level using a notional capital structure, after account is taken of our ODI rewards from AMP6. The following below shows our credit metrics after legacy AMP6 adjustments and after re-profiling in order to try to manage credit metrics across the control period.

Notional company post-legacy and profiling financial metrics

	2021	2022	2023	2024	2025
Gearing	61%	61%	61%	62%	62%
Adjusted cash interest cover	1.49	1.49	1.56	1.64	1.61
FFO/debt	10.4%	10.4%	10.5%	10.6%	10.4%
Adjusted cash interest cover (alternative)	1.22	1.22	1.30	1.38	1.37
FFO/debt (alternative)	9.6%	9.3%	9.4%	9.6%	9.4%

We've looked at the financeability of each specific control. Although financeability is critical at the appointee level, given that is how finance is raised, assessment at the control level reveals the extent to which charges are balanced between water and wastewater. We've reviewed the outputs for the separate controls within Ofwat's financial model and believe that there is a reasonable balance between the ratios for each sub-control. There are, however, some issues with the calculation of adjusted interest cover.

Details of this price control-based assessment are provided in Appendix 11: Aligning risk and return.

We've also assessed the financeability of our plan on an actual capital structure. This is critical because it is on this basis that we raise finance. We consider that our plan would allow us to maintain a BBB+/Baa1 credit rating.

22.6   A FAIR AND APPROPRIATE BALANCE OF RISK AND REWARD

Our plan provides for a fair and appropriate balance of risk and reward across our shareholders, our employees and our customers. This is provided in two main ways:

- By establishing stretching but realistic service provision and cost targets in our 'base' plan – it is these challenging base commitments that enable us to deliver a 5% reduction in bills before inflation.
- By having appropriate mechanisms in place to manage the implications of service provision and/or cost levels differing materially from those in our base plan.

This second aspect is central to providing for a fair balance of risk and reward. We strongly believe in the benefits that can result from rewarding performance improvements, and have been a leading advocate for the establishment and development of the Outcome Delivery Incentive (ODI) arrangements that all companies now put in place. To be effective and legitimate, however, these kinds of incentive arrangements need be applied in ways that strike a fair balance between customers, shareholders and employees. Our track record shows the priority we have consistently given to this issue over time. For example:

- In AMP5 to 2012, we benefitted financially from inflation levels being higher than had been anticipated in our base plan. We shared the benefit evenly between customers and shareholders, investing an additional £150m in improving services for customers, and paying a special dividend of £150m.

- In this AMP we have reinvested £220m of totex efficiencies as part of a share buyback to adjust our gearing, while also creating a new Care and Assistance team to support our most vulnerable customers.

For our PR19 plan we have gone even further and formalised our approach to sharing in our dividend principles along with the introduction of a new community dividend (see Chapter 18: A company you can trust).

Ofwat provides a standard framework for assessing the balance of risk and reward that involves identifying the extent to which changes to base assumptions can affect the RoRE. This gives a means of taking stock of the overall balance of risk and reward provided for by our plan. The RoRE analysis focuses on identifying what is referred to as a P10 to P90 range, in order to investigate how returns would be affected by relative typical types of deviations, with the range excluding the more extreme top and bottom 10% of potential outcomes.

We have calculated RoRE ranges for the following:

i. Totex levels.

ii. Costs of new debt.

iii. ODI performance.

iv. Revenue levels.

The management and mitigation of risks associated with (i) – (iv) forms an integral part our ongoing risk management processes, and this affects the likely implications of risks in different areas for our customers, shareholders and our people. We summarise how we've identified our RoRE ranges for each of the key risk areas below. Further details on the basis upon which we arrived at these assessments, together with some explanation of how we manage and mitigate relevant risks can be found in Appendix A11.

Totex levels

The actual level of totex we spend may be higher or lower than the level forecast in our plan because of a number of factors, including in particular:

a. Input price movements (energy, materials, labour).

b. Weather, including the extent and effects of severe weather events.

c. Economic conditions (which can affect activity levels, bad debt, etc.).

d. Output/outcome requirements (for example, required outcomes may depend on regulatory decisions that have not as yet been settled).

e. Input requirements – forecasting totex requirements for future projects can involve tackling inevitable uncertainties over what inputs may be required to deliver a given outcome (before efficiency issues are considered). For example, there have been significant costs to address cyber risks beyond what was anticipated in our PR14 plan.

f. The efficiency of our operations.

Given the range of sources of totex risk highlighted above, we have formed a top-down view of what a reasonable P10 to P90 range is for overall totex spend. This has drawn on the scenarios we've developed and assessed as part of our financial resilience work, but also takes account of the challenging nature of our plan. The totex challenge in our plan goes significantly further than a level of totex that we think there is a 50% likelihood of outperforming against. This totex challenge sits alongside much more stretching commitments concerning the outcomes we will deliver. In line with this, we have identified a P10 to P90 range as follows:

- planned totex -5% for wastewater, -2% for water (i.e. totex out-performance of 5% and 2%);

- planned totex +10% (i.e. totex under-performance of 10%).

We've assumed less scope for outperformance on wholesale water totex as we think this is a realistic reflection of how much we are committing to improve our performance to meet the totex and ODI targets we've set.

Finance costs

We think that the potential range of performance against the iBoxx could be up to around 30 basis points (bps) on the upside. This is around double the average 'halo effect' which Ofwat observes from industry performance relative to the index in prior periods. We've identified the potential for this level of upside as we put considerable effort into seeking out new sources of debt both to diversify our overall mix of sources, and to reduce our finance costs. The benefits of this flow through to all customers over time through Ofwat's embedded debt benchmarking. If Ofwat adjusts the index to capture the level of average outperformance identified as the 'halo effect' up-front, then the potential upside reduces to 15bps (and the incentive on companies like us to be bold and innovative in our financing strategies would also be likely to reduce). On the downside, the range would again be around 30bps for a company that manages to maintain an A/BBB+ credit rating – i.e. within the bounds Ofwat has assumed for the iBoxx index. Among other things, this takes account of the incremental cost of securing CPIH-linked debt, for which the market is still quite illiquid. If pressures on our credit metrics

resulted in a downgrade, further under-performance by more than 30 basis points could easily result.

Outcome Delivery Incentives

To understand the potential RoRE impact of our package of performance commitments and ODIs we have undertaken monte carlo simulation modelling. This approach allows us to consider the potential rewards and penalties in a more sophisticated manner than simply adding up all the rewards and comparing that to the total penalties. From this modelling we've estimated a P10 and P90 range of -3.0% and +2.6%. The downside weighting is consistent with the fact that before any reward can be earned, stretching performance needs to be delivered.

Revenue

In practice, the scope for RoRE impacts to arise as a result of revenue variations under the water and wastewater Network+ controls is relatively limited because of the neutral way in which revenue imbalances are addressed through the wholesale revenue forecasting incentive mechanism (WRFIM). Having considered this range of revenue risks, we have identified a P10 to P90 range of +0.16% to -0.21% of RoRE (this excludes the cost impacts of change in sludge production which are captured in totex).

Overall RoRE range in our plan

The overall RoRE range for our plan is -5.3% to +4.7% and is shown in the following diagram. RoRE ranges for each price control are provided in Appendix A11. The ranges are calculated by adding together the ranges for totex, finance costs, ODIs and revenue, and so assume that the highest (or lowest) levels of all four of the component ranges could occur simultaneously.

Overall RoRE range
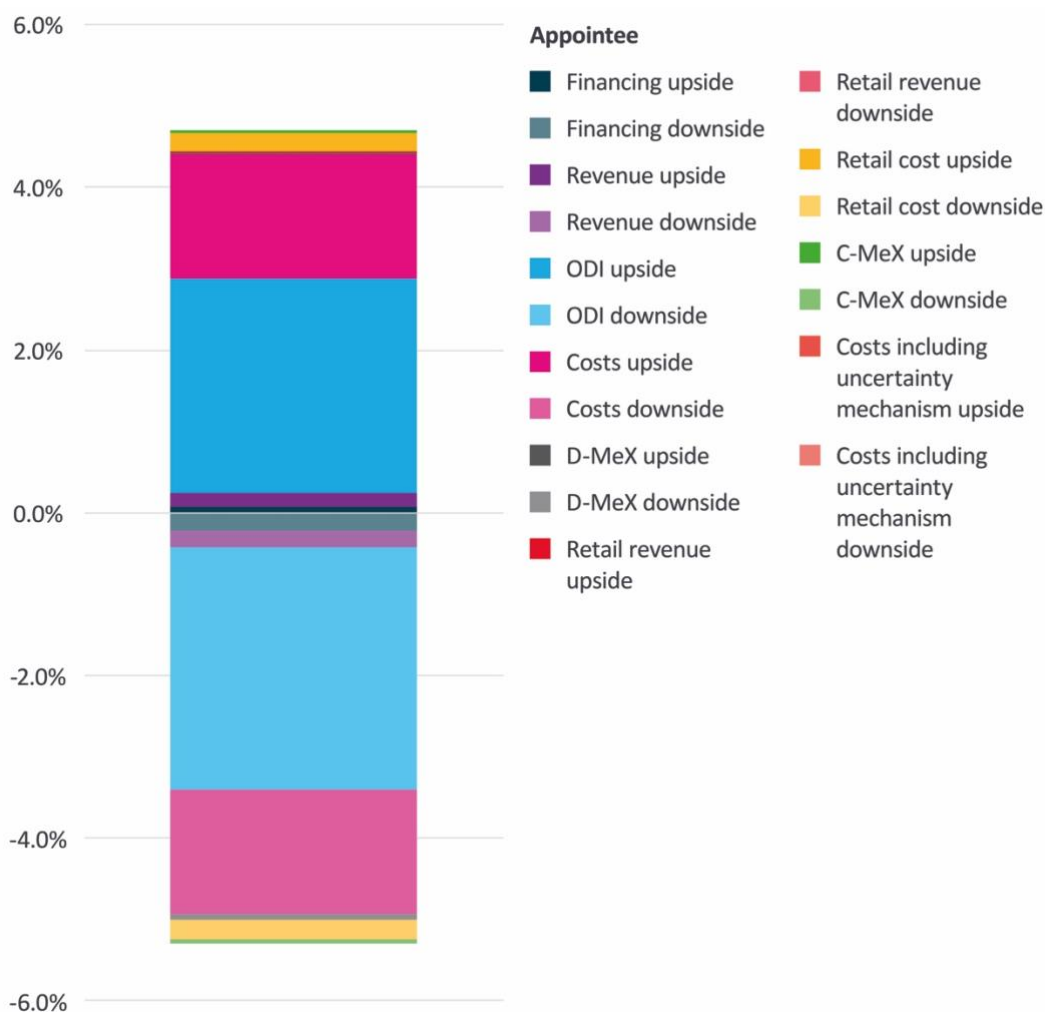
We think our plan provides a fair and appropriate balance of risk and reward and aligns our interests with those of our customers in an effective manner. Earning a RoRE above Ofwat's base return on equity allowance would require us to outperform what are already very challenging targets. Our customers would share in the benefits of that outperformance:

- totex savings would be directly shared with customers;

- the earning of ODI rewards would only be possible if customers are benefitting from service improvements that have been identified as being important through extensive engagement; and,

- as our track record clearly shows, when there are other material levels of unexpected outperformance, we look to go further than this in providing additional benefits to our customers.

At the same time, our customers are protected if our performance falls short. This includes the scope for a much larger negative RoRE effect than at PR14 if we fail to meet our stretching performance commitments; ODI under-performance could result in a RoRE impact of -2.98% during AMP7, compared with a potential downside of 0.9% at present.

We think the RoRE ranges are appropriate, because they reflect risks that we are best placed to manage. They reflect a balance of risk and reward that provides us with strong incentives to continuously improve our performance in ways that will benefit our customers now and in the future.

22.7   A PLAN STRONGLY SUPPORTED BY CUSTOMERS

We've undertaken two key pieces of research to understand customers' views and ultimately the extent of support for our business plan. This includes:

- research that sought to explore and understand customers' views about our overall plan, including proposed service levels and bills (acceptability research – two rounds of research); and

- research on how customers viewed the balance of charges over time (multiple AMPs) through deliberative research (balance of charges research) and detailed polling through our online community.

Our first round of acceptability research was undertaken across our region and that of South Staffs Water, given that we provide sewerage services to those customers. Overall we engaged with 2,245 customers, with approximately 15% being customers of South Staffs Water. This research involved a combination of in-period interviews and online surveys, covering all socio economic groups and ages of our customers. Importantly all research was first subject to focus groups with 10-year olds to ensure that the material was readily understandable as we recognise the water sector has an over-reliance on jargon and technical language.

The key results from our research, which was based on a 3.2% bill reduction, was that 80% of our customers found our plan acceptable, with bills expressed on a CPIH basis. The individual components of the plan (i.e. the summary of the performance improvements) gained acceptance from the majority of the household and non-household customer base. Although the majority of low income customers and those who are just about managing to pay their household bills found our plan acceptable, the results were lower, demonstrating the importance of our support programmes.

Finally, we note that household customer acceptability increases when they see a summary of the plan. This underscores one of the key findings from our research that customers want to know more about what we do and if we are to increase trust, then we need to increase engagement.

We followed up on the above research with another round of acceptability testing, which included a larger bill reduction (5%) and incorporated new elements of our plan, notably our community dividend. In this research 85% of customers found our plan acceptable.

Our balance of charges research was designed to explore customer views about how to structure charges over multiple AMPs through the use of the financeability levers. This was a half day deliberative research session involving a small number of customers across different socio-economic backgrounds. We used a deliberative approach to give customers the time and information they need to come to an informed view about the issues, which are quite complex in nature.

The research revealed a high degree of alignment between our principles and customers' views. When prompted about how to balance charges over time, customers spontaneously developed principles relating to bill stability, maintaining the current level of service delivery and each generation paying their fair share. In terms of priorities, customers identified bill stability as the most important.

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PART 3:
DELIVERING BETTER OUTCOMES

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On the issue of CPIH and maintaining a low cost funding platform, 88% of customers agree with our proposed approach for changing the measure of inflation to CPIH from 2020 and using the levers to maintain access to low cost borrowing. Even when customers were presented with the potential for an even greater bill reduction than 5%, customers favoured how the levers were being used. This reflected the view that the approach was financially sensible or in the words of our customers "It seems like the ethical and best thing to do for the customer." This underscores Ofwat's rationale for introducing CPIH – to enhance customer legitimacy.

Further information on both topics is detailed in Appendix A1: Engaging customers.

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23   SECURING TRUST, CONFIDENCE AND ASSURANCE

Our Board recognises that we've a privileged role providing a critical public service, with a duty to act in a responsible way for our customers of today and tomorrow. Given the essential role we play in our customers' lives, we've developed a comprehensive assurance and governance framework to ensure our plan is driven for our customers, provides affordable bills, supports those who are vulnerable, embeds innovation and is resilient in the long-term. It's a framework that goes beyond our 2020-25 plan and delivers a transparent and dynamic approach to assurance – an approach that our Board, customers and stakeholders can have confidence in.

In this chapter, we explain how our assurance framework provides confidence that we've created a high quality business plan that our customers can trust through:

- building on our established and robust assurance processes;

- demonstrating how our Board has challenged and engaged every step of the way;

- the effectiveness of the process; and

- how we'll provide confidence and assurance through to 2025 and beyond.

We provide more detail on our assurance in Appendix A12, and our Board's assurance statement is included in Chapter 2.

23.1   SECURING ESTABLISHED AND ROBUST ASSURANCE PROCESSES

Learning from the past and building strong foundations

Over the last decade we've worked to continuously improve our assurance approach. Following mis-reporting issues in the early to mid-2000s we undertook a radical overhaul of our assurance processes, culture and values. We introduced 'Doing the right thing – the Severn Trent way', a new code of conduct that we embedded throughout the organisation as a way of working that ensures every employee is accountable for upholding our values. The assurance processes we put in place came from best practice identified across many organisations and industries. The changes we made included:

- **Three lines of assurance**. Recognised as a best practice approach by audit companies and institutions worldwide for providing oversight on the accuracy of data, where the 'third line' is independent from the executive of the company. We explain further below how we deploy this model.

- **Data owners**. We identified the key data we need to capture and report to deliver accurate information to our customers and our regulators. We then ensured that each area of data had an owner assigned to it who was responsible for accurate collation and reporting.

- **Process description templates**. We recognised our processes weren't sufficiently clear and replicable.

So we introduced process description templates to document each of our processes, providing us with an auditable methodology for producing our data. This also provides us with resilience by ensuring that new people can replicate our processes effectively and reduces the risk of single points of failure.

- **Regulatory oversight function**. We've a dedicated team with accountability for the production of our Annual Performance Report.

- **Director sign-off**. We introduced annual disclosures from all Executive Directors to our Board on our key statutory and regulatory reporting. These disclosures require our Directors to confirm they have revealed all relevant material to our auditors and confirm their position on the accuracy of the data being reported.

Our recognised framework

This best practice approach has continued to evolve into our established company assurance framework which is underpinned by four key principles:

- **Robust assurance** – we operate a three-lines of assurance model, targeted at areas of greatest risk.

- **Ownership and accountability** – we've clear lines of ownership for both the delivery of performance, and the accuracy of the data provided.

- **Effective governance** – is provided by our Board, Audit Committee, Disclosure Committee, and Executive Committee, and with additional challenge provided by the Water Forum.

- **Transparency and public accountability** – we publicly report on our performance, and hold ourselves to account where we do not meet our commitments.

Every year we publish our annual assurance plan and as part of this process we ask our customers and stakeholders for their views to make sure we've included the areas that are most important to them.

Our three lines of assurance

To further improve customer confidence in our performance delivery, we reviewed the way we approached internal assurance. We embedded first line activities within the directorates responsible for producing the data to ensure we had the right people with detailed knowledge of our processes performing assurance. Second line assurance oversight is provided by internal teams held within the business and reporting to a separate senior manager to maintain independence. By making this change, our independent third line assurance is able to focus on the most important areas. Our 'three lines of assurance' model has led to an increased sense of accountability throughout the year, every year – rather than being seen as 'five-year plan' or 'annual report' activity.

Our established three lines of assurance model

Line	Functions	Purpose	Typical activities
1a	**Business operations**	Responsible for the reporting of performance.	- Provision of source information and reporting. - Monitoring and improving performance where required. - Defining and documenting methodologies and processes.
1b	**Embedded first line**	First line of assurance for ensuring high quality and robust submissions.	- In-depth quality checks and reviews. - Assisting with production of required documentation.
2	**Independent second line**	Second line of assurance ensuring that first line has undertaken its duties.	- Ensuring adequate first line checks undertaken. - Quality checks and reviews of systems and controls. - Coordination of assurance activities between first and third line.
3	**Independent challenge: Internal Audit, external assurance , Customer Challenge Groups**	Provide independent challenge of levels of assurance provided by first and second line.	- Reviewing application of methodologies and processes and ultimate integrity of the data. - Reviewing completeness and appropriateness of assurance framework (Internal Audit). - Providing challenge on expert areas (i.e. Water Forum on vulnerability, affordability and customer needs).

In 2015, Ofwat introduced the Company Monitoring Framework. We actively review Ofwat's feedback and reassess areas noted as requiring improvement. We were pleased this resulted in us gaining 'self-assured status' in Ofwat's second assessment and our 'assurance plan' being recognised as 'exceeds expectations' over the last two years. We also agree that our reporting of our corporate structure was not as clear as it could be, which could damage customer confidence in us – and contributed to us losing our self-assured status last year. So now, to help our customers and stakeholders understand the companies which operate under the Severn Trent group umbrella, we've published a group structure on our website. This structure details the relationship between Severn Trent Plc, Severn Trent Water and Hafren Dyfrdwy (formerly Dee Valley Water).

Our approach to risk and other obligations

As the principal operating subsidiary of a FTSE100 company we've a strong history of well-established governance and internal controls to fully meet our statutory requirements under the Companies Act 2006, the UK Corporate Governance Code, the UKLA Listing Rules, Disclosure Guidance and Transparency Rules, and our company's annual and continuing

regulatory reporting. In addition, we conduct an internal annual compliance assessment of our statutory and legal obligations – specifically in respect of our licensed business – through our 'licence to operate' framework. This covers over 350 statutory and regulatory obligations and seeks to ensure there is clear ownership and accountability for each of our duties and obligations from director level, to accountable senior managers and their responsible managers. The framework includes existing obligations, and new statutory obligations yet to be commenced.

Each year, our strategic leaders (senior managers) accountable for the delivery of obligations are asked to perform a 'self-assessment' against five key parameters – purpose, process, people, competency and controls. This assessment allows us to form a **probability** metric to identify areas of compliance risk. We then use an **impact metric** based on the impact of a risk materialising to public health and safety, the environment, customer service, competition, revenue, and market confidence (e.g. reputational impact). This helps us to prioritise areas for improvement during the course of the year. Where risks are identified, our 'second line of assurance' oversight teams work with the teams accountable for delivery to make process improvements. At the end of the financial year, strategic leaders carry out a further assessment to confirm whether there were any departures from compliance – for example, in an instance where we as a company believe that we're not entirely compliant with a duty within our licence, we make a clear statement of our awareness of this outstanding issue, what measures are in place to become fully compliant with this licensing requirement, and a planned target date to be fully compliant. We then assess the materiality of the issue. This process helps to inform our Board's annual risk and compliance statement.

We also operate a well-established, Enterprise Risk Management (ERM) system for identifying, assessing and managing our significant risks – including risks to our corporate objectives, core processes, key dependencies, stakeholder expectations and legal and regulatory obligations. A number of risk management systems feed our ERM process,

including STORM our central repository for operational asset risks, Drinking Water Safety Plans (DWSP) to manage water quality risks, and Safety Net our health and safety portal. As part of this we undertake regular horizon scanning both 'bottom-up' – led by the business unit ERM champion, and 'top-down' – by our Board and Executive Committee. Significant risks feed into our company risk profile and are reported to our Executive Committee, Audit Committee and Board at least every half year. Specific risk topics are discussed at Board level as needed throughout the year. In terms of resilience, we want to go beyond traditional risk management, enabling us to respond to shocks, stresses and uncertainty as well as more quantifiable and understood risks. We'll continue to take a holistic, systems level view of our business resilience and the environment we operate in.

As a public service, we want to be transparent about how we balance the needs of our customers, our strategic plans as a business, and provide a fair return for our investors. We believe we are prudent in how we manage financial risk and even-handed in the way we share the returns from our outperformance with customers and shareholders. We pay our taxes in full and on time; we pay dividends and executive salaries that are reasonable and sustainable – and linked to the delivery of outcomes to customers; and we avoid complex offshore financial vehicles.

Further details of how we demonstrate this in a fair and transparent manner can be found in Chapter 22: Aligning risk and return and Chapter 8: Securing long term resilience.

We recognise that these elements are growing areas of interest to our customers given the ongoing national debate around executive pay and renationalisation. While the information we've published in our Annual Report and Accounts is very detailed and transparent, we recognise that it may not be accessible to all segments of our customer base. So we now provide a summary of this information in our customer Annual Performance Report and we'll consider how best to display this information while complying with current and future statutory and regulatory reporting requirements.

23.2 ENHANCING OUR FRAMEWORK FOR OUR FIVE YEAR PLAN

In order to give our Board full confidence in signing its assurance statement, we worked with assurance specialists PwC to build on our established assurance framework and develop a bespoke, risk-based approach that took into account the specific nature of risks associated with developing business plans.

We wanted to ensure that we also met our Board's expectations by delivering a high-quality plan guided

by our customers. The approach we developed contained four key components:

- a bottom-up risk assessment;
- a top-down Board statement;
- assurance allocation aligned to risk; and
- oversight through robust governance.

How our assurance supported our plan

The bottom up risk assessment

Our assurance framework determines the 'bottom up' risk of potential inaccurate reporting associated with each 'building block' in our business plan. We reviewed the risk within each price control by building block and then by component parts (methodology, model, data sources/ systems, judgements and assumptions, data table, and narrative). We considered the materiality of risk using a number of factors including operational, financial and customer impact, while also considering our Board's strategy. We also identified associated risks based on the degree of change and our usual business activity, the complexity of each component, the level of ownership and accountability, and the level of subjectivity. This risk assessment formed the basis of our assurance allocation.

How we established bottom up risk
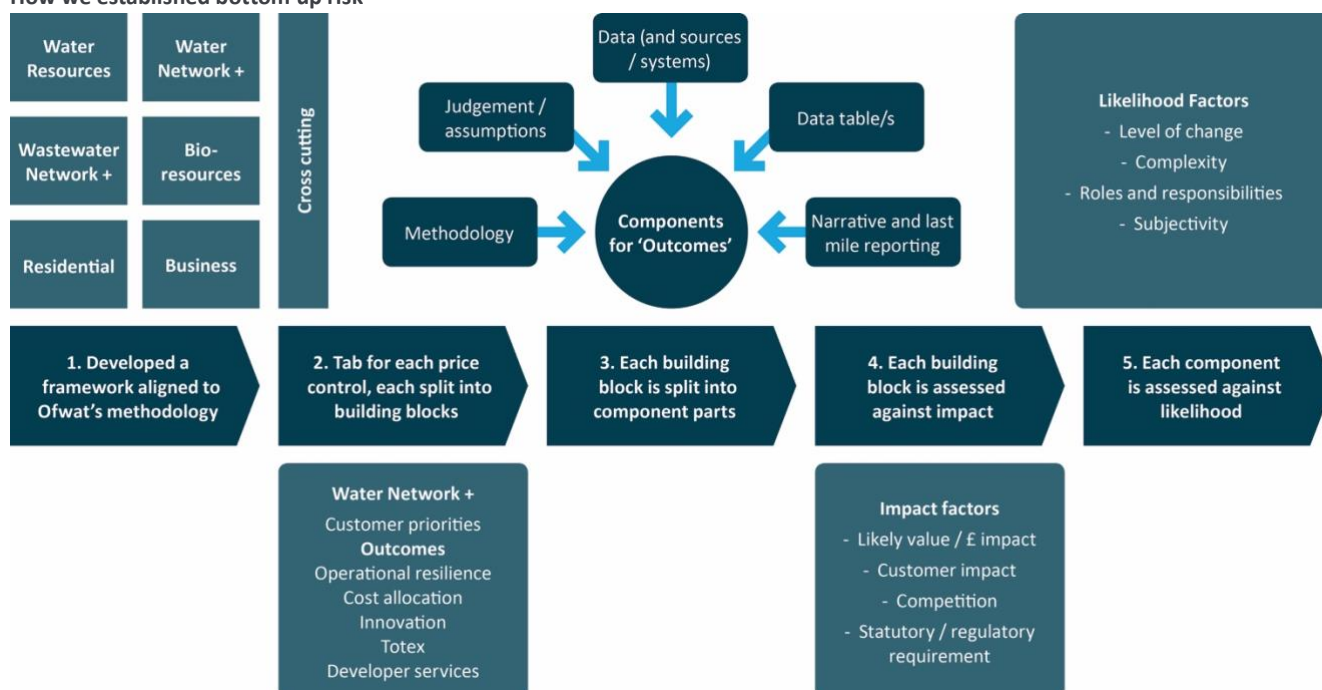
The top down approach led by our Board

As part of the assurance framework approved by our Board in July 2017, we developed statements that a best-in-class company Board would wish to make using Ofwat's draft methodology and then updated them to align with Ofwat's final methodology. To support our Board in making these statements, we devised proof points and collected supporting evidence. These proof points drew from the bottom up assurance, our wider assurance programme, our evidence of past performance, and our Board's own engagement.

Allocation of assurance on a risk basis

The risk assessment was used to allocate the appropriate level of assurance. As a minimum, first and second line assurance has been carried out on all component parts of our five year plan.

For areas noted as high or significant risk, we employ a third line of assurance. We reviewed the building blocks and component parts to determine what type of third line assurance was required, and assigned it to one of our assurance partners:

- **Engineering/technical** – where assurance required an expert engineering / water industry technical background.

- **Regulatory** – external expert assurance providers where challenge was required around the fundamental

methodology and assumptions against our regulatory requirements; and adaptability to meet future requirements.

- **Data integrity and consistency** – undertaken by Internal Audit which, as our independent audit function reporting directly to our Audit Committee, perform these checks across significant parts of our regulatory reporting and through its annual audit programme – and so was best placed to understand and test these areas for our plan and against our wider reporting.

- **Financial** – used for areas requiring specific financial expertise, such as pensions, where our Internal Audit team is not specialised.

- **Model integrity** – where a complex financial model was involved and required specialist external expertise to test and challenge.

- **Industry expert peer review** – used in particular specialist/niche areas to provide independent test, challenge and benchmarking to inform the development of our plan.

In addition to this:

- Our Water Forum provided challenge to areas where its customer focus and expertise would benefit the plan development, for example to our customer engagement approach and to areas of our plan such as education, vulnerability, affordability, cost adjustment claims and our performance commitments.

- We created an internal team known as the 'red team' which provided additional independent targeted review of the submission for compliance with Ofwat's guidance. This team existed in addition to our lines of assurance to provide an extra layer of challenge to key areas such as our data tables.

Our risk assessment outcome showing compound risk that determined the level of assurance we undertook

Cross cutting

		Key level of risk
Financeability, risk and reward	Resilience in the round	High
Outcomes	Tax allocation	Medium-high
Cost allocation	PR14 reconciliation	Medium-low
Customer engagement strategy	Legal and statutory obligations	Low
Affordability	Vulnerability	
Efficiency	Direct procurement	
Cost envelope	Market mechanisms	
Environment and social governance	Consistency	

Price control

Water Resources	Water Network +	Wastewater Network +	Bioresources	Residential
Customer priorities	Customer priorities	Customer priorities	Customer priorities	Customer priorities
Outcomes	Outcomes	Outcomes	Outcomes	Outcomes
Operational resilience	Operational resilience	Operational resilience	Operational resilience	Operational resilience
Cost allocation	Cost allocation	Cost allocation	Cost allocation	Cost allocation
Innovation	Innovation	Innovation	Innovation	Innovation
Totex	Totex	Totex	Totex	Totex, inc inflation
RCV allocation	Developer services	Developer services	RCV allocation	Revenue
Market design	Business		Market design	Affordability/Vulnerability
Consistency with WRMP	Developer services			Debt management
Data tables				
Cost exclusions				

Ensuring a high-quality plan through high quality data

To maintain an appropriate level of control on our data tables and the numbers within, we issued clear guidance to data providers and accountable managers – this included providing face to face training sessions to over 100 colleagues.

To ensure that all areas received comprehensive first and second line checks, we produced a standard set of assurance templates to be completed as part of the data submission process. These were reviewed for completeness as part of our central governance checks prior to submission to third line assurers. These checks included accountable managers sending an approval email through to our central inbox to confirm that they had seen evidence of first and second line assurance. Approvals were subsequently tracked by our compliance team and reviewed by Jacobs our technical and regulatory assurers or Internal Audit to ensure all areas had received appropriate sign off.

We enacted strict controls to our data tables to prevent unauthorised changes once they were examined by third line assurers. Any changes required were made through an authorised change control process where the accountable manager was made aware of the reasoning for the change prior to approval being sought.

Ensuring a resilient plan

As described in Chapter 8: Securing long term resilience, we understand the importance of demonstrating our plan is able to withstand, and takes account of, the risks associated with the challenges of emerging political, economic, social, technological, legal and regulatory, environmental, technical, operational and health and safety risks. Furthermore, our extensive customer engagement asked our customers about what is important to them and the role we play in delivering it.

While risk identification is important, so too is our response. Within our plan we've sought to give a rounded view of how we're managing risks. For example:

- we've broadly retained Ofwat's current notional level of gearing (62.5%) and produced a seven-year viability statement for this year's Annual Report and Accounts to evidence our financial resilience;

- we're focusing on skills development, succession planning and the importance of fair and balanced decision making to support corporate resilience; and

- for operational resilience, our plan builds on a systems view of risk, and for example, includes a greater focus on catchment management and managing flood risks, while also recognising we need to embed the lessons learned from the recent freeze/thaw event.

As part of our assurance framework, we took account of previously undertaken independent assurance on some of these wider resilience factors which are reported separately through our Annual Report and Accounts, Annual Performance Report or our long-term water resource management planning.

Ensuring our customer voice underpins our plan

At PR14, we developed our assurance approach to embed customer views in our plan and we set up our Water Forum. While the initial purpose of the Water Forum was to provide challenge to PR14, we evolved its role to provide expert customer challenge on our regulatory submissions such as shaping our annual assurance plans. We share our assurance findings to aid transparency. We've held 13 meetings with our Water Forum since 2016 and 46 meetings with Water Forum sub-groups during our plan development. The Forum has been consulted and provided constructive challenge, every step of the way.

During the plan development, we've undertaken our most in depth customer engagement programme ever, as well as continuing to track customer sentiment. In addition to the established engagement with our regulators, investors, customers, communities and other stakeholders to create this plan, we conducted targeted research with over 32,000 consumers on topics such as willingness to pay, and used deliberative research on strategic investment areas. This has helped us develop a better understanding on a wide range of topics, including how we help customers who are struggling to pay their bills. To further ensure that our customer views were accurately represented, we engaged external independent assurers to verify our insights and test that the outputs informed our plan.

It is important to us that our plan earns our customers' trust and confidence through high levels of transparency and customer engagement on issues such as our corporate and financial structures and by providing a fair balance between our customers and investors. To ensure we covered these topics, our customer engagement included research on how we should share the benefits of outperformance with customers and communities, as well as topics such as renationalisation, company ownership and the fair balance of charges between current and future customers. Knowledge of our approach to funding investment and balancing charges over time helps engender trust that we will behave in customers' interests.

The assurance framework and summary of initial findings were presented to the Water Forum jointly with Jacobs in June 2018 and the Chair of the Water Forum closed the session saying 'from my work with other Boards, I can confirm that this assurance process is excellent'.

23.3   OUR BOARD HAS CHALLENGED AND ENGAGED EVERY STEP OF THE WAY

Our established, and we believe best-in-class, governance arrangements were overseen by our Board to guide and shape our plan, and provide challenge while reviewing our assurance evidence. We implemented a programme board reporting directly to our Executive Committee with updates on progress and highlighting potential risks or issues for escalation.

Our assurance governance framework
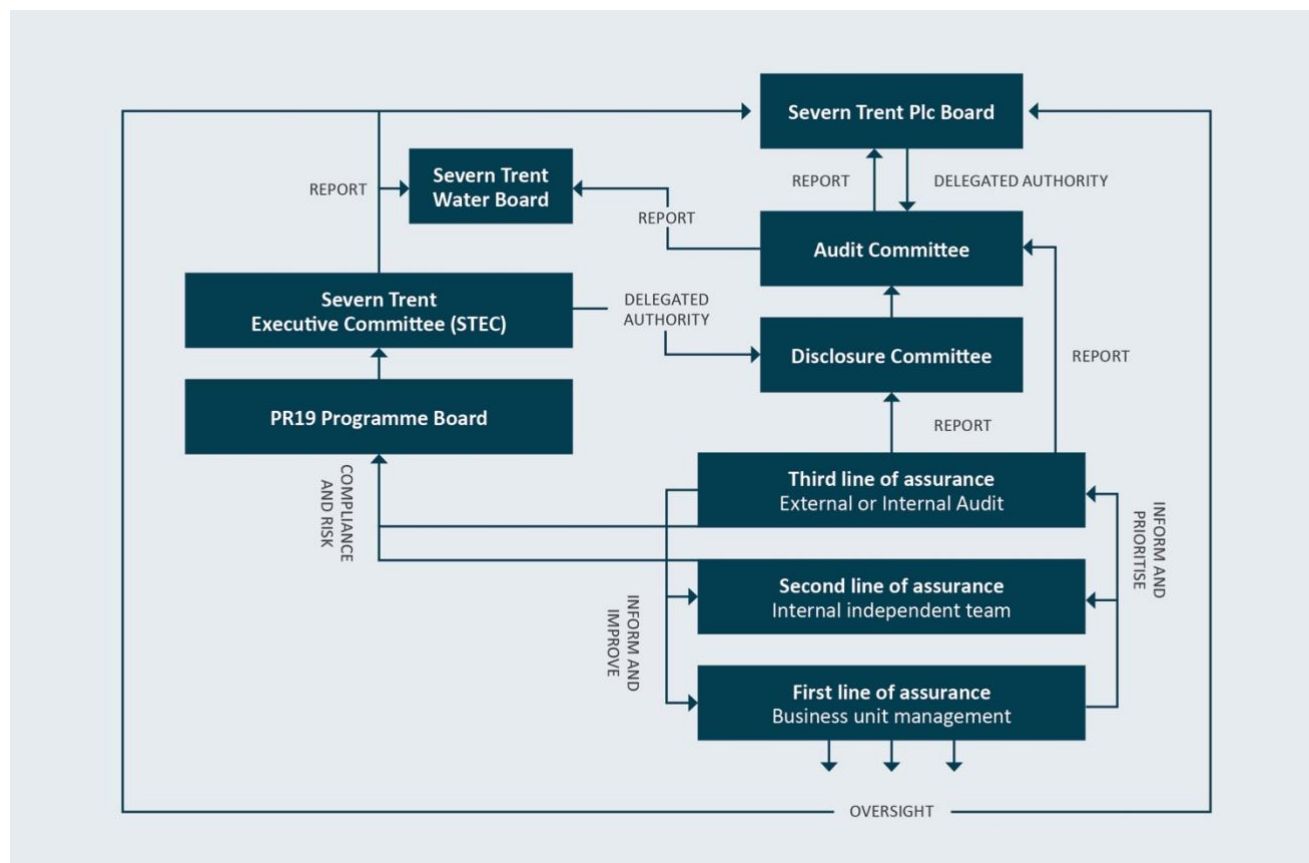
Board meetings – the assurance framework and assurance findings have been reviewed through our established governance arrangements. This has enabled our Board to provide robust critical challenge to, and shape our plan at regular intervals.

Our Board met 13 times over the course of the programme with significant portions of the agenda dedicated to the discussion and development of our plan – giving our Board an appropriate opportunity to ask probing questions and rigorously challenge the key components and areas of risk. Our Board has shaped the direction of our plan, for example ensuring a stronger link between performance and executive pay through more stretching targets, e.g. upper quartile RoRE. In July 2018, Jacobs presented their findings on our plan directly to our Board which allowed Directors to directly ask questions on the work undertaken.

Committee meetings – in addition to discussion by our full Board, our Audit and Disclosure Committees have met 11

times during the development of the plan and received regular updates on our assurance progress. They've provided scrutiny of both our direct plan assurance – in line with our framework – and our wider assurance programme, taking into account where other decisions and work may impact on our future plan. For example, examining the outputs of assurance on preparatory cost allocation work ahead of our boundary realignment, the scenarios underpinning our long-term viability statement and our long-term planning on our water resource management.

As our plan developed, both Jacobs and Internal Audit presented their findings to our Audit Committee allowing members to ask questions directly and gain further insight into the work undertaken. Further details of our Board, Audit Committee and Disclosure Committee meetings are provided in Appendix 12: Securing trust, and confidence and assurance.

Water Forum meetings – in the 15 months prior to the submission of our plan, seven different members of our

Board attended six formal Water Forum meetings to present our plans and assurance activity, and to hear first-hand, members of the Forum providing robust challenge and ask questions of our Board. In addition, there have been numerous informal discussions with Water Forum members to engage on specific topics.

Customer research workshops – our Board was ultimately interested in the views of our customers. By attending our customer research workshops, individual Board members were able to hear directly from them – in their own words – about the areas that were most important to them. This has helped our Board to keep customers at the forefront of its decision making.

Ofwat non-executive director events – our Board regularly engages with Ofwat at market-wide and company-Ofwat events. This engagement provides our Board with an opportunity to use its wider experience to bring best practice from other sectors to shape our sector for the better and to challenge management where choices are required to balance the direction of our regulators, the needs of our customers and the wishes of other stakeholders.

23.4 THE EFFECTIVENESS OF THE PROCESS – OUR ASSURANCE FINDINGS

Our Board was provided with supporting evidence aligned to the proof points in its assurance statement including the outcome of reports and presentations from assurance providers, expert assessment, outputs and minutes from meetings, and customer research workshops. In line with the key principles underpinning our established framework, our Board received a statement from each member of our Executive Committee demonstrating our management's level of engagement with, and commitment to delivering, our plan.

Our assurance partners and their findings

To help us carry out this programme of assurance, we engaged a number of external assurance providers and specialists to provide critical challenge to our plan. A list of the key assurers and a summary of the scope of their engagement is provided in the following table.

For complete transparency, further details, including where we've used additional assurers, can be found in Appendix 12: Securing trust, confidence and assurance.

Our assurance partners

Who	Scope	Summary of findings
Jacobs	Providing technical assurance on the plan by challenging methodology, examining data tables and providing an independent review of our governance arrangements (including licence to operate, how we've accounted for future government strategy and resilience in the round).	*Overall we observed that you had a thorough understanding of Ofwat's expectations. Where we have noted risks or areas where we considered the building blocks would benefit from further evidence, we understand that your teams have updated narrative and tables as required.* *Based on our scope, we consider the Board can support the relevant Ofwat statements.*
Internal Audit	Assurance of data flows through financial model to data tables. Checking the plan, data tables and supporting appendices to ensure consistency with previously reported data. Risk based approach to check consistency of data and narrative across the plan and consistency of messages to the supporting data. Reviewed our PR14 reconciliation submission. Review completion of assurance framework.	Internal Audit completed all scheduled reviews; more detail can be found in Appendix A12: Securing trust, confidence and assurance. *'During the course of our review we have seen considerable assurance activity has taken place, particularly in the high risk areas – in some cases in excess of the original plan in order to address new risks or requirements or simply to provide additional assurance. Where third party assurance has been carried out this has been done to a good standard and to an appropriate level. There have been some instances where the scope of their work has been limited due, for example, to a reduced timescale. Where this has been the case this has been assessed and carefully considered by the Compliance team and has not compromised overall adherence to the framework.'*

Water Forum	Providing specialist customer challenge to the plan. In particular, reviewing areas such as vulnerability and affordability with a customer lens.	*'The Water Forum has taken our assurance responsibilities to Ofwat very seriously. Unsurprisingly, we have not always agreed with the company but in all areas we have arrived at a position which both Water Forum and company recognise as a reasonable compromise. Of course the most important verdict comes from the customer. The acceptability research shows that the majority of customers find the plan acceptable.* *In summary, we are pleased to assure you that, from what we have seen and read, Severn Trent has engaged effectively with its customers and this plan does reflect their priorities.'*
External specialists	To ensure the customer compendium accurately represents the views of the customer obtained through research	*'We feel that the Customer Insight report clearly and accurately synthesises the results of STW's research programme, and showcases variety and volume of research undertaken by STW as part of the 2019 Price Review process.'* *'A wide variety of research approaches have been used in throughout the research programme, and a very wide sample of customers have been able to participate in the research.'* *'We feel that the key findings reached in the report provide an accurate and clear reflection of the research programme as a whole.'*
External specialists	Review of post triangulation adjustments to customer valuations, converting customer valuations into incentive rates, caps, collars and deadbands, and enhanced incentive rates.	*'STW has clearly responded thoughtfully and conscientiously to Ofwat and CCWater's challenge. Both the range of evidence used and the consideration of external evidence show serious intent to identify robust and justified WTP values'* *'Severn Trent Water (STW)'s approach to setting outcome delivery incentive rates (ODIs) for PR19 is reasonable and in line with Ofwat's expectation.'*
External specialists	To undertake estimating of a number of schemes in order to provide confidence of allowances included within our PR19 business plan.	*'To conclude, it is our view that in the majority of cases, Severn Trent Water's estimates appear to be competitive'* The full report can be found in Appendix A8: Securing cost efficiency.

Jacobs also assured our cost allocation methodology to confirm we had allocated costs correctly between price controls and between us and other group businesses, ensuring we are compliant with the regulatory accounting guidelines and our licence conditions. Jacobs noted: *'you have a satisfactory base level of documentation and processes in place to report data that are compliant with the principles and rules within the Regulatory Accounting Guidelines.'* Jacobs also examined areas impacted by the changes resulting from our boundary realignment between ourselves and Hafren Dyfrdwy.

Data table assurance findings

All of our data tables have undergone third line assurance. In line with our framework, Jacobs reviewed areas which required regulatory challenge from a methodological and assumptive perspective. Jacobs provided feedback following each audit and all recommendations were tracked through to completion by our compliance team.

Deloitte, our financial auditors for our statutory and regulatory accounts, have performed Agreed Upon Procedures on three tables requiring complex financial information to assist us in preparing these tables accurately.

Our judgements and assumptions with respect to tax have been reviewed by PwC, these assumptions are inputs into the financial model which has been reviewed by KPMG.

You can read more detail on this in Appendix 12: Securing trust, confidence and assurance.

The tables that are fed from the model have been assured (tick and tie) by Internal Audit. For tables where our data was sourced from previously assured data or was not complex financial or regulatory data, Internal Audit performed the third line review. This included the process and data flows through the financial model in order to complete the final set of data tables.

Following completion of assurance on the individual tables, Internal Audit provided a risk-based consistency check across the data tables and its supporting narrative.

Evidence of a resilient plan

We asked Jacobs to independently review our plan against Ofwat's IAP and its concept of 'resilience in the round' to ensure we had adequately addressed this. Jacobs concluded: *'We found that the draft of the resilience chapter that we*

reviewed reflects an integrated approach and reflects the requirements of Ofwat's tests for resilience'.

In addition, our approach has been informed by wider assurance on our resilience programme, for example:

- Cyber Security Resilience – we asked Atkins to examine our cyber security plans to ensure we met our obligations under the Network and Information Systems (NIS) regulations. Atkins found the following: *'the gap analysis conducted by STW against the NIS Regulations appears to be both realistic and honest. Whilst the current level of conformance with the majority of the NIS principles is poor, this is the case with many organisations we have reviewed. However, in several respects, such as governance and awareness training, STW is ahead of their peers.'*

- Long term water resource planning – we have undertaken assurance both as part of our draft Water Resource Management Plan submission and our statement of response following a period of consultation.

We've considered the consultation responses and where appropriate have incorporated these into the plan.

- Long term viability statement – as part of our annual performance report, we've provided our long term viability statement to the end of the next AMP period. This demonstrates that we are committed to maintaining long term financial resilience. Deloitte reviewed our long term viability statement as part of its audit of our Annual Report and Accounts 2017/18.

- Corporate resilience is regularly discussed by our Board. We asked our assurance partners, Jacobs, to review our licence to operate framework, our ERM process and our governance arrangements in general to provide an independent review. Jacobs noted *'You have in place mature and well-documented systems to understand your legal and statutory obligations, and to identify and manage risks. These systems enable you to take a forward look to identify relevant legal obligations and to understand operational and or other risks to meeting these obligations for PR19 and your business plan.'*

23.5   PROVIDING CONFIDENCE AND ASSURANCE THROUGH TO 2025 AND BEYOND

While we believe our processes are robust and effective, we are constantly striving for ways to develop them further and innovate with new methods to be the most trusted water and wastewater company.

For our performance commitments, which we consider to be a customer critical area, we'll continue to use our risk based three line assurance approach. To ensure we spot potential issues early, we'll focus on making sure our reporting methods for the new measures are robust. We expect all performance commitments to go through both mid-year and year end audits in the first year to be able to adequately assess areas for improvement and ensure we have the best data available to report our performance. Our Board will continue to remain fully engaged – monitoring our performance and providing challenge where required through our established governance arrangements. We will also continue to share our indicative performance with CCWater on a quarterly basis and consult with our Water Forum on both our assurance plans and our performance to ensure we receive appropriate levels of customer challenge and scrutiny.

Trusted independent assurance is a critical part of providing confidence, so we've already engaged Jacobs to work with us from now until 2025. We received and reviewed comprehensive bids from a number of external assurers through an OJEU tender process – an advertised tender with a scoring mechanism designed in advance of receiving full bids. Jacobs offered the strongest package of assurance while also demonstrating value for money. During the last few years,

Jacobs have provided a number of independent reports and presented its findings to our Disclosure Committee, Audit Committee and Board while developing a cooperative relationship with data providers and owners across the wider business. Jacobs has built a strong historic knowledge of our systems and processes, which will enable it to act as a 'critical eye' and challenge us in areas of potential risk or non-compliance.

We'll continue to be transparent about the areas of our business that matter most to all our stakeholders – including executive pay, corporation tax and dividend payments. We'll continue to use both ERM and our licence to operate framework to ensure that we manage our company wide risks and statutory obligations both now and in future. We believe that the combination of our established assurance process, our governance approach, ERM systems and our licence to operate framework, and Jacobs' review of these, enables our Board to have confidence that our plan demonstrates our long term resilience.

Chapter 18: A company you can trust provides more details on transparency.

The completion of our assurance framework combined with our Board's own engagement, has enabled our Board to have confidence in providing their assurance statement in Chapter 2.