

Our Water Resources  
Management Plan 2019:  
**A SUMMARY**

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**NORTHUMBRIAN**  
**WATER** *living water*



# WELCOME

When our customers turn on their tap, they expect clean, clear and great tasting water to flow. It is our job to make sure this happens and that there is enough water for every one of our customers – now and in the future. This relies on some careful planning and our Water Resource Management Plan (WRMP) is where we do this.

## PURPOSE OF THIS SUMMARY

Over the following pages you will find a summary of our WRMP 2019.

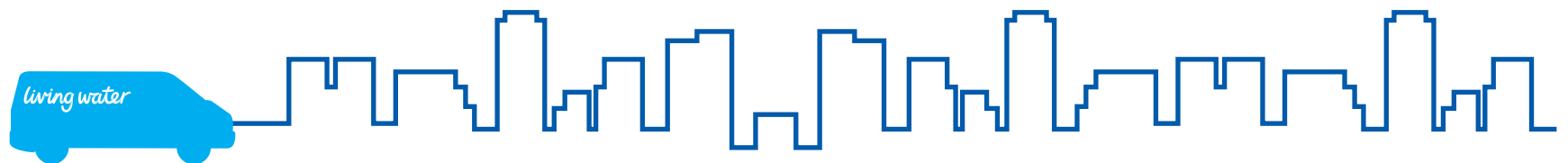
The plan's main aim is to forecast the demand for water in the future and consider this against the water that will be available. Decisions are then made to address any areas where there are shortfalls in supply.

The Government requires water companies to plan for at least the next 25 years. We have chosen to look ahead 40 years in this plan, covering the period from 2020 to 2060.

WRMPs are submitted by all English and Welsh water companies every five years. The WRMP forms part of our wider PR19 Business Plan covering what we intend to do over the period April 2020 to March 2025. More in-depth information can be found on our website [www.nwg.co.uk/responsibility/environment/wrmp/](http://www.nwg.co.uk/responsibility/environment/wrmp/)

## GETTING THE BALANCE RIGHT

Our plan covers:



### SUPPLY

- Water available from 'raw' water sources including reservoirs, rivers and underground sources
- The amount of 'raw water' we can take without harming the environment
- The effect of climate change on demand for water and available sources
- The amount our water treatment works can reliably supply

### DEMAND

- Estimates of how much water people will use in the future
- Impacts of population and housing growth
- Our water efficiency plans to help customers save water
- Water meters installation and resulting water reduction
- Reductions in leakage

### OUTCOMES

By planning ahead, we have sufficient water available to meet the forecast demand for water for at least the next 40 years.

# WHERE OUR WATER COMES FROM

Our supply area stretches from Berwick on the Scottish border to Teesside and we serve approximately 2.4m people with drinking water.



**JARGON BUSTER**

**Water Resource Zone:** This marks out the largest area within a company's supply system where all customers have the same water supply risk during a drought. It is the level at which water resources are



We have two Water Resource Zones (WRZ):

## BERWICK WRZ

This contains about 1% of the population served and all of the supplies come from underground water sources.

## KIELDER WRZ

This large WRZ is predominantly served by surface water sources, supported by large reservoir storage and linked to the Kielder reservoir by the Tyne Tees transfer system. There are a few small rural ground water supplies and a 40Ml/d Sunderland ground water source.

**Each has sufficient supplies to meet demand up to 2060. We do not need to take action to increase supply availability.**

## What our customers said:

Customers told us they would prefer us to develop new resources rather than restrict use of current supplies – like hosepipe bans – if demand outstripped supply.

As we have sufficient supplies no new resources are needed but having taken customers' views into account, our plan focuses on reducing demand further by minimising the amount of water wasted through leakage and focusing on the way it is used. More details can be found on our customer research at the end of this document.

# THINKING AHEAD

## CLIMATE CHANGE

We cannot be certain of how climate change will affect the availability of water so we test our supplies against a range of different scenarios.

Modelling techniques show us that some reservoirs in the Kielder WRZ are sensitive to the reductions in summer rainfall in some of the climate change scenarios. However our ability to transport water from Kielder reservoir through the system via the Tyne-Tees transfer scheme means this is not problematic.

The Berwick ground water sources do have reduced recharge during drought periods but not sufficient to require new water resource development.

Following assessment we have concluded that the possible effects of climate change on both WRZs do not need any new water resource developments over the 40 years of this plan.

## PROTECTING THE ENVIRONMENT

We update our WRMP every five years and agree a list of actions we will take to further improve the environment. This is known as the Water Industry National Environment Programme (WINEP).

The WINEP is designed to protect the environment around the rivers we use, our reservoirs and our land holdings. This covers such things as water quality, fisheries, biodiversity and river structures (e.g.weirs).

### 2015-2020

A range of schemes have been delivered or are under way. These include measures to protect eels and fish, such as eel resistant screens and fish passes, in line with the 2009 regulations. We are also improving the quality of water that we abstract by working with landowners on catchment schemes, including peat bog restorations.



### 2020-2025

We'll deliver further eel and fish protection measures and quality checks at our abstractions. We'll also begin five catchment schemes to make sure there is no deterioration to the quality of our surface sources.



### JARGON BUSTER

**Eel resistant screens:** a filter to prevent these threatened species from being caught up in our pumps

**Fish passes:** a structure installed to help fish swim upstream



# MANAGING DEMAND

## HOUSEHOLDS

We predict a 23% increase in population over the 40 year planning horizon. Trends show that the number of people living in each household will decrease over this time. We expect an average of 9,271 new homes will be occupied each year.

The amount of water used by each customer (per capita consumption or PCC) in our supply area is forecast to reduce annually as more households become metered and respond to our water efficiency activities.

The average amount used per person per day is measured separately for those who are on a meter and receive a 'measured bill' compared to those who are not and receive an 'unmeasured bill'.

The current levels of water usage and our forecasts for 2060 are summarised below:

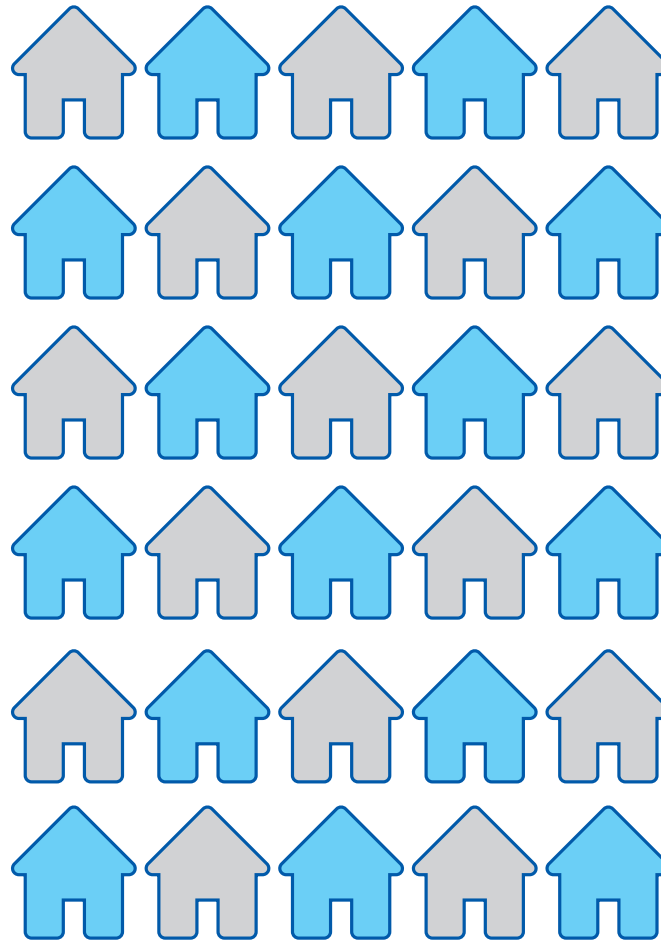
	AVERAGE LITRES USED PER PERSON PER DAY IN 2016/17	2060 FORECAST
Measured customers	130	105
Unmeasured customers	143	122

## NON-HOUSEHOLD CUSTOMERS

We forecast a gradual increase in the amount of water used by businesses and industry over this period as a result of a growth of new businesses in the area.

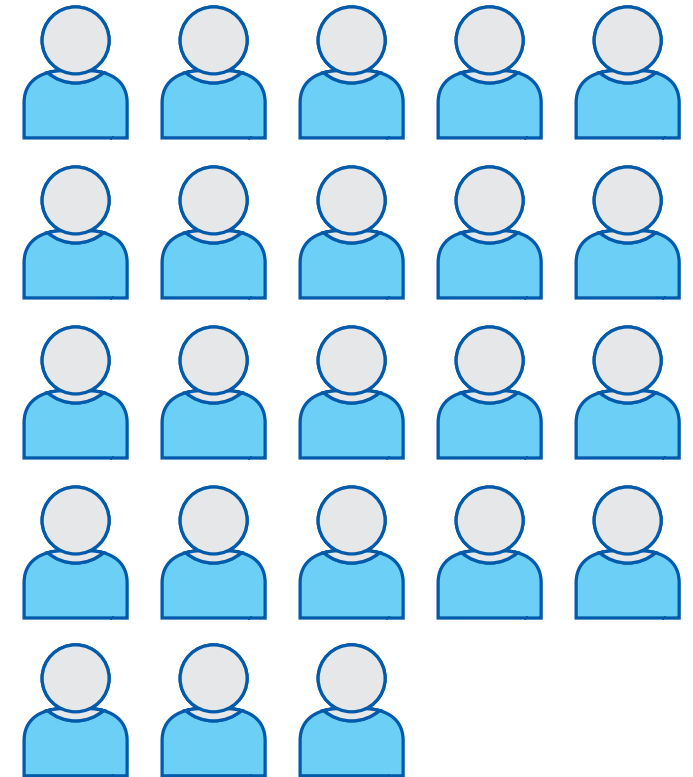
# +9,307

Average number of new homes occupied each year



# +23%

Increase in population over 40 year planning horizon



# REDUCING DEMAND

## WATER METERING

By law we must install a meter for any customer who requests one and opts to pay a measured charge. Being on a meter means a customer pays according to the volume of water used, rather than by the rateable value of their property as all unmetered customers do. Since 1990 new properties have also been automatically metered.

Installing meters is an effective way to reduce water usage, because there is a financial incentive to be water efficient. The Environment Agency's long-term vision is for all households to have a water meter. By 2020, 42% of households will be metered.

Over the 2020-2025 period we will work hard to raise greater awareness of our customers' right to a free meter. We will highlight the option they have to revert back to being unmeasured if they change their mind in the first two years.

### What our customers said:

Customers prefer water meters to be optional.

We're continuing our meter optant programme and are investigating smart meter technologies to understand what services this technology can offer our customers. More details can be found on our customer research at the end of this document.



# PROMOTING WATER EFFICIENCY

We have been delivering innovative and effective water efficiency schemes for the last 20 years. Our contribution to the industry is widely recognised.

We create water efficiency programmes that make genuine savings in water as cost effectively as possible. Accurate measurement of results is critical to the programme so we can understand the actual savings achieved and how sustainable they are. The initiatives are shaped by customers, are accessible to everyone and in many cases will save households money.

## EVERY DROP COUNTS

Every Drop Counts (EDC) is our largest ever water saving programme and takes a whole-town approach, where we integrate all water saving activity in one location. This approach was tested successfully in Wooler in 2015 and we are currently carrying out our fourth EDC programme in Washington.

## EVERY DROP COUNTS

## SUPER SPLASH HEROES

Our programme of school visits, 'Super Splash Heroes', includes an educational play and workshop delivered in partnership with a local theatre company. In 2017 we visited 92 schools, encouraging the youngest generation to develop good habits around water use.

## WATER SAVING KITS AND TIPS

We remind customers to use water wisely in the garden during the summer months, as the amount of water used in the garden can be huge.

We were the first water company to develop a water saving kit, containing 'easy-to-install' products and handy hints to use in the home. More than 60,800 customers have requested the free kits since their introduction in 2009.

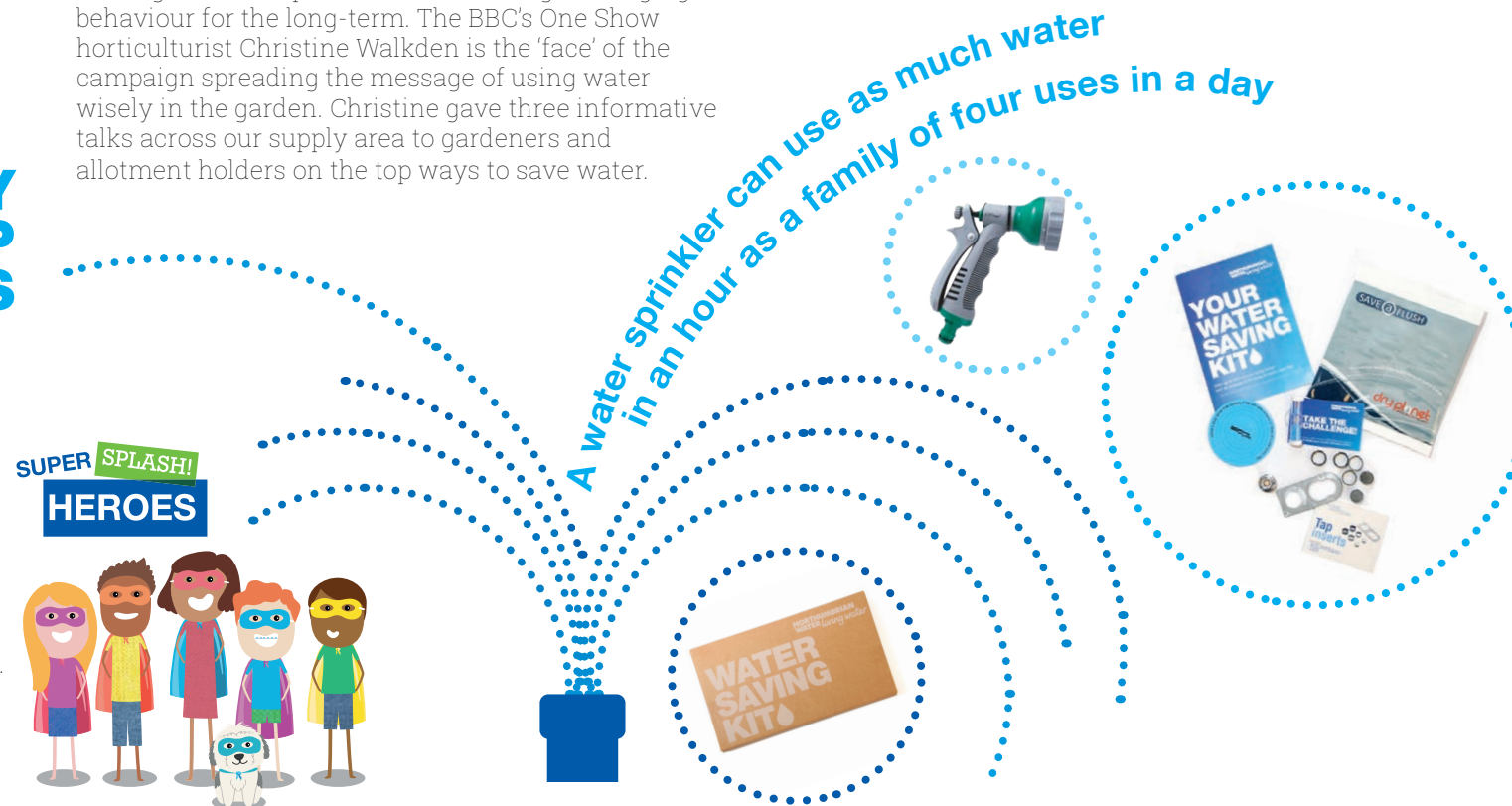
## SAVE A BUCKET LOAD

This campaign aims to promote sustainable water use in the garden and prevent wasteful usage, changing behaviour for the long-term. The BBC's One Show horticulturist Christine Walkden is the 'face' of the campaign spreading the message of using water wisely in the garden. Christine gave three informative talks across our supply area to gardeners and allotment holders on the top ways to save water.

## What our customers said:

Customers take individual responsibility for levels of water consumption but also expect us to do more to encourage water efficiency in future.

We're committed to achieving a gradual reduction in consumption and will invest in approaches to reward customers for water efficiency. More details can be found on our customer research at the end of this document.





# PROMOTING WATER EFFICIENCY

Water efficiency will be more important than ever as we go forward.

Our customers have told us they want us to do more to encourage water efficiency and we plan to significantly upscale our work. This will help to secure supplies for the future, help customers who are struggling to pay to make financial savings and demonstrate innovation through the use of new technologies and approaches.

From 2020 our regulator Ofwat will be measuring the amount of water the average customer uses each day as one of our key performance indicators (per capita consumption or PCC).

## HELPING HOUSEHOLDS CUT WASTAGE

Our Every Drop Counts, Super Splash Heroes and home audits will continue to form a key part of our activity. We will also continue to develop stronger links with housing associations, to integrate water efficiency work with our affordability strategy and focus on identifying and repairing leaks in homes which could be costing customers money while also wasting water.

We will offer a water and energy saving visit to every household. We will also place more emphasis on highlighting to customers the role they can play in protecting future supplies through simple changes to water use in the home.

As we implement smart metering over the next 15 years, we will introduce a website and smart phone app. Here customers can track what they are using, see how this compares to others and find out how they could make changes to save more water. Alongside this we will introduce a rewards scheme, building on 'behavioural economics research' we carried out with Oxford University and the University of Chicago, which looked at the best ways to incentivise customer behaviour change.

# 5%

of toilets have cisterns which leak into the bowl, and can go unnoticed by customers.



# 600 LITRES

**A TOILET CAN LEAK UP TO 600 LITRES OF WATER A DAY, WHICH IS THE AMOUNT OF WATER USED BY A FAMILY OF FOUR EACH DAY**

WE ARE COMMITTED TO REDUCING CONSUMPTION

# 5.6% BY 2025

# 7.7 LITRES PER PERSON PER DAY

**SUPER SPLASH! HEROES**





# REDUCING LEAKAGE

We currently commit to keeping leakage to an average level of 137 million litres of treated water per day (Ml/d). This is about 20% of water supplied daily and is a combination of leakage from our pipes and our customer's pipes. This is around average and though it reflects the economics of operating in a relatively water-rich environment we agree with customers that this should be reduced.

## What our customers said:

We talked to customers about why leakage occurs and how some of it comes from bursts but most of the leakage comes through tiny invisible leaks all along our vast network of pipes and is very challenging to address.

The pipes that connects the customers' property (supply pipe) to our network also sometimes leak and could account for one third of the total leakage. These pipes are the customers' responsibility, although we are aware this is not always understood.

Customers take individual responsibility for levels of water consumption but also expect us to do more to encourage water efficiency in future.

We're committed to achieving a gradual reduction in consumption and will invest in approaches to reward customers for water efficiency. More details can be found on our customer research at the end of this document.

**We are planning to reduce leakage by 15% between 2020 and 2025 and then by a further 10% over each subsequent five year period through to 2045.**

It will become more and more difficult over time to reduce leakage as the leaks become smaller and harder to find. But emerging technologies that aid in detection and repair of leaks, plus the continuous replacement of old iron mains with modern polyethylene pipes, gives us confidence we can achieve these levels.



# PLANNING FOR ALL EVENTUALITIES

We cannot predict the future but we can plan for all eventualities.

## SUPPLYING AN UNCERTAIN DEMAND

To allow for uncertainty in supply and demand we calculate 'Headroom' – the gap between supply and demand. Target Headroom is an additional gap that allows for flexibility in our forecasts.

Demand plus Target Headroom is then compared to the water available each year. If the supply in a particular water resource zone is enough to meet demand plus target headroom, then it is considered to have a sufficient supply surplus.

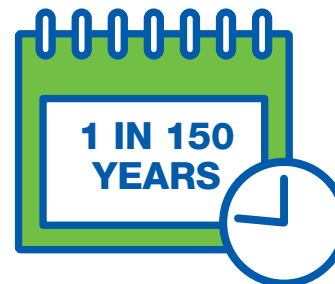
## OUR SUPPLIES WILL MEET FORECAST DEMAND

We have a healthy gap between supply and demand.

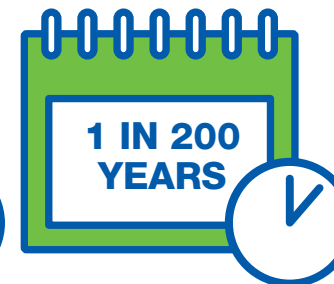
This means there is enough water for us to meet demand during a severe drought so there is no need to develop new water resources. However during severe droughts there probably will still be a need to impose some restrictions on the use of water in accordance with our set Levels of Service. These are:



Appeal for customer restraint on water use



Introduction of a temporary water use ban (mainly hosepipe ban)



Drought order ban (additional to temporary use ban and includes banning some commercial water use)



Pressure reduction

## WATER TRADING

Water companies are required to offer any surplus water to other water companies for them to use during the period of the surplus. In NW the Kielder water resource zone surplus supports a small trade with United Utilities. The residual surplus could support further trade and we have published data to allow others who may be interested to approach us for further trades.

## DROUGHT RESILIENCE

We have tested the resilience of our water supply systems to a very severe drought which is calculated to occur once in every 200 years on average.

We used models to simulate the effects of such a drought on the amount of water we can treat and distribute. **Our modelling confirms that both of our water resource zones are resilient to this severity of drought.**



# WHAT OUR CUSTOMERS WANT

Our customers are at the heart of everything we do and every decision we make.

This plan has been shaped by insight from customer research and engagement projects into areas influencing water resource management and water efficiency.



## DEFINING THE CONVERSATION (2016 AND 2017)

This research explored what matters most to our customers about the services we provide and which areas of service they most want to influence. Our customers told us that we should engage with them to understand their views on customer service, value for money and trust. In regards to other areas of service, the majority viewpoint was that we should 'just deal with it', meaning that they trusted us to deliver the service, using our internal expertise without having to consult customers or external specialists. The areas of service participants most frequently stated we should 'just deal with' relate to water resource management and included 'supplying a reliable and sufficient supply of water' and 'providing clean, clear drinking water that tastes good'. Customers also told us that we should engage with other expert organisations when considering how to manage our performance in the wider environment.

## COMMUNICATING RISK (2017)

This research was about engaging our customers about how they prefer probability, chance and risk to be communicated.

We conducted this research for two reasons; firstly because it can be difficult to interpret numerical presentations of risk. This includes the types of ratios typically used to indicate the likelihood of drought or appeal for restraint (e.g. a 1 in 200 year drought). During the research we presented participants with different options (i.e. percentages, ratios, fractions, and visual formats) and asked them to order them from the most to least likely to happen. A considerable minority instantly disengaged which impacts on the reliability of any data resulting from customer research into risk management.

Secondly, it is easy to perceive risks based on what you have seen or heard, rather than first-hand experience or performance data. Hence, more common service failures such as bursts and leakage tend to be prioritised higher than addressing longer-term strategic issues, such as water resource management.

Our Communicating Risk research findings supported the findings of Defining the Conversation in that customers told us that there are some complex aspects of service which they expect us to manage and plan for without the need for consultation. The most often cited areas of population increases, climate change and ageing infrastructure all relate to our approach to water resource management.

# LISTENING TO CUSTOMERS' VIEWS

Over 2017 and 2018 we engaged our customers on water resource management options, as part of the shaping of our plan. Informed by our engagement and risk research findings we chose to concentrate on demand management options, rather than the more complex and poorly understood levels of service, such as hose pipe ban frequency. Our first project explored the views of our customers' on leakage, metering, tariffs, consumption and preferences for managing the supply demand balance. Our second project explored the views of our customers, via an online survey, in the same subjects.

Participants were asked how they would allocate a £10 budget across five potential water resource management investment options, in order to understand their priorities.

NORTHUMBRIAN WATER	
1. Highest Priority	Build more reservoirs, water treatment works and pipes
2.	Reduce consumption with compulsory water meters at all customers' homes
3.	Inform customers about water meters for optional meters
4.	Reducing leaks
5. Lowest Priority	Installing water meters whenever someone moves house







In addition to this research we have gone on an extensive journey to understand the views of our customers and have conducted several other projects which touch on elements of water resource management planning including:

- ◆ Trust and value (2017)
- ◆ Tariff Structures (2017)
- ◆ Service measures (2017)
- ◆ Resilience, Asset Health and long-term affordability (2017)
- ◆ Communicating risk (2017)
- ◆ Long-term strategy consultation (2018)
- ◆ Behaviour change and funds (2017)

The key messages from customers, from these projects, which have influenced the design of our WRMP are:

CUSTOMER RESEARCH FINDING	HOW THE RESEARCH INFLUENCED OUR WRMP
1. Increasing supply capacity is prioritised over demand management.	We understand customers want us to plan ahead and develop new resources rather than pursue an aggressive demand management policy. We do not have a supply deficit in either operating area which requires us to invest in new water resources at this time. We do plan to reduce demand further in order to reduce the amount of water that is wasted through leakage and also in the way it is used. However, we want to respect what our customers have told us and our ambitions relating to water consumption are shaped accordingly.
2. Customers prefer water meters to be optional.	There is a two year period to decide on a measured or unmeasured bill after an optant meter is installed. We are investigating smart meter technologies to see what additional services these can offer our customers.
3. Customers take individual responsibility for levels of water consumption but also expect us to do more to encourage water efficiency in future.	We commit to sustained gradual reductions in consumption which will enable us to put customer experience first. We will invest in both existing and new approaches to incentivise water efficiency.

More detail on metering, smart meters and options are included in the relevant sections of this report.

# INDEPENDENT CHALLENGE

The independent Water Forums, whose role it is to challenge us to always make sure we put our customers at the heart of our future plans and pricing, were updated on the development of our WRMP in November 2017. Members challenged the presentation of return periods, suggesting that percentage chance of restrictions would be much more meaningful (e.g. 5% chance in 20 years as opposed to a 1 in 20 year restriction). Members also agreed that our selective metering strategy was a good scheme.

## OVERALL ACCEPTABILITY OF OUR 2020-25 PLAN

These views have shaped our draft WRMP plan, which is currently going through a final round of testing as part of our PR19 Acceptability Research. A representative sample of our customers are being given the opportunity to look at a summary of our whole PR19 Business Plan and to tell us whether or not they accept it. A section of the summary specifically relates to water resource management. Here participants can read about how from 2020 we will focus on:

- ◆ Improving how we can move water around our regions to reduce the chance of customers' water supplies being interrupted.
- ◆ Always making sure that local communities have sufficient water to meet their needs.
- ◆ Reducing the risks of hazards like climate change and extremes of weather impacting on our ability to maintain water and wastewater services to customers.
- ◆ Increasing our ability to respond to and recover from long-term interruptions to the water supply which could impact up to 100,000 customers.
- ◆ We will continue to make sure that none of our customers are at risk of Level 4 pressure reduction supply restrictions in a 1 in 200 year drought.
- ◆ We will reduce interruptions to water supply lasting longer than 12 hours.
- ◆ Offering our customers smart water meters.

Our customers are asked one question to measure their acceptability of our whole business plan:

### OUR QUESTION TO CUSTOMERS

To summarise, in our proposed plan we will make improvements to the services you receive between 2020 and 2025, and will also reduce the risk of more serious problems happening in the future. Our plan is built on what customers have already said is important to them and will be delivered for a lower bill than you pay today.

**ON THE BASIS OF THIS INFORMATION, DO YOU ACCEPT NORTHUMBRIAN WATER'S PLAN?**

**YES – I ACCEPT THE PLAN**

**NO – I DON'T ACCEPT THE PLAN**

**I WANT MORE INFORMATION**

The acceptability research has not concluded at the time of preparing this summary, however initial results on acceptability is high.





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**WATER** *living water*