



Cambridge Water

Draft Water Resources Management Plan 2019 Summary

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1. Purpose of this document

This document sets out Cambridge Water's draft long-term Water Resources Management Plan (WRMP) for the 25 years between 2020 and 2045. It describes how we will continue to meet the demand for water in our Cambridge region – and how we are going to make it count going forward. As such, it considers things like climate change, population growth and the need to protect the environment.

Ultimately, though, everything we do starts and ends with our customers. So, we have shaped our WRMP to meet their needs over time. We know these will certainly change in many ways. But our customers must always be able to rely completely on our ability to supply clean, high-quality water efficiently, consistently and to the highest levels of service they expect while protecting the environment they themselves both rely on and enjoy.



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This draft plan describes how we will continue to meet the demand for water – and make it count going forward.

2. What is a Water Resources Management Plan?

Along with the other regulated monopoly water companies in England and Wales, we are required by the Water Industry Act 1991 to develop and adopt a WRMP. This plan sets out how we will manage our water resources over the long term and maintain the balance between available water supply and the demand for that water. Under the Water Act 2003, these plans became legal documents that we have to submit to the Secretary of State at the Department for Environment, Food and Rural Affairs (Defra) and consult on. We have to develop and adopt a new WRMP every five years.

The WRMP is an essential part of our integrated business planning and we have to review it each year. It has very close links to a number of other plans, including:

- our **strategic environmental assessment**, which considers whether the proposals within our plan could cause “significant environmental effects” and to assess the potential impacts of the options we are considering;
- our **business plan for the 2019 price review (PR19)**, which will set out our investment and service package for each of the five years between 2020 and 2025 (and what that will mean for customers’ bills), and which we will submit to the regulator Ofwat in September 2018; and
- our **drought plan**, which we published for consultation in late summer 2017, and for which our response to the consultation was submitted to the Secretary of State on 24 November 2017.

When developing our WRMP, we also take into account:

- **local authority development plans**, which consider projections for new housing needs in our region;
- **river basin management plans**, which include a range of measures that help to meet the overall objective of improving the environment; and
- **flood management plans**, which consider a number of flood management measures that the Environment Agency has identified Anglian River basin district – in particular, the Cam and Ely Ouse catchment and, to a lesser extent, the Upper and Bedford Ouse and Old Bedford and Middle Level catchments.

Ultimately, our WRMP is centred on a balanced view of our customers’ priorities on a range of important issues. These are set out in section 3.

WRMP timetable

The timetable for adopting the final WRMP is as follows.

1 December 2017	The date we submitted our draft WRMP to the Secretary of State at Defra.
2 March 2018	The start of a 12-week consultation period (the closing date will be 28 May 2018).
August 2018	We will publish on our website our response to any representations we receive on our WRMP consultation.

We will publish our final WRMP on our website once the Secretary of State has authorised us to do so. Copies will also be made available at our head office.

3. Putting customers at the heart of our plan

At the heart of our WRMP are our customers' and other key stakeholders' preferences and expectations. We have built on the work we did for our 2014 WRMP and have used new techniques to give us even more evidence to support our plan.

To that end, we:

- carried out research to establish and understand our customers' priorities;
- held detailed one-day and half-day workshops with household and business customers to gain feedback on their preferences, service level expectations and things we could do to help customers who may need extra support. We used a range of approaches during these workshops, including an innovative version of the 'Top Trumps' game to help us understand customers' preferences – and the reasons for those preferences;
- had focused discussions with the Customer Challenge Group¹ – the panel set up to represent our customers and challenge our plans ('the independent customer panel'), particularly on the workings of our modelling, for example;
- carried out a study to understand our customers' reasons for not switching to a water meter; and
- used our customer service tracker to understand perceptions of our service performance.

Our engagement reinforced for us our customers' priorities, including:

- having clean, high-quality water supplies;
- being sure that water will always come out of the tap;
- their bills being fair, accurate and affordable;
- receiving great customer service;
- protecting the natural environment; and
- helping those customers who may need extra support.



Customers are also expecting innovation in:

- helping them monitor and reduce their water usage; and
- investing in our network to make sure we can continue to meet demand for water over the long term.

¹The Customer Challenge Group (CCG) is an important part of the regulatory framework. It provides independent challenge to us and independent assurance to the regulator Ofwat on the quality of our customer engagement and the degree to which this engagement is driving decision making in our business planning.

In addition, our engagement so far shows that our customers have particular views about the following issues.



Leakage



Customers said:

Most customers we spoke to want us to do much more to reduce the volume of water that leaks out of our pipe network every day.



We will:

... make addressing leakage a central part of our long-term business planning because this is such an important issue for our customers.



Metering



Customers said:

Most customers agree that metering is the fairest way to charge because people pay for how much water they use. But they want to be sure that those customers who struggle financially, or who have a disability or whose circumstances may make them vulnerable, are protected from the possibility of their bills increasing because they have a water meter. There is little support in our region for making meters compulsory for everyone.



We will:

... work with customers to encourage more of them to choose to have a meter fitted. We will also work proactively to provide direct support to vulnerable customers by using home visits and simplified processes to ensure that we engage effectively with them. And we will consider options for 'smart meter' devices that would help our customers monitor and control how much water they use – something they said would be useful to them.



Temporary or non-essential use bans



Customers said:

Most household customers are happy with the current levels of service they get from us. This means they should only expect us to have to introduce a temporary use ban (what used to be called a 'hosepipe ban') once every 20 years. We know that the last temporary use ban was more than 20 years ago, so many customers in our region have not experienced this. We also know that any service failure will influence how customers view us overall. Similarly, evidence from business customers we spoke to suggests they are happy with our commitment to only have a temporary ban on non-essential activities (such as washing windows) once every 50 years.



We will:

... maintain our current levels of service in these areas to make sure we continue to deliver what our customers expect now and in the future.



Water efficiency



Customers said:

Most customers agree that they could do more to reduce how much water they use. But more than half think we need to do more to make them aware of the support we can offer to help them save water.



We will:

... do more to educate and inform our customers about the 'big picture' reasons why they should think about the need to save water (such as population growth and climate change). And we intend to carry out a comprehensive programme of water efficiency initiatives to help our customers reduce the volume of water they use each day. This includes incentivising developers to build more water efficient homes.



The environment and sustainability



Customers said:

Many customers have told us that it is important to protect the wildlife in our region – and a third of those we spoke to think we are not doing enough in this area. They also think we need to do more to explain to them what impact our activities have on the areas where they live.



We will:

... pilot an innovative tailored service package in 2018 for customers who are particularly interested in any potential impact of our activities on the environment, and will monitor the success of this. And we will consider the measures set out in the Water Industry National Environment Programme (WINEP) and the Water Industry Strategic Environmental Requirements (WISER) as part of our long-term business planning.

Our customer engagement is on-going, but will support our final WRMP to provide an even more rounded picture of our customers' preferences and expectations. We have yet to complete the following engagement projects.

- Our 'willingness to pay' study, which concludes in January 2018, will give us important insight into how much customers want us to invest in things like leakage reduction, more water meters and water efficiency measures.
- Our customer segmentation study, which concludes in March 2018, will give us a more detailed view of how we can engage more effectively with customers.
- During February and March 2018, we will be asking our customers if they support our proposed package of Performance Commitments and associated Outcome Delivery Incentives for the five years between 2020 and 2025 as part of our long-term business planning. And we will be asking them to tell us what service levels they want around responding to leaks and fitting water meters so that we can continue to deliver the service they expect.
- Finally, during May and June 2018, we will be asking customers if our business plan for the five years between 2020 and 2025 is acceptable to them, and if the bill level is affordable to deliver what they have told us matters most to them.

In developing our WRMP, we also sought input from other key stakeholders, including:

- the independent customer panel;
- the Consumer Council for Water (CCWater);
- Defra;
- Environment Agency;
- Natural England;
- Ofwat; and
- Anglian Water.

This is something we are legally required to do under the Water Act 2003.

4. Background to the Cambridge region – scope of the plan

We are responsible for the public water supply for Cambridge city and South Cambridgeshire and part of Huntingdonshire, serving a population of more than 330,000 people every day. Our region stretches from Ramsey in the north to beyond Melbourn in the south and from Gamlingay in the west to the east of Cambridge city. It is divided into seven water supply zones.

The map below shows the extent of our region.

Our water resources are supplied from groundwater sources – 97% from chalk aquifers and the remaining 3% available from greensand aquifers. The underground chalk strata is generally a robust water storage aquifer, which is recharged mostly by rainfall during the winter months each year. We take water from this aquifer using boreholes sunk into the ground, at 26 sites across the region. Drinking water is provided to our customers by 36 service reservoirs and water towers.

All our water sources are linked by a highly-connected, integrated and flexible supply system. In a situation where there is a water shortage, for example, we can transfer water between service reservoirs across the region to maintain supplies to all customers. We are also considering plans to improve the quality of water in our network and our long-term resilience. We operate the system 24 hours a day, seven days a week, and monitor and manage the network all the time.



We also provide a number of small bulk water supplies to Anglian Water and Affinity Water, and receive a very small number in return. And we have a number of emergency bulk supply points close to our border so that we can share resources if the need arises.

We face a number of significant challenges over the 25 years covered by this WRMP. These include the following.

- We are facing an increased demand for water because of significant population growth and an increase in the number of properties in our region.
- We need to change the way we use our resources because some of the water we take (or 'abstract') from the environment could lead to a deterioration of that environment. This is having a significant impact on our WRMP and proposed programme.
- Customers expect us to do more to reduce leakage on our network, and to help them save water and manage their bills. We have an important part to play here in educating, informing and challenging our customers – helping them to make water count over the long term.

This WRMP sets out the options we consider will best help us to meet these challenges.

5. Our WRMP in the wider context

Our WRMP is set in the context of wider government and regulatory policy, which is that we must be more ambitious in the way we manage demand for water over the long term. In other words, it is about making water count for our customers and for the environment now and in the future.

Our WRMP is also set in the wider context of the challenges and changes that have taken place in the water industry over the past five years. Increasingly, this includes the need to:

- take a long-term view of resilience, particularly in relation to more extreme weather events such as flooding or drought;
- consider the impact of our activities on the environment; and
- reduce leakage and increase water efficiency.

So, we are proposing an ambitious WRMP, based on new and innovative approaches, to reduce demand in our region. This includes:

- a transformational 15% reduction in leakage by 2024/25;
- continuing to increase the number of our customers who choose to have a water meter over the next 15 years. This region already has a high proportion of customers who have a meter (70%); and
- reducing the volume of water every person in the region uses each day (known as 'per capita consumption' – or PCC) by one litre per person per day (1l/p/d) by 2024/25. Compared with the other regulated monopoly companies in England and Wales, our household customers use on average the lowest volume of water each day, and our ambition is to reduce that even further.

We are also carrying out a trial under the name of 'WaterSmart' with 15,000 households to assess the benefit of tailored water use messages to customers. The aim is to influence these customers' water use behaviour by giving them information about how much water they use compared with other customers. We will consider rolling this out across all our customers once the trial is complete and we have evaluated the benefits.

In addition, we are looking at ways to incentivise developers to build more water efficient homes and estates. We are currently working on an award-winning scheme with the University of Cambridge on its 3,000-home Eddington development where we are managing a rainwater harvesting system alongside the drinking water supply. This is the largest water recycling system project in the UK.

And we have considered options to balance supply and demand that can be provided by third parties. To that end, we have liaised with several organisations and water companies to explore potential new water sources. We will use the WRMP consultation period to identify other options for water trading or to consider alternative demand management options. For the longer term, we are actively involved in the Water Resources East (WRE) project, which is looking regionally and cross-sector at the long-term (after 2060) needs for water and options to meet demand.

Our WRMP also considers the impact of our operations on the environment. We are committed to making sure that the volume of water we take from the environment is sustainable. We will work with the Environment Agency to determine if there is an impact, and if there is, to identify any measures that we need to take to put a workable solution in place.

6. Baseline demand for water

We use the latest forecasts of properties and population in our region, combined with the continuation of existing policies around metering, water efficiency and leakage management to give us a view of what the demand for water would be if there were no changes to policy or strategy. This is our 'baseline demand' for water. It is our starting point for assessing whether we have enough water to meet demand over the long term.

In terms of our baseline demand for household customers (our 'baseline household demand'), we are forecasting an increase in the household population in our region of 87,000, with 47,500 new homes being built from now until 2045. This will give us a 38% increase in connected properties.

We also forecast that occupancy rates will fall over the same period – from 2.42 to 2.26 on average – and that PCC will fall from 130l/p/d to 126l/p/d. Overall household demand is forecast to rise by 10 megalitres (Ml) of water a day by 2044/45 (a megalitre is one million litres).



We are forecasting a 38% increase in connected properties by 2045.

Our baseline household demand forecasts take into account our current metering policies, which are that:

- all new properties have compulsory meters;
- all properties with swimming pools or garden ponds containing more than 10,000 litres of water have compulsory meters;
- all household customers who wish to use unattended garden watering devices (such as sprinkler systems) have compulsory meters;
- all non-household and business properties have compulsory meters where practicable; and
- all household customers who wish to switch to a meter free of charge can switch back to their previous method of charging within two years of the meter being installed.

We forecast that the level of metering in our region will increase from 70% to 76% in 2020/21 and to 88% in 2044/45. In terms of leakage, our baseline demand forecasts include leakage continuing at the current Performance Commitment of 13.5Ml a day across the period covered by this WRMP.

For non-household and other business customers, we are forecasting a very slow rise in demand over the 25 years between 2020 and 2045.

Our baseline demand forecasts also take into account our target 'headroom'. This is a volume of water added to demand to account for uncertainty around our supply and demand forecasts, including those around population estimates and climate change impacts. Forecast demand plus target headroom is the minimum volume of water we need to plan to maintain supplies to our customers.

We plan for both 'dry year annual average' and 'dry year critical period' scenarios. The dry year annual average is the average demand over one year measured in megalitres a day. It is a dry year when demand averages are higher than in a normal year because the weather has encouraged more people to do things like water their gardens, use paddling pools or take more showers. The dry year critical period is usually in the summer and is related to the weather. It refers to the peak volume of water used for the activities outlined for the dry year annual average.

7. Baseline supply forecast

We use 'level of service deployable output' when forecasting our future water supply needs. Deployable output – or DO – is the volume of water we can access under the worst historic drought conditions for our region. It is further constrained by a number of factors, including:

- the volume of water we can legally take from the environment;
- the quality of that water;
- the processes we use to treat the water; and
- how we move the water around our network.

Specifically, our level of service DO is based on those historic droughts where we require additional measures to manage our water resources, and the likelihood of us needing to introduce restrictions on how much water customers can use – that is, every 20 years. For example, the last time we asked our customers not to use hosepipes was in the 1990/91 drought. Typically, we expect to need to restrict customer demand in droughts that extend to three or more dry winters.

That said, we are mindful that most customers in our region have not experienced a temporary use ban, and the likely impact (if any) it would have on them. But we do know that any reduction in levels of service would be unacceptable to them.



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The last time we asked our customers not to use hosepipes was in the 1990/91 drought.



We have a number of measures that we can use to manage our water resources during periods of drought. These include:

- appeals to customers to use less water;
- more leakage detection and repair;
- making sure all our sources are fully operational;
- temporary use bans;
- non-essential use bans; and
- drought permits and drought orders.

We plan for both 'dry year annual average' and 'dry year critical period' scenarios.

Since our 2014 WRMP, our level of service DO has decreased by 14ML a day. This is because we have included cutbacks of 10ML a day in volumes to protect against deterioration of the environment. Also, a reduction in the availability of some groundwater sources in our region has reduced DO by a further 4ML a day, mainly because of water quality issues.

We also take the impact of climate change – and the possibility of more periods of prolonged drought, for example – into account when considering the volume of water we have available to us to meet demand. Our assessment of the impact of climate change is that this will reduce the water we have by 0.8ML a day by 2045.

Our forecasts of the water we have available to use to meet demand takes account of:

- our assessment of DO;
- climate change impacts; and
- an allowance for when our water sources may be unavailable because we have to do work on them or they develop an unexpected fault.

8. Baseline supply/demand balance

The baseline supply/demand balance shows that under the continuation of existing policies we would not have enough water to meet demand plus target headroom at the beginning of the period covered by this WRMP (2020) under average conditions but for peak conditions we do not have a problem.

9. Deciding on future options

To help us identify options and develop our proposed programme of work, we followed UKWIR's 'WRMP Methods – decision making process guidance'. UKWIR is the UK water industry's main research organisation, with responsibility for a common water company research framework.

We also carried out a process to define and assess the challenges we face so that we could understand their complexity and scale. This has helped us to develop an approach to decision making that is proportionate and appropriate for our region, our circumstances and our customers.



We defined and assessed the challenges we face so that we could understand their complexity and scale.

And we have developed tools to help us model a range of future scenarios. This is so that we can be sure that our decisions on future options are well tested.

We considered a range of options to manage both supply and demand over the long term. These include:

- reducing leakage on our network;
- water efficiency measures;
- more metering;
- investing in existing groundwater sources – replacing boreholes or introducing new water treatment processes to improve water quality, for example;
- identifying new ground- and surface water sources; and
- trading water with third parties.

We evaluated all of these to come up with a list of feasible options and carried out a strategic environmental assessment (SEA) to help us understand any potential impact of each option. We also tested all of the options under a range of scenarios to make sure that our plan is robust. Throughout this process, we took into account customers' views on things like:

- resilience over the long term;
- impact on the environment; and
- whether the options are cost effective.

We also carried out a full appraisal of how much each option was likely to cost. This was so that we could be sure we were putting the most cost-effective solutions forward.


As part of the work to consider the options for this WRMP, we decided to take the opportunity to review our existing operations across all the water resources in our region to identify the most appropriate mix of options going forward.


10. Our proposed programme

We think that our proposed 25-year programme combines the best mix of options for water supply and demand. We also think that it will deliver what our customers have told us they want us to do. Finally, we think that it shows that we are making water count – for the customers and communities we serve, now and over the long term.

We have summarised the key elements of our proposed WRMP programme in the table below.

Key elements of our proposed WRMP

Key elements of our plan	 What we will do
Leakage	<p>By 2024/25, we will reduce total leakage on our network by 2Ml a day from the 2019/20 Performance Commitment level of 13.5Ml a day. This is a transformational 15% reduction, which we will achieve through a combination of pressure management and active leakage control.</p> <p>We will consider the benefits of developing a live network where data can help identify leaks more quickly and improve performance.</p>
Metering	<p>We will continue to build on our engagement with customers to educate them around the benefits of having a water meter.</p> <p>We will aim to encourage an additional 500 households a year for the next ten years to switch to a water meter above the number included in our baseline forecasts. This will give us a target level of 91% of customers with a water meter by 2044/45 (compared with our baseline target of 88% by 2044/45).</p> <p>We are looking at options for ‘smart meter’ devices that would help customers monitor and control how much water they use – something our customers said would be useful to them.</p>
Water efficiency	<p>We will reduce baseline PCC by 1l/p/d by the end of the five-year period from 2020 to 2025.</p> <p>We will work with developers to explore incentives for them to include rainwater harvesting and greywater recycling within new sites.</p> <p>We will continue to work with customers and target water efficiency advice at those who may be concerned about whether they can afford to pay their water bills. We will report the findings from the ‘WaterSmart’ trial in our final WRMP.</p>

Key elements of our plan	 What we will do
Water supply	<p>Our work to develop this WRMP has shown that continuing with our existing base of sources is the most efficient way to operate over the next 25 years.</p> <p>We have already included some reductions in the volume of groundwater we use for our baseline supply forecast. We will make a further reduction in the volume of water we are entitled to take from the environment by about 6.5MI a day (6.5%) where necessary to manage the risk of causing deterioration to that environment.</p> <p>We will invest in new treatment processes at three of our groundwater sources – at KIPW2, CRPW2 and SIPW (total volume almost 4MI/d). This will enable all three to be brought back into supply.</p>
Resilience	<p>We will continue to liaise with our neighbours, Anglian Water and Affinity Water and others involved in the WRE project to further explore the long-term resilience of water supplies in the region.</p>
Environment and sustainability	<p>We will pilot an innovative service package in 2018 for customers who are particularly interested in any potential impact of our activities on the environment, and will monitor the success of this.</p> <p>We will continue working with the Environment Agency to achieve objectives around the Water Framework Directive and river basin management plans.</p>

11. Final supply/demand balance

By implementing the proposed programme of works outlined above, we will be able to balance supply and demand in our region up to and beyond 2045.

Anyone who wishes to comment on our draft WRMP can do so before 28 May 2018. Replies should be sent to the Secretary of State for Environment, Food and Rural Affairs at the address on page 24 of the draft WRMP, or by email to water.resources@defra.gsi.gov.uk.

The full version of our draft WRMP and the accompanying appendices is available on our [website](#).