

Planning for a drought

Our Drought Plan 2019 customer and stakeholder summary



Executive Summary

We all know it's better to be well prepared in case of challenging circumstances. As part of our statutory requirements we've updated our Drought Plan which details our response to potential droughts in our region.

This leaflet contains information about the Drought Plan and what you can do to help save water in your area.

Planning and managing drought is a complex challenge. Our experience of past drought has shaped and informed this Plan. We have invested

to protect our supply and continue to work closely with our customers to use water wisely. We are always deepening our knowledge of the potential impact of drought and working on future proofing our network for years to come, so we are ready to face whatever nature has in store.

All you need to know about our 2019 Drought Plan

Why do we have a Drought Plan?

We produce a Drought Plan as part of our statutory requirement for water companies (under section 39B of the Water Industry Act 1991, as introduced by the Water Act 2003).

The purpose of the Plan is to explain how we will safeguard public water supplies during extended periods of low rainfall when water resources become depleted - and what we will do to minimise any potential environmental impacts that may arise as a result.

We've got lots of experience in managing water supplies effectively, and this is the fifth formal Drought Plan we have produced since the first in 2000. The Plan draws on all our knowledge and expertise, and we have carefully followed all the Environment Agency guidelines.

What's in the Drought Plan?

Every drought differs in terms of how long it lasts, how intense it is and the areas it affects. With this in mind, we've produced a Drought Plan which prepares us for the potential issues we know could affect our region. It is also flexible enough to take into account a range of different scenarios.

In our Drought Plan 2019 you can find details on:

- What measurements we use to decide when a drought has officially started.
- What we'll do to manage demand for water in the case of a drought.

- What temporary measures we may need to take to provide additional water supplies.
- What we'll do to make sure our customers know what's going on during a drought.
- How we'll work to manage the environmental impacts of our drought management actions.

So how will a drought affect me?

If a drought is declared in a particular area, you can rely on us to make sure that we can provide the water that everybody needs. We'll be in touch with you to let you know what you can do to help, and to tell you about our water efficiency products, as well as water meter installation and leakage detection services.

Sometimes, a drought is severe enough that we have to restrict certain types of water use. For example, because watering your garden or cleaning the car with a hosepipe uses a massive 225 litres in just 15 minutes, sometimes we may need to introduce temporary measures such as restricting the use of hosepipes.

Temporary use bans

There are occasions during certain drought conditions when restrictions on customer use may be required to reduce demand. We may look to implement restrictions on customer use through application of the new powers afforded to water companies under the Water Use (Temporary Bans) Order 2010. These new powers would primarily affect domestic customers only, and allow us to restrict the use of hosepipes.



Full details of the activities covered by a temporary use ban are included within our Drought Plan. We will consult widely and will allow sufficient time for representations to be made before imposing any such restrictions on customers.

We'll keep you informed

Of course, we always explore all other options before introducing such temporary restrictions and we only use them when they are really necessary. And if that time comes, we're here to help.

- We'll be in touch well in advance of any restrictions, telling you exactly what they involve and what you need to do.
- We'll remind you of water-saving alternatives and measures - such as using a bucket and sponge to wash your car or a watering can for the garden.
- We'll be back in touch to let you know when the restrictions are going to be lifted.

Where can I get a copy of the Drought Plan 2019?



Our Drought Plan 2019 is available from our website (along with other useful water saving information) at www.anglianwater.co.uk

What is a Drought Plan?

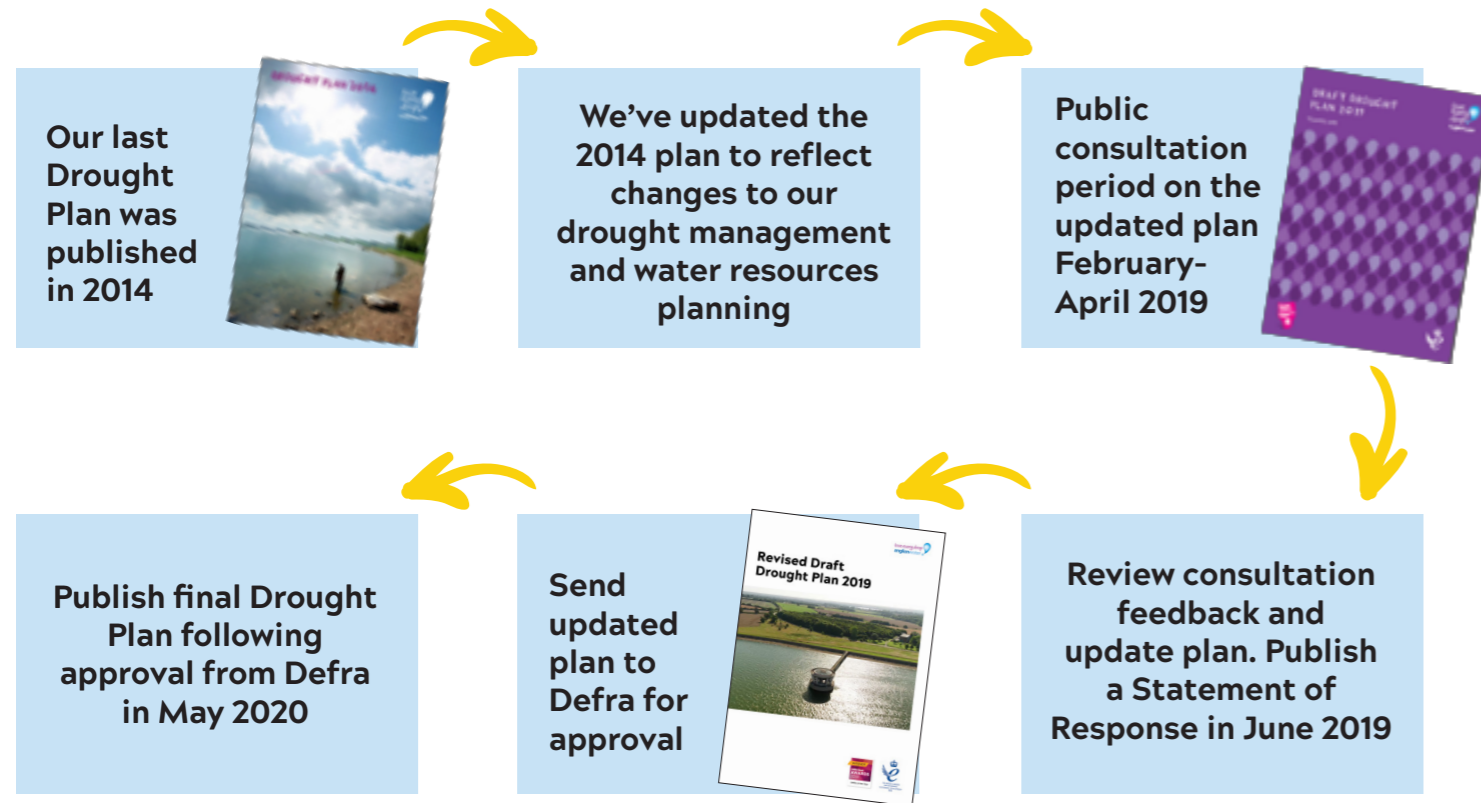


There is a statutory requirement for all water companies to prepare and maintain a Drought Plan that sets out how we will ensure continued supply to customers when water resources may become depleted during periods of low rainfall.

Anglian Water's Drought Plan 2019 has been prepared to update our Drought Plan 2014. It builds on all our knowledge and expertise of drought management to date, along with developments in our drought and water resources planning approaches. We have carefully followed the Environment Agency's guidelines to ensure our Plan takes due consideration of any potential environmental impacts.

Listening, understanding and responding to our customers' thoughts and views is an important part of how we create our drought plans. This Summary document provides a non-technical overview of our plan. Details of how you can have your say on this Plan are at the end of the document. You can find the full Plan and associated Appendices on our website.

Drought Plan consultation process



What is a drought?

The Environment Agency says there is no single definition of drought, but all droughts are characterised by some degree of rainfall shortage. We know that droughts can vary in severity, intensity and location. They can be very localised or more widespread depending on the nature of the water sources involved and the climatic conditions.

Drought events can affect sectors differently, such as public water supply, agriculture, the environment or industry. A water supply drought happens when a

shortage of rainfall causes us concern about supplies for our customers. It tends to take longer to develop than environmental or agricultural drought because our supply systems are designed to cope with dry weather.

It is necessary for us to have a flexible framework so we can respond to a drought in a wide range of situations.

Who we are



We are the largest water and wastewater company in England and Wales by geographic area, supplying more than six million domestic and retail customers. Our region stretches from the Humber in the North to Colchester, from Milton Keynes to the east coast. We also supply water to Hartlepool in Teeside. We provide water services to factories and fire stations, homes and hospitals, business and building sites, schools and sports centres.

More and more people are coming to live and work in our region too, so we all need to think about how we can make our water resources go even further.

Known as the 'bread basket' of the UK our region produces half of the UK's sugar beet, a third of the nation's potatoes and a quarter of the wheat and barley as well as a wide variety of fruit and green crops such as peas, beans and spinach. Agriculture fuels our local economy and is essential for the nation's food security. So we must do all we can to help our farmers thrive. We work with them to conserve water where possible and reduce the risk of polluting our rivers with by-products of agriculture.

The region is also home to many of environmentally important sites and we work in partnership with the Environment Agency and other key stakeholders (such as The Wildlife Trusts) to protect and maintain the natural beauty of our area. Two million people visit one of our parks or recreational sites every year to fish, cycle, kayak or simply take a stroll and get back in touch with nature.



Where your water comes from

We supply our customers from a combination of groundwater and surface water sources. Half our water comes from surface water - we operate eight raw water storage reservoirs and seven direct river intakes. The other half comes from over 200 groundwater sources.

The large pumped storage reservoirs of Rutland Water, Grafham Water and Pitsford Water, supply most of our customers in the west of our region. To the east, we also have pumped storage reservoirs at Covenham, Alton Water and Ardleigh. Our boreholes are spread across the region, and each one will respond differently in a drought.

The Hartlepool Water supply area to the north of the region generally has more average annual rainfall than the rest of our supply area, which means it is higher resilient to drought events.

The map below shows how our sources are distributed across our region.

Managing our precious resource

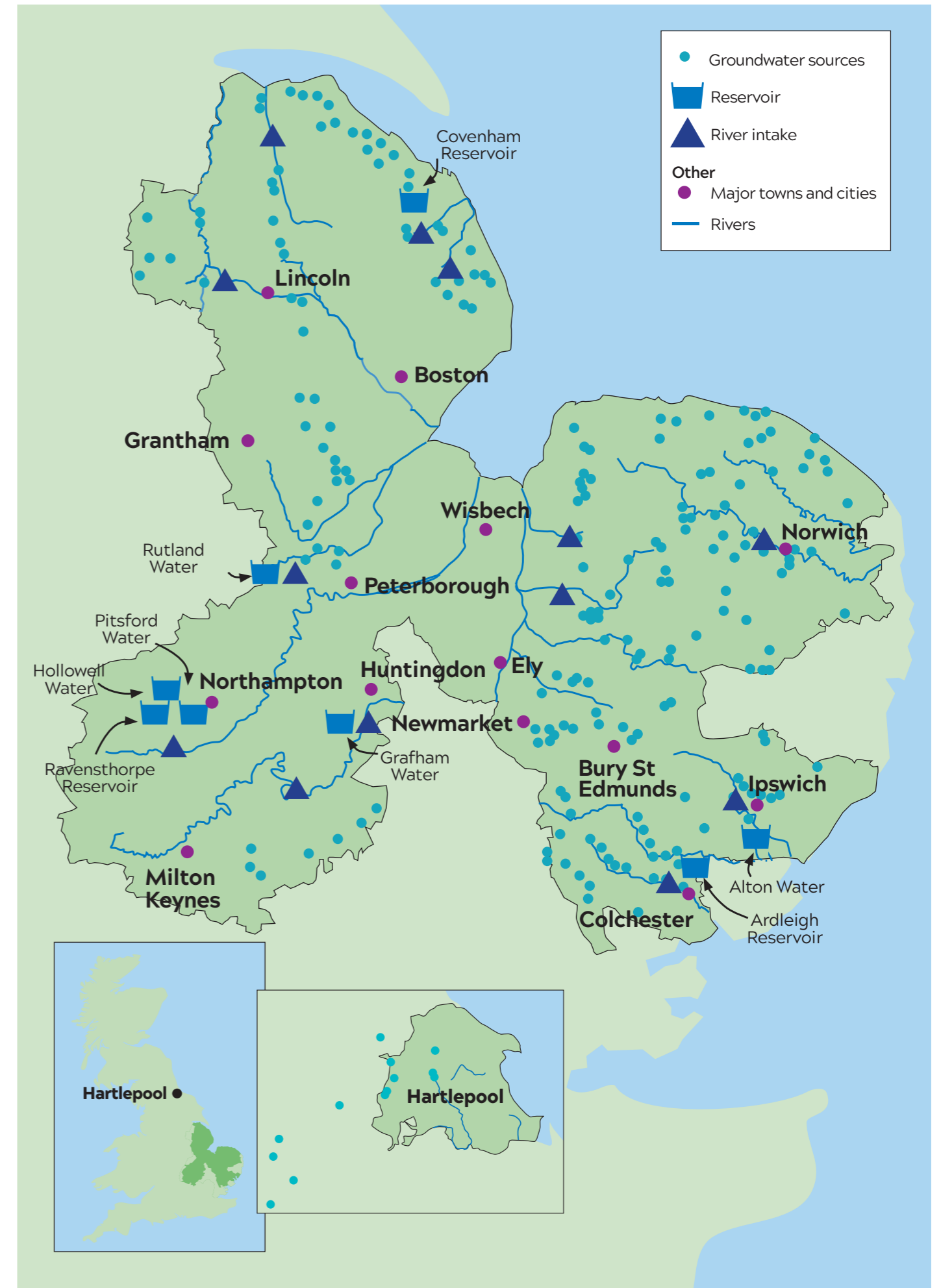
We all know that sometimes it's a good idea to take an umbrella or a raincoat if we're heading out.

But did you know the east of England is the driest region in the UK, with around two-thirds of the average rainfall for England and Wales?

That means water is even more precious here than elsewhere across the country - and we all need to do our bit to help save it.



Figure 1.1: Map of Anglian Water's water sources



Times are changing

Our region faces unique water challenges; it's the driest region in the UK and it's also one of the fastest growing regions in the country. It has two thirds of the national average rainfall and there is high water loss through evaporation.

This makes our region particularly vulnerable to the impacts of climate change. Climate change projections suggest that there will be lower summer rainfall and hotter temperatures meaning there will be greater loss through evaporation too. This means that the water below ground cannot be topped up so readily as it has been in the past. It is also likely that there will be more intense tropical downpours. Rather than refreshing the fields this could lead to more fertilisers/nitrates and pesticides being washed into our region's rivers and impacting their water quality.

Water resources are already under pressure: the region is designated by the Environment Agency as an area of serious water stress, and opportunities for new water resources are limited.

We're proud of our track record as experts in water management. We've worked extremely hard to manage demand, helping our customers to become more waterwise and to love every drop. In fact, more than 85% of our customers use water meters - helping households and businesses to make important water savings every day - and we've also got the lowest levels of leakage in the industry, with half as many leaks as any other water company.

However all these challenges mean we have to love every drop and plan carefully for the future, to make sure we maintain your water supplies whilst protecting the environment.

Water saving tips - what you can do to help!

Take care of the drops... so the litres look after themselves.

Saving water doesn't mean we have to cut down on our cuppas or wear our socks two days on the trot. Just a few little steps around the home could help make a big difference.

In the bathroom

Be a better brusher: Turning the tap off between rinses when you brush your teeth can save 60 litres per day per household.

Hush the flush: A water displacement device in your toilet cistern saves 1 to 2 litres every time you flush.

Shower power: A typical shower can use up to 15 litres per minute - so shower for 60 seconds less each day to make a massive difference - be clean and green.

In the garden

Keep it covered: Covering soil with pebbles, gravel or chipped bark keeps moisture in and weeds out.

Grab a butt: Collecting rain water from your roof and downpipe in water butts to use in your garden will keep your beds blooming all summer.

Let the grass grow: Lawns don't need watering. Set your mower on a higher setting to keep the moisture in.

Outside the garden

Back to basics: Using a hosepipe to water the garden or wash the car uses a whopping 225 litres of water in 15 minutes - so why not use a watering can, or a bucket and sponge instead?

In the kitchen

Drop the drip: Fit a washer to that leaky tap and save up to 3 litres a day.

Save and spin: Wash 1 full load in your washing machine instead of 2 half loads, and save 10 litres of precious water.

Bowled over: A running tap uses 15 litres every minute - so try washing your fruit and vegetables in a bowl of fresh water before giving them a final rinse.

Feeling dishy: Dishwashers use around 15 litres of water every wash, if you have one, try putting it on once a day when it's full. This way you may use less water than if you wash up by hand 2 or 3 times a day.

Save Water. Save Money. Switch to a meter!

Ever thought about switching to a water meter?

It means you'll only pay for the water you use - and not a drop more.

So saving litres in your daily water use could knock pounds off your bill, and help to keep your energy bills low too.

We think it's a 'win, win' situation - or should that be 'save, save'?

If you want to find out more please visit our website at: anglianwater.co.uk/metering

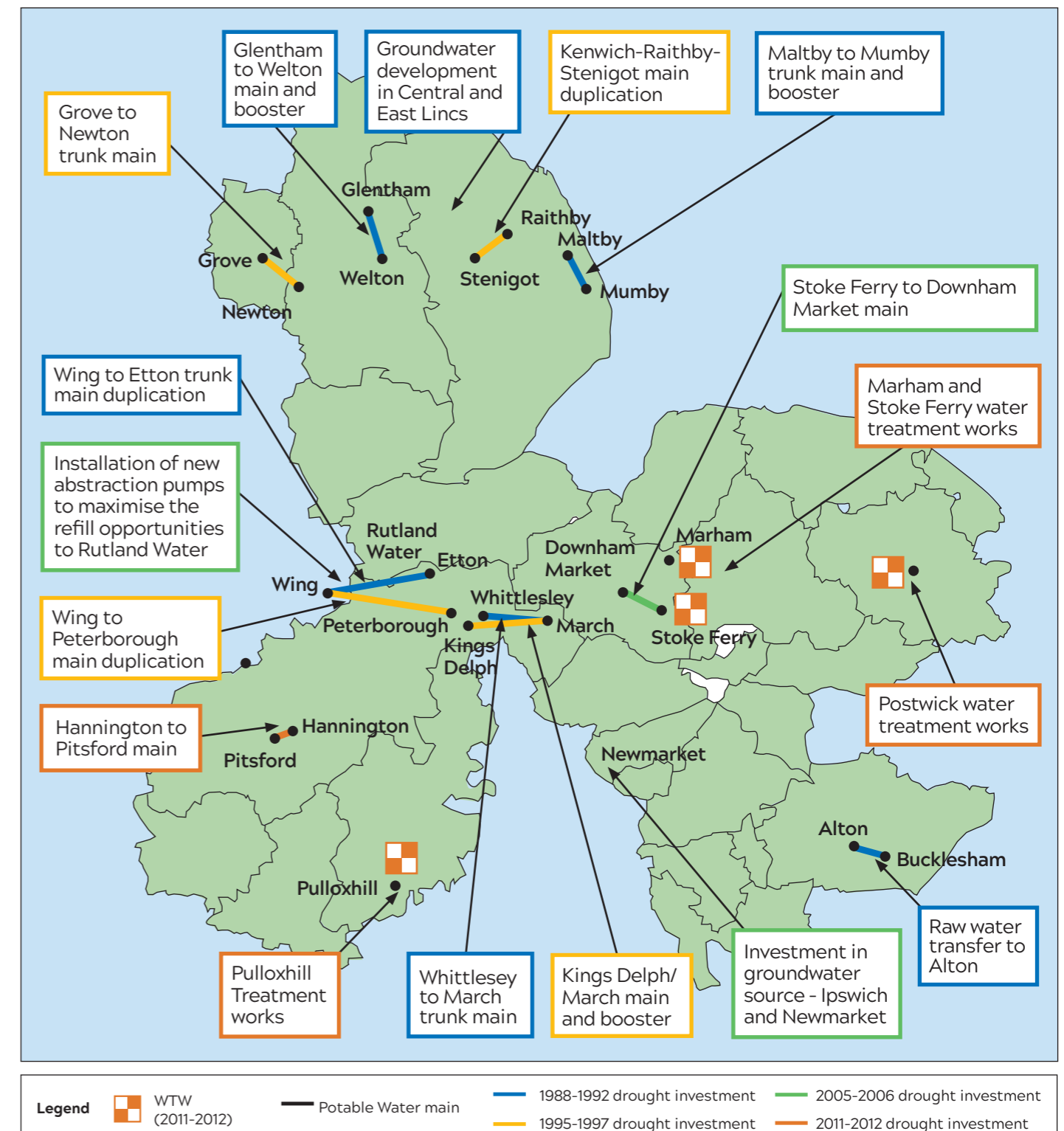
Our drought planning approach

We assess the drought vulnerability of our sources against a reference drought. Previously, we have looked at droughts which have already happened and work out how we would supply water if the same conditions happened again. We call this planning to the worst historic drought on record.

There have been four major droughts in the Anglian region since the water industry was privatised. These were 1988-1992, 1995-9, 2005-6, and 2011-12.

Since privatisation we have invested in our supply systems to ensure they are resilient against historic droughts like these.

Figure 1.2: Post-privatisation investment in the Anglian region following key droughts 1988-2012



However, as the global climate changes, it is hard to predict what might happen in the future. As part of our Water Resources Management Plan (WRMP) 2019, we considered possible future droughts that might be more severe than previously experienced.

Many will remember the 2011-12 drought, which affected a lot of the UK. Fortunately, this drought ended with the second wettest year on record! But what would have happened if the rain didn't come? We have carried out a lot of complex drought analysis to understand the impact of different droughts on our water supply system.

Since the 2011-12 drought, we have been concerned that parts of our system are vulnerable to drought and we would not be able to maintain supplies to customers without imposing severe restrictions, such as rota-cuts.

As a result, we have undertaken a review of our Levels of Service (our water supply commitment to our customers) as part of our Water Resources Management Plan (WRMP) 2019. We thought carefully about what Levels of Service are appropriate for our customers and our region. Our objective is to ensure that from 2025 onwards, our customers will not be at risk of rota cuts in a severe drought.

Our WRMP proposes the investment we will make to ensure we are resilient against more severe droughts and so our customers will not be at risk of rota cuts. You can find out more about our WRMP on our website.

Our Drought Plan complements this, setting out short-term actions to monitor and manage the impact of drought on our customers and the environment.

Why can't we plan for all droughts?

Investing in drought resilience is very expensive. We could make sure our water supply network was big enough to mean we would never need drought restrictions but this would require millions of pounds of investment which might rarely be used. This extra cost would have to be passed on to customer bills but we know this isn't acceptable. We also care about the environment and being sustainable. Therefore we have to balance the risk of drought restrictions against the cost of building more and more infrastructure and keeping customers' bills down.

Drought Terminology

Historic drought - refers to the worst historic drought on record, which we planned to in our 2015 WRMP and Drought Plan. This was previously assumed to be drought events with approximately a 1 in 100 year return period, which we describe as having a 25 % chance of occurring over a 25 year planning period.

Severe drought - refers to drought events with approximately a 1 in 200 year return period. We describe these events as having a 12 % chance of occurring over a 25 year planning period.

Extreme drought - refers to a drought events with approximately a 1 in 500 year return period. We describe these events as having a 5% chance of occurring over a 25 year planning period.

“The restrictions seem sensible, priority needs to be given to the vulnerable and to agriculture. Should a drought happen again, I think we would just get on with it, it is not an insurmountable issue to face in the modern world.”

Anglian Water customer feedback,
2018 workshop

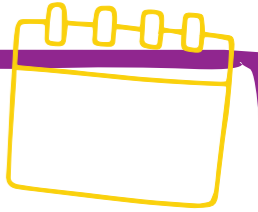
What happened in the 2011-12 drought

2011

- On the 10 July 2011 the Secretary of State announced that the Environment Agency's Anglian region had moved to drought status, as a result of nearly 6 months of exceptionally low rainfall and the soil moisture deficit being at its highest recorded level.
- This exceptionally low rainfall in 2010 and 2011 had a significant impact on flows in the River Nene, and affected our ability to refill Pitsford Reservoir and Rutland Water.
- As a precautionary measure, we applied successfully for two drought permits on the River Nene to maximise the water available for abstraction. Both drought permits were issued in December 2011 and expired in April 2012.
- At that time, we were growing increasingly concerned about the potential impact of a third-dry winter, and that we would not be able to maintain supplies to customers in our Ruthamford WRZs without imposing severe restrictions.
- We responded to this risk by:
 - Reducing our leakage to record low levels (189MI/d, 10% below our target of 211MI/d)
 - Launching Drop 20, our biggest ever water-saving campaign, where we asked every customer to reduce their daily use by 20 litres
 - Identifying and delivering a £47 million programme of capital investment to increase our resilience and protect customers' supplies, and
 - Leading the industry-wide response through the National Drought Management Team.

2012

- By March 2012 it was being reported as the driest 18 months ever recorded.
- The low reservoir storage situation in March 2012 was compounded by low river flows across the Anglian region impeding refill opportunities. In addition, the drought area was starting to extend into our groundwater system.
- On 5 April 2012 we imposed Temporary Use Bans on our customers for the first time in 20 years, alongside six other water companies in the south and east of England.
- Thankfully, the drought was brought to a rapid conclusion by six months of record-high rainfall between April and September 2012.
- We lifted the restrictions on 14 June 2012, just 10 weeks after they had started.



How drought affects our resources

Our experiences of previous droughts show that our water resources respond differently to different types of drought, and our drought plan reflects this.

Our resources are dependent on both the intensity and duration of a rainfall deficit. We have summarised the different drought responses of our sources in Table 1.1.

Table 1.1: Water resource type summary and drought response

Resource	Source of water	Resource type	Response to rainfall
Reservoirs	Water pumped from nearby rivers/natural inflow/direct rainfall	Small and single-season secure e.g. Ardleigh reservoir	Storage responds quickly to changes in rainfall and reservoir levels can quickly drop. However they also tend to recover quickly once river flows pick up.
		Large multi-season secure e.g. Rutland Water	Greater storage volume means reservoir storage depletes slower and can withstand longer periods of low flows. However it takes longer to recover once levels have declined.
Rivers	Surface water runoff from land and groundwater base flow	Overland runoff dominated e.g. River Welland, Trent	Flashy and responds quickly to high or low rainfall situations. This means flows can decline quickly but also refill quickly.
		Overland runoff/ base flow split	Combination of overland and baseflow rivers.
		Base flow dominated e.g. River Wensum	Slower response to rainfall changes as these rivers are bolstered by groundwater. This means they can maintain higher flows for longer but take longer to recover from low flows.
Groundwater	Underground aquifers	Chalk e.g. Marham/ Sandstone e.g. Raithby /Limestone e.g. Aslackby. Confined e.g. Spilsby sandstone /unconfined e.g. Chalk outcrop	Groundwater responds more slowly to rainfall patterns because there is a lag time between rain falling on the ground and percolating through to the aquifer. This generally means groundwater sources are more resilient to shorter dry spells, but it depends on the type of aquifer and it's degree of confinement and we have identified where sources are drought vulnerable.



How we manage drought



Our response to drought has to be relevant and realistic for the unique nature of our region.

We consider there to be three stages of drought:

- Normal/non drought conditions
- Potential drought
- Actual drought

Each of these stages can affect our customers and our business in different ways. We need to know when we cross into each stage so we have developed a series of triggers for each.

First of all we need to set a baseline of what are the normal/non drought conditions for our region and all parts of the region. We carefully monitor weather patterns, such as rainfall and soil moisture. So we can identify any changes to regional or sub-regional variations in weather that may signal potential drought. It is also essential we closely monitor our resources - we are always checking our reservoir levels, river flows and groundwater levels.

How quickly groundwater sources recharge and when reservoirs refill are the most crucial indicators in autumn and winter and, river flows are key in spring and summer. Low rainfall in winter and spring give an early sign of potential drought conditions.

To build as full a picture as possible we have triggers for each of our sources as we know that not all of our sources respond to drought in the same way if at all. We have different site specific indicators at our rivers, reservoirs and vulnerable underground sources.

Our triggers are designed to give us enough time to take control of the situation by:

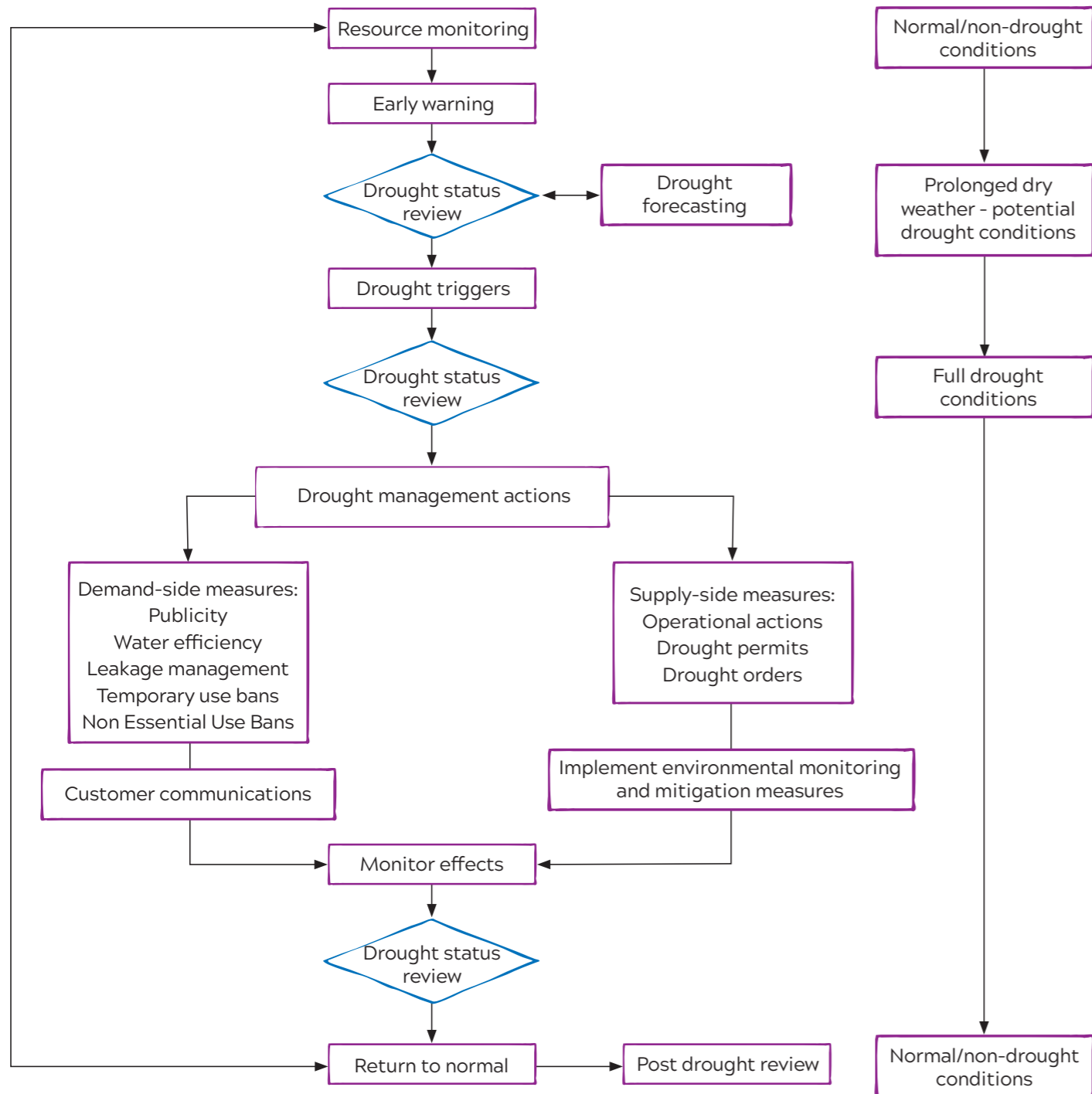
- Clear communication to customers
- Issue temporary restrictions on water use
- Apply for drought orders and permits

We also model the impact of a drought on our resources and security of supply. Above all we consider the impact, the complexity and the timing of any actions we take on our customers and the environment.

It is not straightforward to decide when we have moved from one stage to another so we bring all our experts together in a Drought Management Team to make the important decisions in a timely manner from onset to end. We know it is important to keep our customers informed and we will communicate any decisions clearly with you.

Set out below is a diagram which shows the actions we take at each phase of a drought.

Figure 1.3: Drought management framework



Drought actions

Once our indicators suggest we are heading into a drought we will make sure we are abstracting as much water as we can and keeping our reservoirs as full as possible. When this becomes more challenging, we have to look to additional drought management actions.

Our Drought Management Team will review the situation and make decisions that are timely and proportionate to the circumstances. Our aim is always to minimise disruption to our customers, the environment and other water users as best we can. As with our long-term water resource planning we follow a twin-track strategy during a drought - reducing demand for water before looking at ways to make more water available.

Reducing demand

Throughout this time we will carry out enhanced customer communications so you will always know what is going on, as well as providing suggestions of how you can save water in and around the home, through increased water efficiency and smart metering. We will do our bit too, continuing to manage leakage and trying to reduce our leakage rates even further.

If necessary, we will look to restrict customer water use through Temporary Use Bans (TUBs). Introducing a hosepipe ban is not a decision we take lightly but it is a sensible way to manage demand for water during drought. By making an early intervention it can be enough to bring us back into balance and avoid more drastic restrictions for our customers. It is also part of the expected sequence of steps a water company should take under the Water Use (Temporary Bans Act 2010).

“We realise that having enough water for drinking and bathing is more important than watering a garden or cleaning a car.”
 Anglian Water customer feedback, 2018 workshop



The full list of restrictions is as follows:

- Watering a garden using a hosepipe
- Watering plants on domestic or other non-commercial premises using a hosepipe
- Washing a private motor vehicle or a private boat with a hosepipe
- Filling or maintaining a domestic paddling or swimming pool
- Drawing water using a hosepipe for domestic recreational use
- Filling or maintaining a pond
- Filling or maintaining an ornamental fountain
- Cleaning walls or windows of domestic premises using a hosepipe
- Cleaning paths or patios
- Cleaning other artificial surfaces.

In a worsening drought situation the next step is to restrict non-essential use through Non-Essential Use Bans. These apply to households and our commercial customers and businesses. Drought orders to bring this ban into effect have to be granted by the Environment Secretary. We have to be able to show that we have taken all necessary steps to date to save water and protect the environment in a timely and effective manner.

Activities that would be restricted are as follows:

- Watering outdoor plants at a commercial premises such as a garden centre
- Filling or maintaining a non-domestic paddling pool or swimming pool
- Filling or maintaining a pond
- Operating a mechanical vehicle washer
- Cleaning any vehicle, boat, aircraft or rolling stock
- Cleaning any commercial premises
- Cleaning a window
- Cleaning industrial equipment (plant)
- Suppressing dust.

We would consult with the non-household retail sector and only bring in specific restrictions if we were confident that we would achieve the necessary savings.



Restriction exemptions

Some customers are exempt from these restrictions. Anglian Water grant the following Discretionary Exemptions without the need to make representation or obtain permission:

- Those with severe mobility problems or who hold a Blue Badge as issued by their Local Authority;
- customers using an approved drip or trickle irrigation system fitted with a pressure reducing valve and timer system.

We will liaise with our Non-Household Retail partners, regarding exceptions for businesses whose commercial activity would be affected by the imposition of restrictions, although the exception may be withdrawn if the water resources situation were to deteriorate further or non-essential use restrictions were imposed. Businesses that we may consider are those users of water engaged in cleaning of private motor-vehicles using a hosepipe and cleaning of walls, or windows of domestic premises using a hosepipe as a service to customers.

There will be a formal representation process for any other exceptions to be considered.



Drought permits

At this stage we will also look to take more water from the environment if we are able to. These activities require formal permission from the Environment Agency and need us to apply for drought permits. These will only be granted after we have shown that we have done as much as we can at source level to conserve supplies and reduce demand for water, and any loss of supply is due to exceptional shortage of rain.

As part of our drought planning we have considered the environmental risk of our activities and have prepared all the necessary background material so we are ready to apply in good time for any permits we may need. We have also met all of the Environment Agency's specific requirements. There are eight sources that would need a drought permit to provide extra supply in a time of need.

There are eight sources that would need a drought permit to provide extra supply in a time of need. As shown on the map on page 18.

Environmental protection

An important part of the drought planning process is to ensure that the environmental impacts of any of the drought actions that we propose are minimised.

We have carried out comprehensive environmental assessments to make sure any potential permit will not have a detrimental impact on the environment and have created a comprehensive monitoring plan.



Drought action priority order

Increase publicity and encourage water wise behaviour



Optimise resources, leakage management



Temporary Use Bans (TUBs)



Apply for drought permits



Non-Essential Use Bans and drought orders



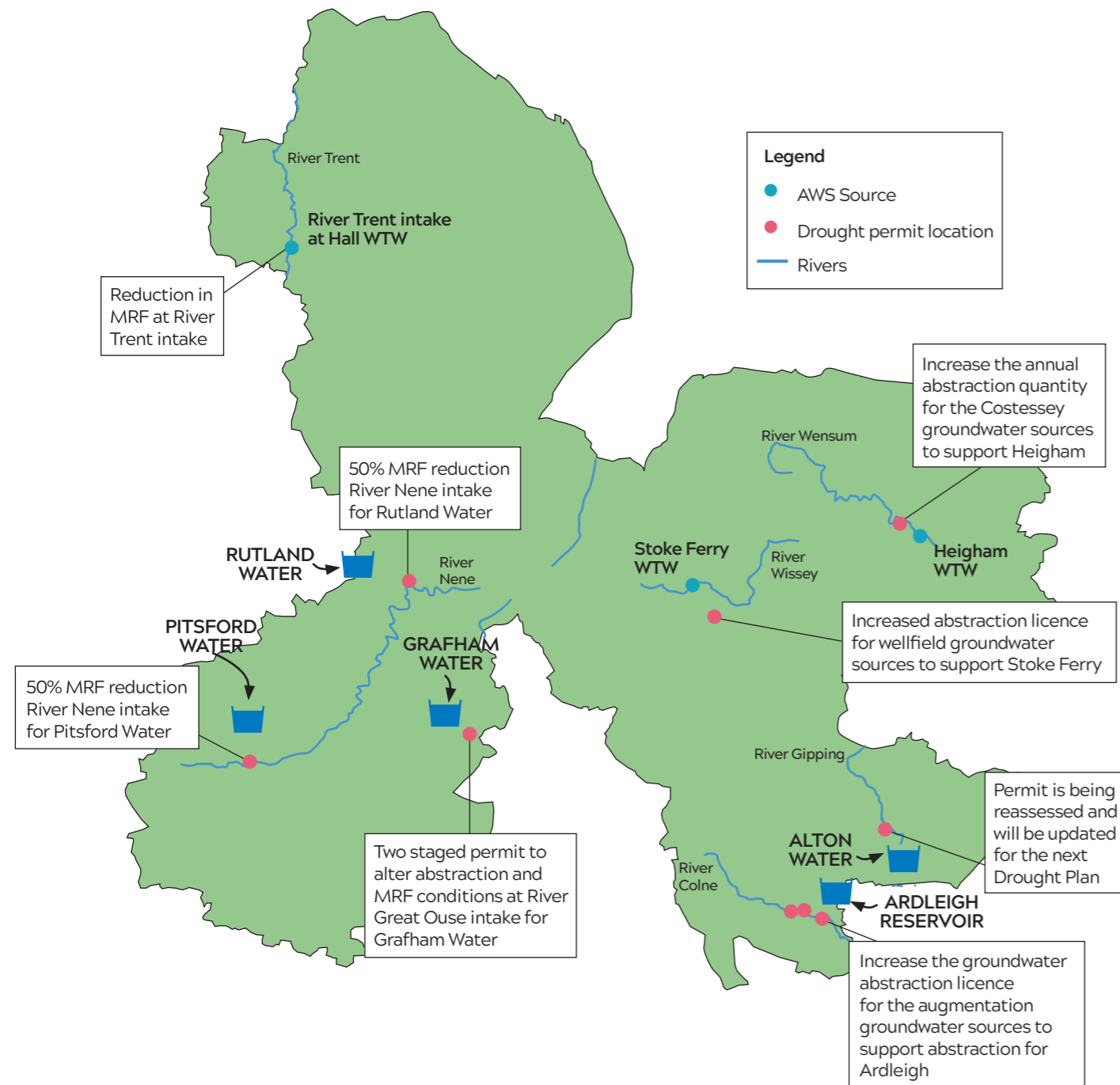
Severe Restrictions (Rota cuts)

Severe restrictions

Only under the most extreme conditions would we apply to the Environment Secretary for an emergency drought order to impose cuts to the water supply at certain times of the day.

We do not believe this to be an acceptable way to run our business and serve our customers and are investing in our water supply system so that this would only be the case under a very extreme drought, beyond the droughts we have planned for.

Figure 1.4: Anglian Water potential Drought Permit locations and associated sources



Drought communication



Communication with our customers and other stakeholders is vital and based on past experience of managing through drought, our publicity campaigns and close contact with our customers led to a 10% reduction in demand for water. We have prepared a communications plan that sets out how we would work with our customers, share accurate information and advise them how and when to change their behaviour at each stage of a drought.

Our customers are at the heart of our business. In 2017-18 we were ranked number one for the customer service by the consumer council for water.

When does a drought end?

The end of a drought is when the risk of impact of drought on sources is no greater than in a normal year. Normal conditions must be present and monitored for a sustained period of time.

The return to normal will be decided only when all of the drought indicators rainfall, dryness, river flows have all returned to normal levels. It can be the case that drought conditions can pause and then resume. So to be sure we model a range of rainfall patterns to decide if there is any risk of a return to drought.

Our drought triggers and management actions are aligned so if we have imposed restrictions on customers they can be lifted immediately once the drought ends. Once we have returned to business as usual we will carry out a review of how we managed through the drought to improve our understanding and learn any lessons for the future.



Cover photo - Fly fishing at Anglian Water's Grafham Water reservoir, an 806-hectare biological Site of Special Scientific Interest, southwest of Huntingdon in Cambridgeshire. It was designated an SSSI in 1986.