OUR DRAFT DROUGHT PLAN 2022
SUMMARY

ESSEX&SUFFOLK WATER *living water*

Contents

Welcome

We supply water to approximately 1.8 million customers in our Essex and Suffolk supply areas. 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 in our Water Resource Management Plan which forecasts 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 water resources planning in our WRMP is also supported by our Drought Plan. Over the following pages you will find a summary of our draft Drought Plan 2022.

Our Drought Plan details how we will ensure that we can always provide sufficient water for our customer's basic needs, however bad a drought becomes. It confirms how we will manage a future drought, what trigger levels can be used to identify when action is required, and what those actions are to ensure we maintain resilient supplies, even during the most severe of droughts. It also outlines how the effects of a drought and drought actions will be communicated to our customers and takes account of the need to undertake environmental monitoring at those sites potentially affected by the implementation of drought actions. Drought Plans are submitted by all English and Welsh water companies every five years.

More in-depth information can be found on our website www.nwg.co.uk/droughtplan.

> 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.

WE ASKED FOR YOUR VIEWS ON OUR DROUGHT PLAN

In June 2021 we carried out a six week consultation on our draft Drought Plan, asking customers, regulators and stakeholders for comments.

We will publish on our website a Statement of Consultation in response to the points raised.

More information can also be found on GOV.UK: **"Drought: how water companies plan for dry weather and drought"**.

What is a drought?

There are many definitions of drought.

The Environment Agency (2008), defines drought as **"...a period of low rainfall which creates a shortage of water for people, the environment, agriculture, or industry"**.

Beran (1985) defines drought as, **"A decrease of water availability in a particular period and over a particular area"**.

This definition reflects the very unique nature of every drought in terms of its intensity (i.e. the size of the rainfall deficit), seasonality (i.e. when it occurs), duration and the regions it may affect.

Our supply area is located within one of the driest parts of the UK. In an average year, we only receive 600mm of rainfall.

Recognising this, the Environment Agency, our environmental regulator, has classed our supply area as a Water Stressed Area.

Although we operate in a dry region, below average rainfall is not always a problem due to the investment we have made in raw water storage and water resources and treatment more widely. For example, during a dry summer, we draw on water stored in our reservoirs and in underground aquifers, both of which will have been filled during the winter months. However, a dry summer followed by a dry winter and then another dry summer could be of more concern. So, the type of drought will determine whether we need to adopt drought actions including which might include actions in place that curb our customers' water demand and sometimes increase available water supplies. These actions are tied into the Level of Service we provide.

"In an average year, we only receive 600mm of rainfall.

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AQUIFER

This is underground water bearing rock. For example, we abstract groundwater from the Chalk aquifer by drilling a borehole down into the Chalk rock.

RAINFALL DEFICIT

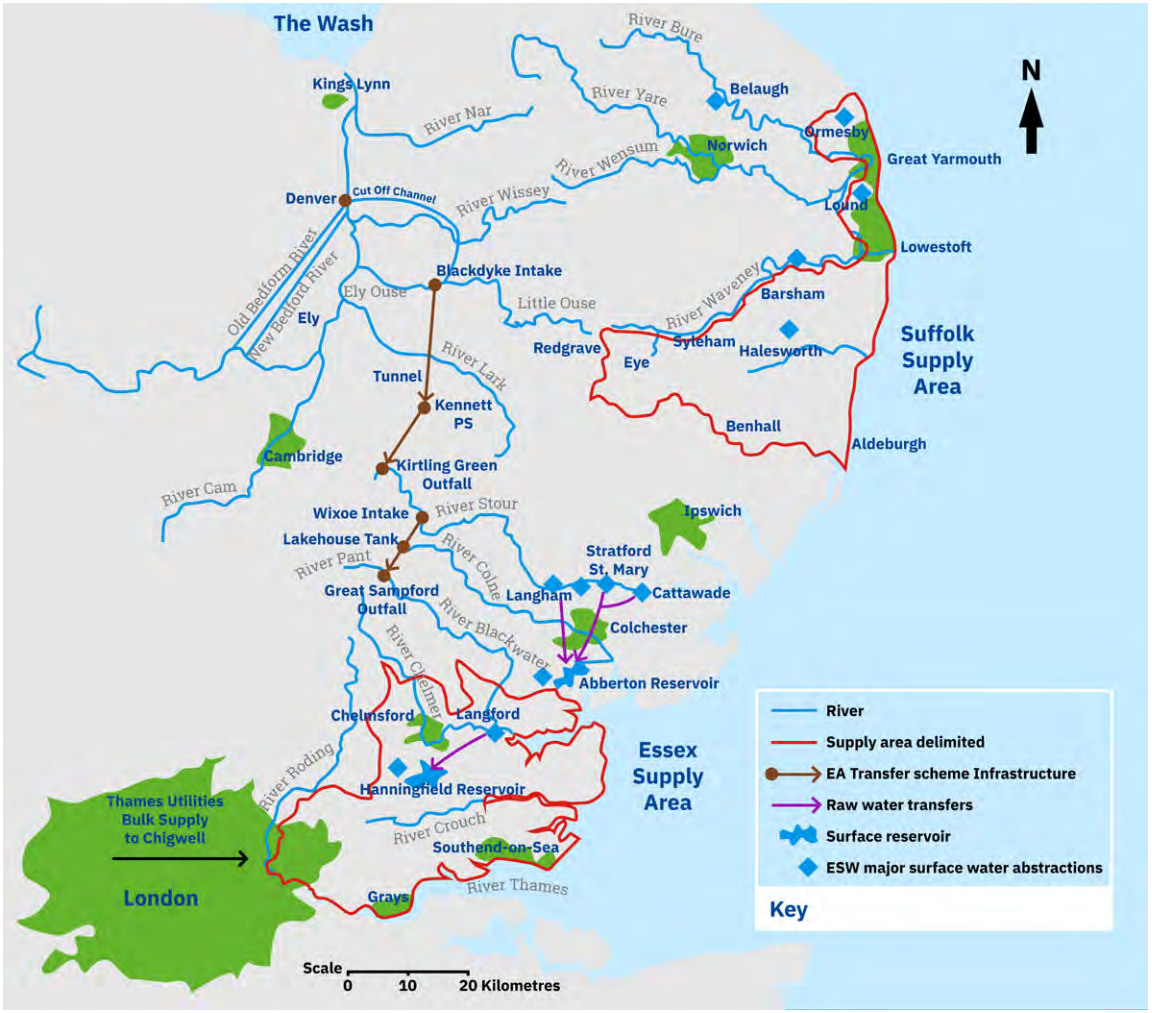
Typically, 600mm of rain falls on our region each year. However, in a drought year, we may only measure 400mm per year. Therefore, the rainfall deficit in that year would be 200mm.

Where our water comes from

We supply water to approximately 1.5 million customers in Essex and approximately 0.3 million customers in Suffolk. Our water supply areas in Essex and Suffolk are completely separate with no common border between the two parts of the company. Our Suffolk supply area actually includes parts of East Norfolk, including the Borough of Great Yarmouth.

We manage water supply and demand in areas known as Water Resources Zones (WRZ). We have four of these in total, one in Essex and three in Suffolk.

FIGURE 1:
Essex & Suffolk Water Supply Areas



Water supply in Essex

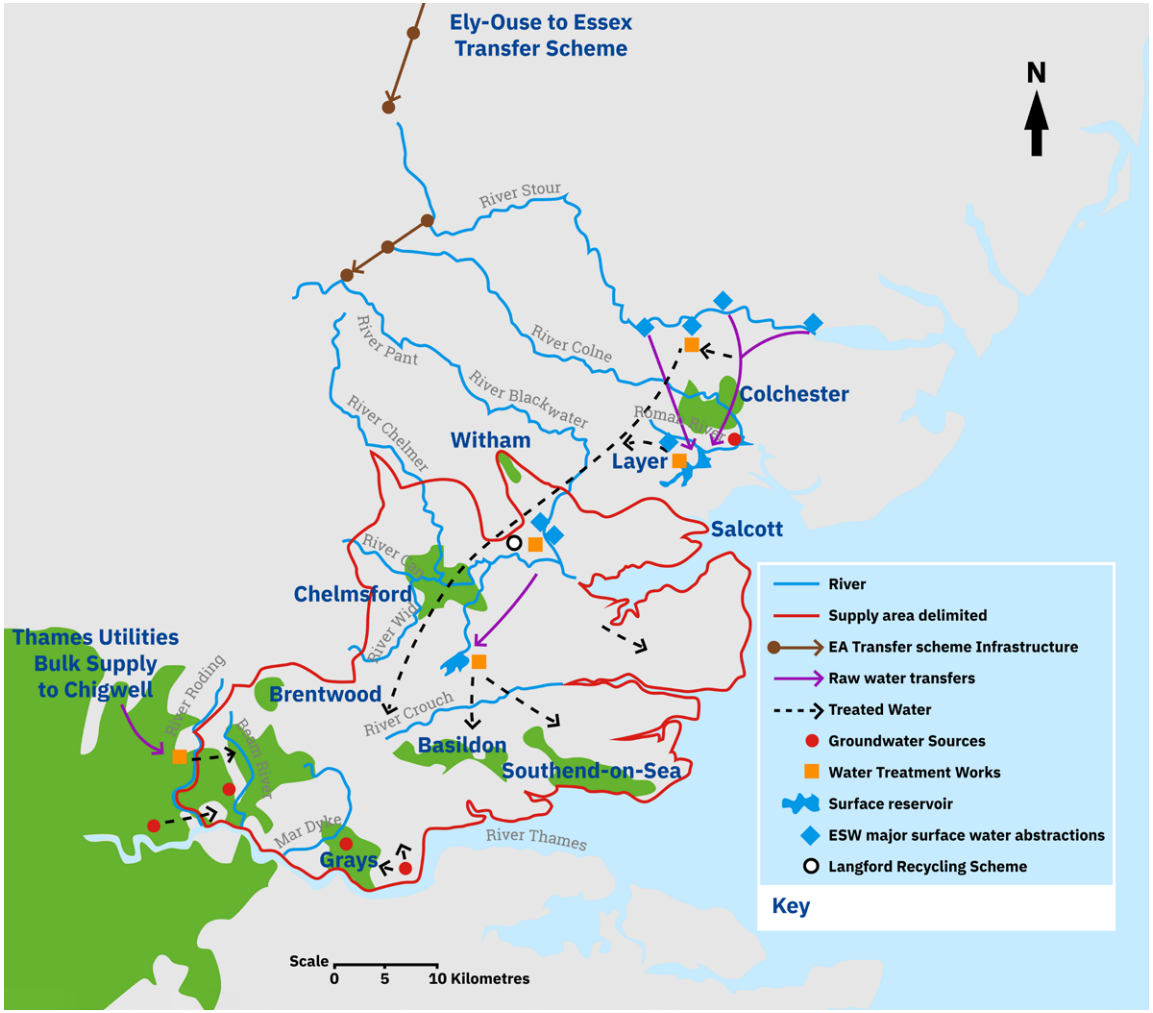
In a drought year, only 54% of the water we supply in the Essex water resource zone is sourced from within it, with the rest being transferred into the zone from outside the area.

In the Essex Water Resource Zone, we abstract water locally from the the rivers Chelmer, Blackwater, Stour and Roman River. Collectively, these are known as the Essex rivers and they are used to fill pumped storage reservoirs at Hanningfield and Abberton, and to supply treatment works near Maldon, Stratford St. Mary, Chelmsford and Colchester. The remaining water sourced from inside the zone (approximately 2% of total water supplied in the zone) is abstracted from water bearing rock known as the Chalk aquifer in the south of the zone.

In a dry year, up to 26% of the water we abstract from the Essex rivers is transferred into the Essex water resource zone from the Ely Ouse to Essex Transfer Scheme (EOETS). This is owned and operated by the Environment Agency and transfers water via pipelines and pumping stations, from Denver in Norfolk, to the headwaters of the River Stour and the River Pant/Blackwater (see Figure 1).

A further 15% of water is provided via a raw water bulk transfer supplied by Thames Water Utilities from the Lea Valley reservoirs. The raw water is pumped directly to our treatment works near Chigwell for treatment onward supply.

FIGURE 2:
Essex Water Resource Zone



Water supply in Suffolk

Our Suffolk Supply Area is divided into three Water Resource Zones known as Blyth, Hartismere and Northern / Central.

BLYTH AND HARTISMERE WATER RESOUCE ZONES

All the water supplied within our Blyth and Hartismere water resource zones is abstracted from boreholes constructed into the Chalk and Crag aquifers (water bearing rock).

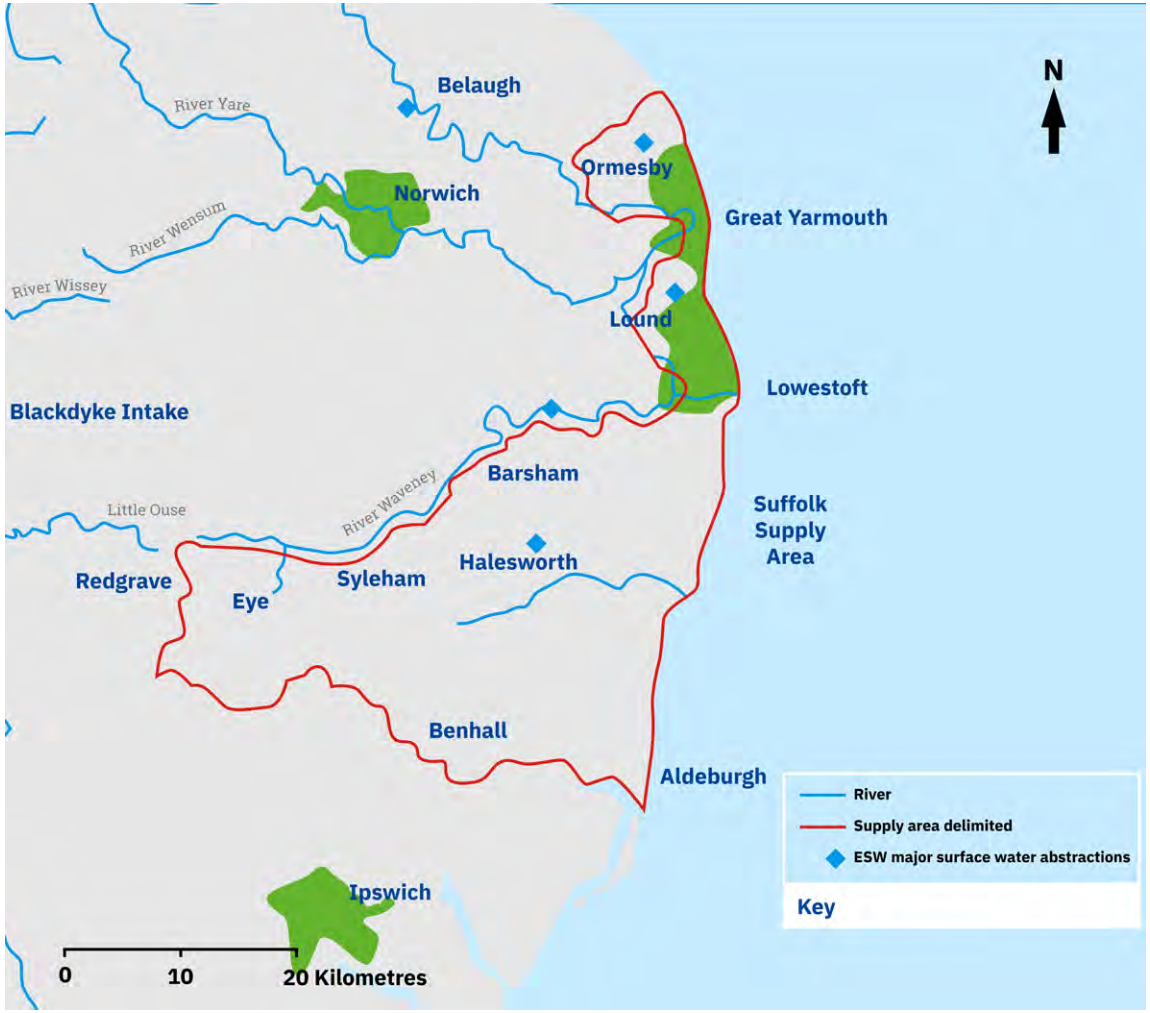
NORTHERN CENTRAL WATER RESOUCE ZONES

Water supplied in the Northern / Central water resource zone is predominantly sourced from surface water, with a smaller proportion from groundwater in the south of the zone.

Surface water is provided via four sources including the River Waveney, the River Bure, and groundwater fed lakes at Ormesby, Lound and Fritton.

A smaller component of raw water can be sourced from remote Chalk boreholes in the north of the zone. Larger quantities of groundwater produced in the south of the zone are abstracted from eight groundwater sources.

FIGURE 3:
Suffolk Water Resource Zone



Our levels of service during drought

During long or very intense droughts, we may need to place some restrictions on customer water use to ensure we are always able to maintain reliable supplies should the dry weather turn into an extreme drought.

Without these levels of service, we would need to develop new water supply schemes such as new winter storage reservoirs. However, this would result in water becoming significantly more expensive.

We have an agreed with our customers the following level of service for four levels of restrictions on water use during drought.

DROUGHT ACTION	FREQUENCY
Level 1: Appeal for restraint	1 in 10 years on average
Level 2: Phase 1 Temporary Use Ban	1 in 20 years on average
Level 3: Phase 2 Drought Order Ban	1 in 50 years on average
Level 4: Standpipes and Rotacuts	1 in 250 years on average

Some droughts, typically those of short duration, do not require us to place restrictions on the use of water. However, we would always ask our customers to use water wisely.

It is worth knowing that we are meeting all of our levels of service and in fact, have never needed to introduce Level 3 or 4 restrictions.

A Level 1 **Appeal for Restraint** might be made during the early stages of a drought. We would use all of our communication channels (e.g. social media and press releases) to ask our customers to Use Water Wisely.

As a drought develops, a Level 2 **Temporary Use Ban (TUB)** might be required. For example, this would allow us to restrict the use of hosepipes for garden watering. They will still be rare and will only be implemented when there is a real need.

During severe droughts, we may need to implement a Level 3 **None Essential Use Ban** or **Drought Order Ban.** This would allow us to place wider restrictions on the use of water including but not limited to watering outdoor plants on commercial premises, filling or maintaining a non-domestic swimming or paddling pools, operating a mechanical vehicle washer or cleaning a window of a non-domestic building.

During an unprecedented drought, we might need to reduce the water pressure in our network (known as **Pressure Reduction**) or implement Level 4 actions including the use of standpipes and rota cuts.

It is worth knowing that we are meeting all of our levels of service and in fact, have never needed to introduce Level 3 or 4 restrictions. The last time we introduced a Level 2 Temporary Use Ban was during the 1996/98 drought.

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We state our **Level of Service** for an Appeal for Restraint as 1 in 10 years. However, this does not mean that an Appeal for Restraint will be made with such regularity.

A 1 in 10 year event may for example occur 3 times in 10 years and then not again for another 20 years.

How we manage droughts

Figure 4 illustrates the supply and demand management process which we follow during a drought.

Stage 1: During this stage, we undertake our business as usual water resource monitoring (e.g. rainfall, reservoir levels and groundwater levels) as well as water supply and customer demand forecasting.

Stage 2: The monitoring of data from stage 1 will tell us when the trigger level has been reached for implimenting a drought action. The very first trigger is the formation of our internal drought Management Group which is chaired by our Water Director. The final decision for selecting and implementing a drought action lies with the Executive Leadership Team and Board. As a drought intensifies, the Drought Management Group will brief the Executive Leadership Team and Board with increased frequency.

Stage 3: This is when we will review the drought measures in our Drought Plan and when will decide which is the most appropriate to impliment.

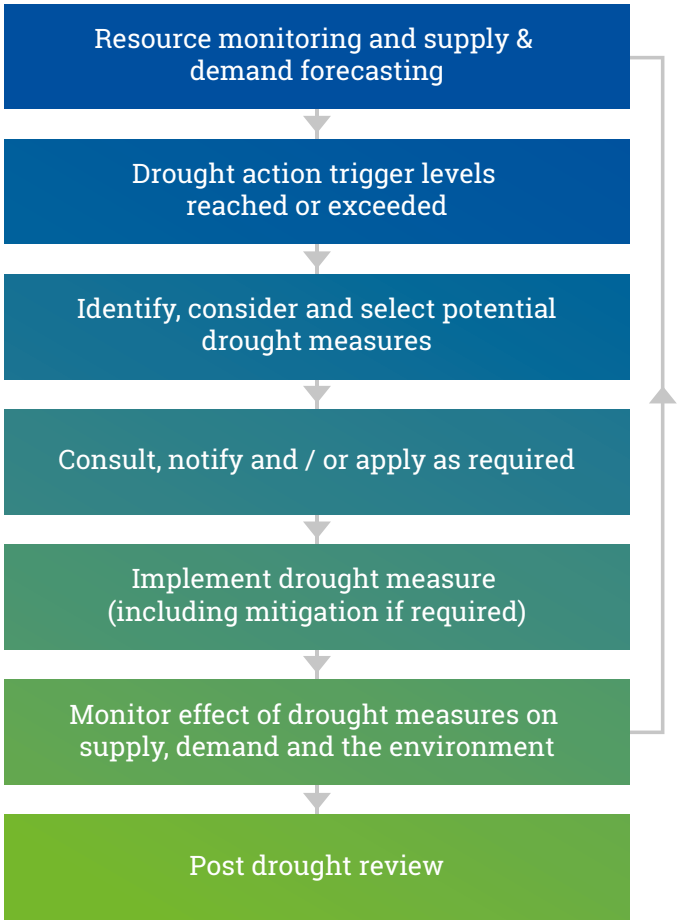
Stage 4: For some drought actions, we are required to consult our customers and regulators. For others, we will need to make an application for a drought permit or Drought Order. This is when we will do these things.

Stage 5: Following completion of stage 4, we will then impliment the drought action. In the case of supply side dorught actions, we will also impliment any mitigation measures to reduce the impact it might have on the environment.

Stage 6: Once a drought action has been implimented, we will monitor the effect it has on customer demand, water supply and in the case of supply side drought actions, the impact it has on the environment.

Stage 7: Once our monitoring data has confirmed a drought is over and drought actions have been withdrawn, we will then undertake a post drought review, to identify lessons learnt and to review and improve our drought plan process.

FIGURE 4:
Drought Management Process



Restrictions on water use

We may need to introduce restrictions on water use as a drought develops to ensure we can maintain supplies should a severe drought develop.

DROUGHT ACTION	FREQUENCY
Level 1: Appeal for restraint	Appeals for restraint are the most frequently introduced drought action but also the least restrictive, relying on the goodwill of our customers. An appeal for restraint is when we provide our customers with clear information about how the dry weather is affecting our water resources and where we ask them to use water much more carefully than normal. This is achieved by using various forms of media including social media, radio and press. In addition to explaining the importance of using water more carefully, we also try to show how this can be achieved. Our website (www.eswater.co.uk) provides water efficiency tips and details of how to request free water saving products. Appealing to our customers' to save water is actually where the biggest savings in water comes from in a drought. Experience shows us that a demand reduction of 7% can be achieved by informing our customers of the need to save water. This is a significant reduction which could remove the need for further restrictions having to be imposed.
Level 2: Phase 1 Temporary Use Ban	A Phase 1 Temporary Use Ban (TUB) allows us to place restrictions mainly on the domestic use of water including the use of sprinklers and hosepipes for watering gardens and plants and washing cars and windows. It does not stop plants being watered with a watering can or cars or windows being washed with a bucket and sponge. The legal definition of a garden under these powers includes domestic gardens, parks, public gardens, allotments and sports fields, including golf courses, cricket fields and race tracks. Cleaning covers domestic cars, boats, windows, patios and buildings. If needed, we would apply a Phase 1 TUB restriction at the Water Supply area level (i.e. either Essex, Suffolk or both). Some commercial groups could be affected by a TUB. For example, nursery and garden service trade could be affected as customers might be less willing to buy plants or lay a lawn. To minimise the effect on trade, we would emphasise that watering of plants is not banned, only watering using a hosepipe. We will try to minimise any economic consequences for commerce from a TUB by exempting a number of activities and groups. This would be dependent on the severity of the drought and may change as a drought progresses. Our banning and exempting of commercial water uses will be proportionate to the prevailing situation and the water consumption of the activity.

Restrictions on water use
(continued)

During more severe droughts, we may need to introduce further restrictions on water use.

DROUGHT ACTION	FREQUENCY
Level 3: Phase 2 Drought Order Ban	Our levels of service for a Drought Order Ban (1 in 50 years on average) means that they are very rare. In fact, we have never needed to introduce a Drought Order Ban. A Drought Order Ban bans what has been applicable to the domestic customer under the Temporary Use Ban, to non-domestic or commercial customers. These bans have economic consequences for businesses and have to be used as sparingly as possible. Our intention would be to apply for powers to ban all of the activities open to us, but only apply each restriction when necessary and when beneficial in terms of water savings and economic impact. If ever needed, a Drought Order Ban will only be introduced once a Temporary Use Ban has already been in implemented.
Level 4: Standpipes and Rotacuts	Level 4 restrictions fall outside of our Drought Plan and instead fall under our Emergency Plan. Restrictions include rota cuts (i.e. water supplies are turned off for several hours per day) and in-pavement standpipes for filling water containers.

DID YOU KNOW...?

Using a watering can keeps your plants alive but uses a fraction of the water a hosepipe would as water is directed more accurately to where it is needed. Lawns do not need to be watered. They may turn brown during hot dry periods but they always recover when it eventually does rain.

Hosepipes are covered by a Phase 1 TUB because they can use over 500 litres of water in 1 hour. This volume of water is greater than the total daily consumption of water for the average household.

Drought measures to increase water supplies

Our Drought Plan contains a number of measures to increase water supplies during a drought.

Our Drought Plan contains a number of drought actions that once implemented, would provide additional water supplies by allowing us to operate outside of normal **abstraction licence** conditions. To do this, we would have to apply to the Environment Agency and/or Defra for a drought permit / drought order. This would need to be issued to us before the drought action could be implemented.

A **drought permit** application requires an accompanying environmental report to be submitted with the application. We have prepared baseline environmental reports for each of the supply side drought actions. These reports confirm the drought action, the mechanism by which the drought action could effect the environment, an assessment as to whether the drought action could cause a significant adverse effect on the environment and the mitigation and monitoring that would be employed to ensure the drought action would not have a significant adverse effect on the environment. They also include an environmental monitoring plan which sets out baseline, drought and post drought environmental monitoring.

> We have prepared baseline environmental reports for each of the supply side drought actions.

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An **Abstraction Licence** is a legal document issued by the Environment Agency that allows us to abstract water from agreed locations subject to meeting strict conditions in relation to the quantity that can be abstracted over a day and a year.

A **Drought Permit** is a legal document issued by the Environment Agency that modifies or suspends conditions on an abstraction licence. We would only apply for a drought permit once a Temporary Use Ban is in place and providing we can demonstrate there has been an exceptional shortage of rain.

How we will implement our drought actions

We will implement our drought actions in the order illustrated in Figure 5. This will ensure that we have reduced customer demand before needing to consider supply side actions which could impact on the environment.

Our Drought Plan identifies the triggers that we will use to determine when a drought action should be implemented.

In our Essex Supply Area, our drought action triggers are agreed water levels in our Hanningfield and Abberton reservoirs known as control curves. These are used to trigger actions such as running our Langford Effluent Recyling Plant to support flows in the River Chelmer as well as the requesting the Environment Agency to run the Ely Ouse to Essex Transfer Scheme to support flows in the River Stour (to support Abberton reservoir) and the River Blackwater (to support Hanningfield reservoir).

Our Drought Management Group will consider implementing a drought action once reservoir levels fall below the triggers.

In our Suffolk Supply Area, our drought action triggers are generally groundwater levels in the Chalk and Crag aquifers which we abstract from. Our groundwater supplies are resilient as demonstrated in the 1996/drought. However, we have undertaken modelling to identify groundwater level triggers for our drought actions.

FIGURE 5:
Order of implementing drought actions

SEVERITY OF THE DROUGHT	LEVEL	DEMAND SIDE ACTIONS	SUPPLY SIDE ACTIONS
Drought plan	Level 1	• Communications campaign • Increased leakage control	• Optimising sources • Reducing treatment works outage • Reducing process losses • Running dry weather river support schemes including Essex Recycling Plant, the Ely Ouse to Essex Transfer Scheme and the Waveney Augmentation Groundwater Scheme
		• Formal Appeal for Restraint for voluntary reduction in water use	
	Level 2	• Temporary use bans	• Lowering borehole pumps • Road Tankering (Suffolk only)
	Level 3	• Drought Order Non-essential use ban	• Drought permits to temporarily increase licensed quantities on abstraction licences • Drought permits to temporarily reduce compensation flows; and • Ordinary drought order to obtain additional water
		• All possible actions to avoid emergency drought orders including Pressure Reduction	• All possible actions including major environmental impact drought permits and orders.
Emergency plan	Level 4	• Emergency drought orders (such as standpipes)	

Extreme drought measures

We have identified the actions that we could implement in an extreme drought (after level 3 restrictions such as non-essential use bans) to delay the need for level 4 severe drought restrictions, such as emergency drought orders that authorise the use of standpipes or water tanks.

It is extremely unlikely that we would ever need to implement these actions. We have only ever needed to implement a Level 2 Temporary Use Ban (also known as a hosepipe ban) and the last time we did that in our Essex and Suffolk supply areas was during the 1997/98 drought. Additionally, since then, we have increased the resilience in both Suffolk and Essex supply areas with a new groundwater source and treatment works in our Hartismere water Resource Zone and the Abberton Scheme in Essex which increased the storage of Abberton reservoir by 60% to 41 billion litres of water.

Nevertheless, we have identified actions (see table overleaf) which we have assessed to be practical to implement during an extreme drought; likely to be temporary and technically feasible.

41bn

The Abberton Scheme in Essex increased the storage of Abberton reservoir by 60% to 41 billion litres of water.

Extreme drought measures
(continued)

The table below summarises the actions we have identified that we think could be implemented in an extreme drought (after level 3 restrictions such as non-essential use bans) to delay the need for level 4 severe drought restrictions such as emergency drought orders that authorise the use of standpipes or water tanks. In prioritising the implementation of these extreme measures, we will ensure that the demand actions are implemented before more extreme supply side actions.

ACTION	WRZ	SUMMARY OF ACTION	TRIGGER FOR ACTION	LIKELY SAVING BENEFIT	BARRIERS	ENVIRONMENTAL IMPACTS	TIMESCALES	PRIORITY ORDER
Demand	All	**Media & Communications:** National campaigns, excessive water use seen as socially unacceptable, Day Zero language, guides for customers to show how to restrict water use to 50 litres/ person/day.	Extreme measures would be implemented after all Level 3 actions have been implemented and then based on priority order in this table.	Logically, these actions will result in a reduction in demand. However, we do not believe it is possible to quantify the saving.	Hygiene - Covid.	No significant adverse environmental effects as the measure is to reduce demand and therefore abstraction.	2 weeks	1
Demand	All	**Supply pipe repairs:** Free and fast supply pipe repairs for customers.		0.14Ml/d	Need customer's permission which is not guaranteed (impacts on driveways); Availability of ESW resource (inhouse or contractors).		3 weeks	2
Supply	All (where opps. exist)	Trades/transfers: Short term trades between companies/sectors.		Would be determined on a case by case basis taking account current resource position and water availability.	Donor permission; EA Trading Policy	This option might require abstraction above recent actual levels. The action would not be pursued if it required abstraction above their own licensed quantities.	6 weeks	3
Supply	Hartismere	Emergency Treated Water Transfer from Anglian water to our Hartismere Water Resource Zone		Benefit of up to 0.75Ml/d peak	The network connection already exists. Operation of the transfer dependent on AW's supply position and their approval as per AW / NWL agreement.	This option might require AW to abstract above recent actual levels. The action would not be pursued if it required abstraction above their own licensed quantities.	2 weeks	4
Demand	All	Consideration of removal of some exceptions under TUBs and NEUBs.		Small reduction in demand. Unquantified	May need emergency powers; could impact on businesses; could be perceived as being discriminatory	No significant adverse environmental effects as the measure is to reduce demand and therefore abstraction.	Within 28 calendar days	5
Supply	All	**Full range of powers available with drought orders:** • Temporary increases to licences that have been reduced or revoked • Compensation flow reductions • Abstraction from alternative sources.		Would be determined on a case by case basis taking account current resource position and water availability.	Need for emergency drought order. Environmental impacts, WFD objectives.	Potential for long term / permanent impacts on ecology and WFD status. See section below on Overriding Public Interest	Within 28 calendar days	6
Reduced mains pressure	All	**Pressure management:** Further reduce pressure while still maintaining essential services, night time reductions and protecting vulnerable customers		Unknown	Customer support; regulatory approval.	No significant adverse environmental effects as the measure is to reduce demand and therefore abstraction.	6 weeks	7

Testing our drought plan

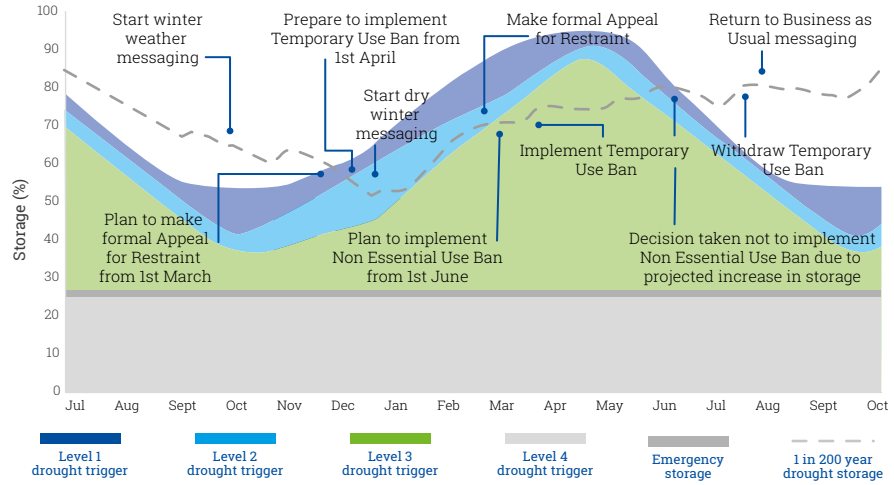
Based on our experience during the droughts of 1996/97, we already know that our Essex and Suffolk supply areas are resilient to droughts that occur once every 200 years on average.

During these droughts, we only needed to impliment Level 1 (Appeal for restraint) and Level 2 (Temporary Use Ban) drought actions. We did not need to impliment Level 3 (Non-essential use bans) or emergency Level 4 (Rotacuts and standpipes) drought actions. However, using surface water and groundwater models, we have tested our Drought Plan against more severe droughts.

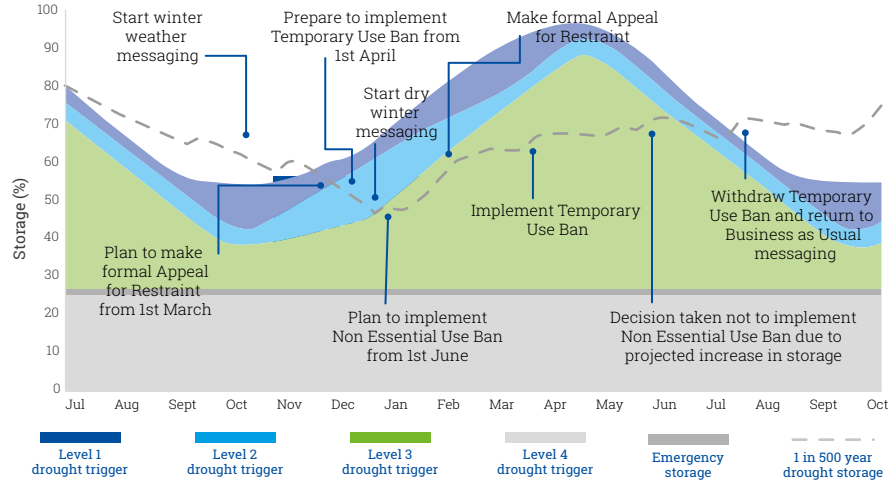
The graphs to the right show the combined storage of our Abberton and Hanningfield reservoirs in Essex during a drought that occurs once every 200 years on average and once every 500 years on average. The illustration also shows the triggers for each of the drought action categories (Levels 1 to 4). Drought actions would be implemented (following agreement by our Drought Management Group and in consultation with our regulators) at the point reservoir storage falls below each trigger.

We have prepared similar graphs and drought actions triggers also for our Suffolk groundwater sources.

Essex Reservoir Combined Storage - **1 in 200 year return period scenario**



Essex Reservoir Combined Storage - **1 in 500 year return period scenario**



How we will communicate during a drought

Our Drought Plan sets out how we'll communicate in a clear and timely way with our customers, partners and other interested groups during a drought.

Our supply area is in the driest region of the United Kingdom and is also one of the fastest growing regions in the country.

Water is a precious resource and therefore we talk to our customers all year round about how they can use water wisely.

Customers are becoming increasingly aware of their impact on the environment are truly understanding that every drop counts.

We have a fantastic history of customer engagement campaigns targeting communities using our engagement vehicle Flo in our operating areas via Every Drop Counts and Whole Town Approach. As a result, we have a legacy of encouraging water saving and educating customers about the environment. We've made significant investments in our network to reduce leaks and bursts, and have the lowest level of household leakage in the East of England.

We have prepared a communications plan that sets out how we would work with our customers, stakeholders, retailers, non-household customers and other interested groups.

> **Water is a precious resource and we talk to our customers all year round about how they can use water wisely.**

The communication plan sets out how we would increase awareness of water levels and the impact on supply, what we as a company are doing and what customers can do to help. The plan includes direct communication with customers and stakeholders alongside other communications methods such as social media and the use of local media outlets including radio. The key messages would include information on the current situation and promotion of water efficiency advice.

Where appropriate, we will agree joint regional communications with our neighbouring water companies including Anglian Water, Thames Water and Affinity Water. We will consider early and proactive communications with our customers to help inform and mitigate the impacts of prolonged dry weather and drought on the environment and / or other water users.

How our drought actions could affect the environment

Our policy is that we will always implement drought actions that reduce customer demand before implementing those that require a drought permit to increase water supplies.

This approach will reduce the effect of abstraction on river flows and groundwater levels. However, during a severe drought (i.e. worsre than those we experienced in the 1990s), we may need to apply for drought permits to increase water supplies.

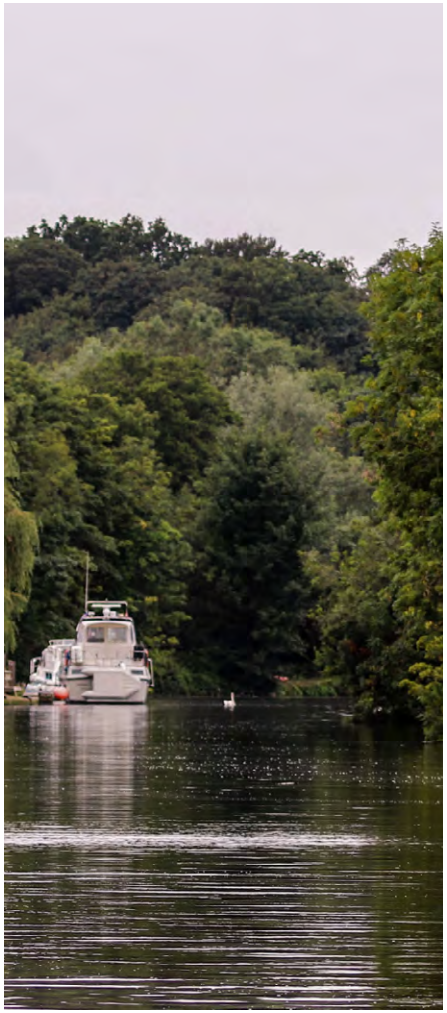
In our Drought Plan, we set out how we will monitor, assess and mitigate the effects of a supply side drought action on the environment.

For each of the supply side drought actions, we maintain a drought action environmental report. The scope of each report has been agreed with the Environment Agency and is regularly updated with new data that we have collected. If we ever need to apply for a drought permit, then having these "Off the Shelf" environmental reports will ensure that the process is not held up.

The reports include an environmental monitoring plan which covers baseline monitoring (outside of a drought), as well as monitoring we will undertake once the drought action has been implemented and following its withdrawal. We can then compare the monitoring data collected following the implementation of a supply side drought action against the data collected outside of a drought. If unacceptable impacts were identified, we would withdraw the drought action.

In our Drought Plan, we set out how we will monitor, assess and mitigate the effects of a supply side drought action on the environment.

Sometimes it will be necessary to implement measures (known as mitigation) to reduce any adverse effects the drought action may have on the environment. For example, when river flows are low, oxygen levels can become depleted which can stress fish. In this instance, an example of a mitigation measure is aeration where specialist equipment is used to bubbled air directly into the water to increase oxygen levels. Where appropriate, we have identified mitigation measures for each of our supply side drought actions.



ESSEX&SUFFOLK WATER living water

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