



Essex County Council
Environment and Climate Action

Water Strategy for Essex

2024

In partnership with:



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Forewords

Our people and economy are dependent upon ready access to clean and plentiful water. The water environment in Essex also provides us with immeasurable recreational, health and wellbeing benefits.

Our rivers, wetlands and estuaries are vital spaces to support nature and biodiversity. These spaces are at the front-line in tackling our climate and water crisis by capturing carbon and providing opportunities for natural water storage and treatment. We not only need to protect them, but to enhance and create more of these environments to help us become resilient to future water scarcity and floods.

We must change our behaviours and make changes to our built environment and approach to land use now, to capture and supply the water we will all need in future.

Cllr Peter Schwier

Climate Czar, and Cabinet Member for Environment, Waste Reduction and Recycling





In Essex, we are very lucky to be able to turn on a tap and have access to clean and safe water. Water is an element that we all require to live, and it is easy to forget that water is a resource at risk if we don't make changes.

It is crucial that all residents of Essex learn the short-term and long-term effects of something as simple as leaving a tap or shower running. As a County, we need to better understand how to protect and enhance our precious water resources, so that we can continue to enjoy the vital benefits that flow from it well into the future. This change starts now.

Our younger generation have the power to be entranced by what they learn in this strategy and relay it onward to those less concerned with the problems that we face.

But our hope is for everyone to participate in the change. It starts with the small things in your home, which subsequently can have the ability to repeat in every house and have big impacts. We aim to preserve our water for the future, together.

Jillo Ntim

**Water Strategy Representative
for the Young Essex Assembly**

Executive Summary

The problem

Essex is a water-stressed area. On average we consume larger volumes of water per person than most of England. Only three-fifths of the drinking water consumed here comes from the county itself – the rest has to be imported from elsewhere. Apart from domestic use, water is needed by business sectors, such as agriculture and horticulture, food processing, power and leisure.

With climate change and population growth, plus the need to restore, protect and enhance the natural environment, the situation can be expected to get worse.

It is estimated that by 2050 the East of England will experience a public **water supply shortage of around 730 million litres of water per day (Ml/d)**, equal to over a third of the predicted future need.

On top of this, Essex water quality is below the national average. This is as a result of storm overflows discharging sewage into the water supply; pollution from fertilisers and poor livestock management; and runoff from construction and traffic.

Although Essex is one of the driest places in the country, we also have areas at very high flood risk from the sea, rivers and rainfall.



Towards solutions

This strategy highlights some of the great work partners in Essex are already implementing to deal with water resources and water quality issues and aims to provide an important starting point for more conversations around the risks and opportunities in Essex.

There are three main ways we can address the issues:



Reducing our demand for water

We all need to find ways to use less water and thus reduce pressure on our future water resources.

This includes:

- Reducing leakages and using water efficient goods
- Rolling out smart meters
- Taking everyday actions to use less water
- Building water efficient or water neutral development



Changing land use for water

We should change the way we use land. This is both about working with nature and being more thoughtful when we use or develop land to take account of water supply and quality.

This includes:

- Incorporating more trees, hedges and other natural 'green infrastructure' when land is developed
- Using wetlands and Sustainable Drainage Systems (SuDS) to reduce flood risk and improve water quality



Our future water supply

In the medium to long term, we need to develop new sources of water supply.

Opportunities include:

- Building new reservoirs
- Transferring water from places where there is surplus to areas in deficit
- Reusing and recycling water
- Desalination

Who's responsible?

Multiple organisations have responsibilities for water or commitments to improve it, and the web of interactions is complex.

- Water companies (there are four serving Essex) all have Water Resources Management Plans¹ (WRMPs), which set out how they plan to balance demand with supply
- OFWAT, the water regulator, aims to ensure that water companies deliver their statutory duties
- National Government has created a 25 Year Environment Plan (25YEP)², which includes clear goals and targets for clean and plentiful water
- The Environment Agency's responsibilities include flood and coastal erosion risks, setting rules and strategy on water abstraction, and reviewing and updating river basin management plans
- Regional water planning groups, such as Water Resources East (WRE) in Essex, propose the major measures and infrastructure needed to enable water supply to meet water demand
- Essex County Council is a Lead Local Flood Authority (LLFA) which means we have powers and responsibilities for flooding from rainfall and local watercourses (non-main rivers). We are also the Responsible Authority to deliver the Local Nature Recovery Strategy (LNRS) on behalf of Greater Essex
- Essex Highways maintains highways drainage systems on behalf of Essex County Council
- Catchment partnerships (five in Essex) are officer groups who operate together at a local level and understand the water challenges and character of their area

- Local planning authorities work with their communities to identify the strategic priorities for the development and use of land and resources in their area
- Charities and representative groups, like the National Farmers Union (NFU) and Country Land and Business Association (CLA), have plans which consider the importance of water for their own sectors

Recommendations

We have identified 30 different actions that will contribute to addressing the water issues we face in Essex over the next five years. They all relate to the three main themes of reducing demand, changing land use and developing alternative supply.

Of these, 10 activities are for Essex County Council or Essex Highways to lead on. To make significant progress in solving the water issues we face, however, we have to count on the players outside of Essex County Council's control to play their part, and we will do our bit to support them.

If the recommendations in this strategy are followed, with all parties collaborating together, we believe that all of us in Essex can look forward to a brighter future where fresh, clean water is readily available and the problems of droughts and floods are considerably reduced.

Introduction

This Water Strategy for Essex explains why Essex is vulnerable to water shortages, how the county is performing in relation to national targets for consumption and leakage control, and what steps should be taken to address the issues raised.

It highlights some of the great strategies and work partners in Essex are already implementing to deal with water resources and water quality issues and aims to provide an important starting point for more conversations around the risks and opportunities in Essex.

Strategy purpose:

- ✓ **To increase awareness of water resources and quality across the county of Essex**
- ✓ **To bring together data to clearly illustrate the water challenge we are facing now and by 2050**
- ✓ **Raise awareness of how we need to adapt from now to 2050**
- ✓ **Set out what must be done through recommendations for future activity**
- ✓ **Ensure Essex strives to go beyond national government targets for clean and plentiful water**



As you read this strategy you will hear about:



The state of our water in Essex today, both in terms of supplies and quality



Who uses water and for what purpose, who regulates and plans for water



What are the root causes of our water challenges and why we need to change



The three elements of the solution: reducing demand, changing land use for water, and exploring new water supply options



Recommendations for collective action to achieve and exceed national goals for water



Links to live data, educational and water awareness tools with Essex case studies



A glossary of key terms and further reading

Working closely with our Young Essex Assembly colleagues, who supplied valuable feedback and insight into its design features, we have also developed the **Essex Water Your Future**³ online explorer, which provides a high level overview of all of the issues discussed within this strategy. It is a more interactive way to see what is going on with water where you live. The explorer site shows how complicated the integrated water system can be, but then breaks this down and explains each element of the cycle with direct links to Essex case studies and further resources.

This Strategy helps to deliver the **Everyone's Essex**⁴ commitments and forms part of the **Essex Climate Action Plan**⁵.

Our water data storyboard on **Essex Open Data**⁶ provides information taken from Essex water company Water Resource Management Plans (WRMPs), including data on abstraction and water quality in Essex. These tools and data are freely accessible.



Water in our lives



We are used to having clean, plentiful drinking water available whenever we turn on the tap, but water is also very important to many other aspects of life:



the agriculture and horticulture sectors (or farming and growing) require water for animals and irrigating crops;



the food processing sector uses water to wash ingredients and as an ingredient itself in making food and drinks;



industry and the power sector may use water for cooling, or in the case of energy generated from hydrogen, as the raw material from which green hydrogen is produced;



the leisure sector uses water for keeping golf greens and racecourses green and safe, for washing boats, and for swimming pools; and



the environment itself needs water to support wildlife, healthy rivers, aquifers, wetlands, biodiversity and ecosystems.

The amount of water on the planet never changes, but climate change is affecting where, when and how much freshwater is available to us at any given time. Activity such as deforestation, abstraction, building and human-caused pollution have all influenced natural processes and chemical balances.

Climate change is already causing increased temperatures and risk of heatwaves, and more intense periods of dry and wet weather which in turn lead to more frequent droughts and flooding (**MET Office State of the UK Climate Reports**⁷). Our approach to land use, the built environment and the level of population growth have led to polluted water bodies and weakened how river systems can cope with both too much and too little water. Unless urgent action is taken, impacts on communities and the environment will continue to worsen.

**Agricultural
spray
irrigator**

1.1 Water availability

Essex is already classified as a seriously water-stressed area. Our water companies predict that by 2050 we will only have 63% of the water we need available.

If we do not take action to use less water and create more sources of water supply, supply shortages and restrictions will be a reality. These will prevent new homes being built, new businesses being set up in Essex, and change the type of food that can be grown here.

Looking at data on the long-term average rainfall in Essex (Met Office UKCP), we can already see that in the past 30 years (1991-2020) there has been less rainfall in spring and more peaks over autumn and winter than during the 30 years previous to that (1961-1990). Less rainfall early in the year can be particularly

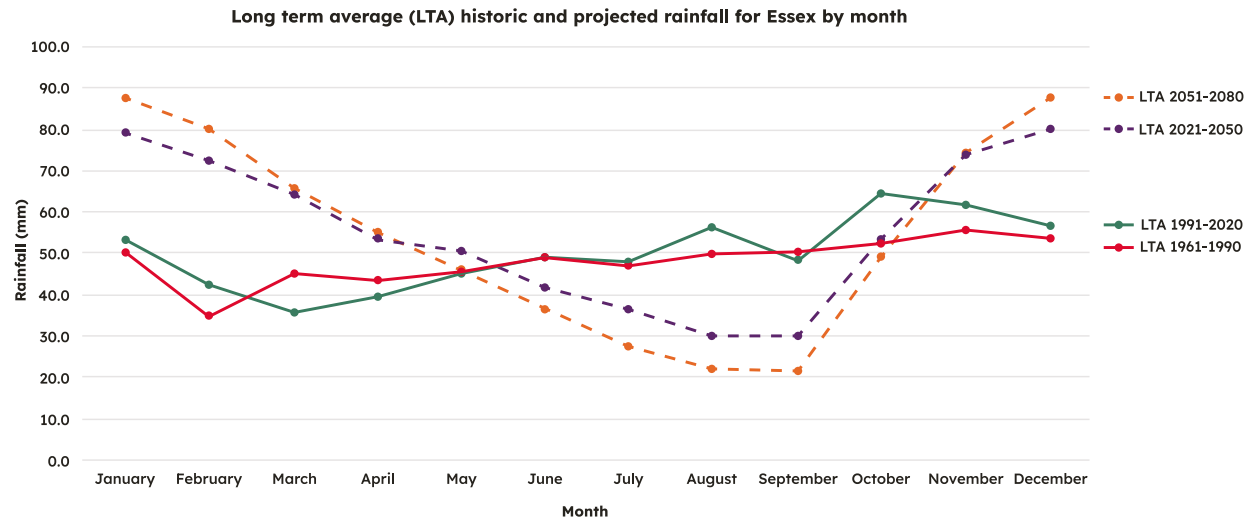
problematic for agriculture and can directly affect the availability and dependency on groundwater (aquifer) sources.

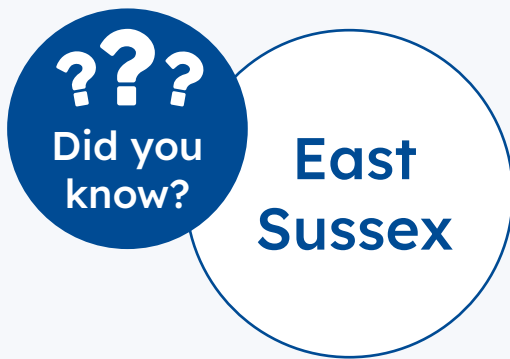
Any change in the availability of water is likely to affect the crops we grow and recognise in Essex fields. It can also affect the ability to manufacture certain products or the enjoyment and health of our water environment. This in turn may lead to changes in employment or availability of local goods and services to meet demand.

Looking ahead, our winters will continue to be a lot wetter, and summers a lot drier. As well as using less, we must store winter flows and flood water when it is plentiful, to help ensure supplies are available when needed during other times of the year.

Figure 1.1: Historic and projected long term average rainfall data from the Met Office UKCP RCP 8.5 scenario

(RCP8.5 is a pathway where greenhouse gas emissions continue to grow unmitigated, leading to a best estimate global average temperature rise of 4.3°C by 2100).





A recent water shortage was experienced by South East Water customers in East Sussex and Kent.

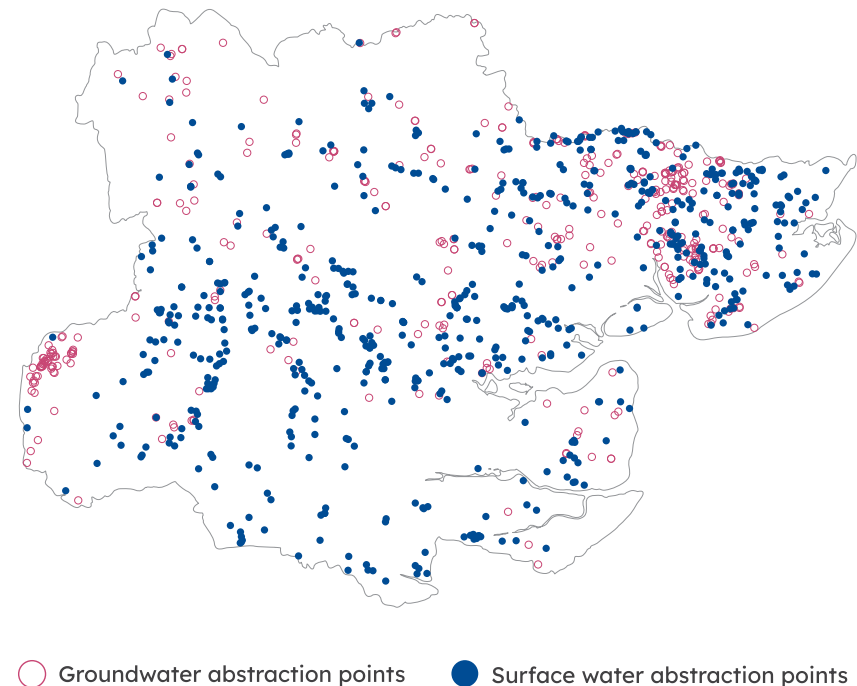
Four schools along with 2,500 households were without water after treated water storage reservoirs were not refilling enough to keep the supply going ([The Guardian, June 2023](#)⁸). In these short-term situations, bottled water was supplied to their customers.

Droughts vary in intensity, area, and length, so it can be difficult to keep track of trends. However, UK climate projections suggest drier summers on average, with generally stronger drying in southern parts of the UK ([UK Climate Projections UKCP](#)⁹). We all need to use water more wisely and create new infrastructure to manage the risk.

1.2 Water supply and demand

Water demands across Essex are met by taking water (abstraction) from rivers, lakes and reservoirs (surface waters) and groundwater (aquifers).

Figure 1.2: Map of all the current surface water and groundwater abstraction points in Essex.



A maximum of 194MI/d of water could be abstracted from ground and surface water sources within the Essex border specifically for our public water supply (based on Environment Agency data of maximum daily allowance). A further 130MI/d on average is imported from sources outside Essex to meet the actual public water demand.

This means Essex is only **60% self-sufficient for drinking water** with the remainder piped in from neighbouring counties.

In Essex, average household water consumption in 2021-2022 was 155-160 litres per person per day (l/p/d) (Plan for Water 2023). This was higher than the average in England of 144 l/p/d. Under the Environment Act 2021, the government has set a national water saving target that requires domestic consumption to reduce by 20%, to around 115 l/p/d by 2038. By 2050, consumption is planned to reduce to 110 l/p/d.

As you would expect, the latest 2023 water company data shows that people in Essex use most water on personal washing, but it varies a lot. Households that pay a flat rate for their water (unmetered households) tend to use more water – up to 40% more on various household activities. Customers can use as much as 118 l/p/d on bathing, showering and hand washing, followed by 35 l/p/d on toilet flushing. Non-essential outdoor activity also can account for up to 13.5 l/p/d.



Fig 1.3: Average household usage in 2024 by component, based on water company WRMP data

Components

The average number of litres used daily per person in Essex households is:

152.3



This average is calculated on a 'Dry Year Annual Average' basis, and includes both measured (metered) and unmeasured supplies.

It is made up of 6 categories, as follows:

- Toilet flushing**
- Personal washing**
- Clothes washing**
- Dish washing**
- Miscellaneous internal use**
- Miscellaneous external use**

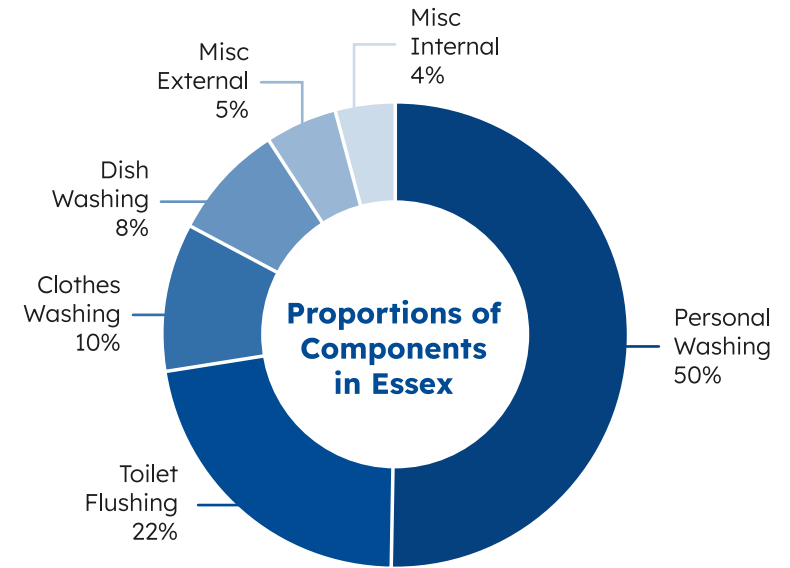
2024-25

Affinity Water

Essex and Suffolk Water

Anglian Water

Thames Water



Toilet Flushing

33.3

(l/h/d)
Litres per Head per Day



Personal Washing

76.3

(l/h/d)
Litres per Head per Day



Clothes Washing

15.7

(l/h/d)
Litres per Head per Day



Dish Washing

12.6

(l/h/d)
Litres per Head per Day



Misc Internal

6.1

(l/h/d)
Litres per Head per Day



Misc External

8.3

(l/h/d)
Litres per Head per Day

The Office for National Statistics predicts that the Essex population will grow by 142,000 people by 2043. If each of those people use the government target amount of 115 litres per day, that's still an additional 16,330,000 litres (16ML/d) per day our water companies need to demonstrate they can supply.

Figure 1.4: Projected population growth in Essex

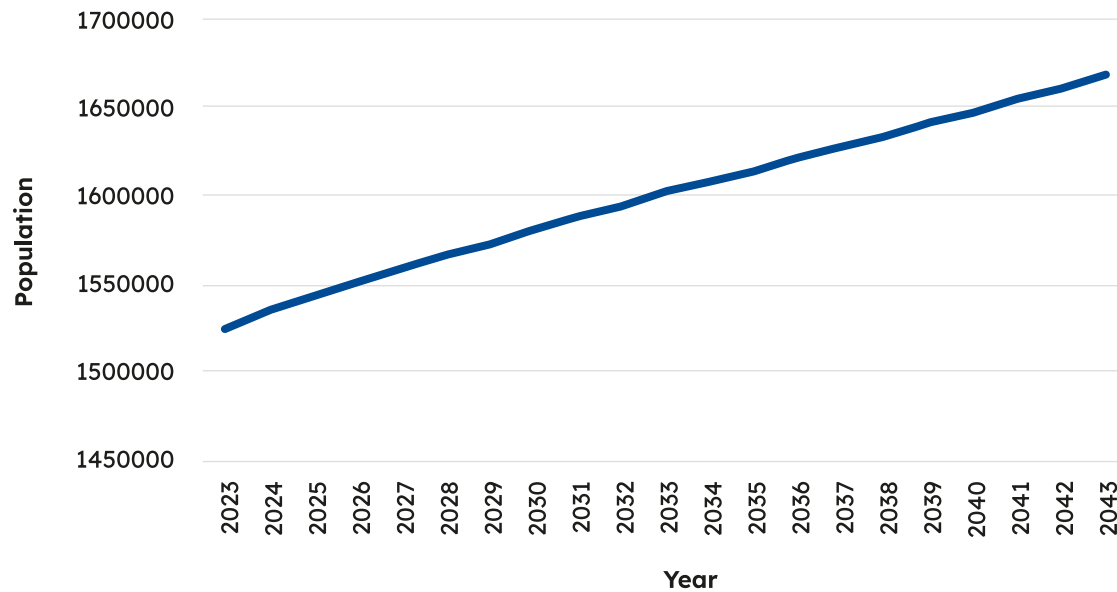
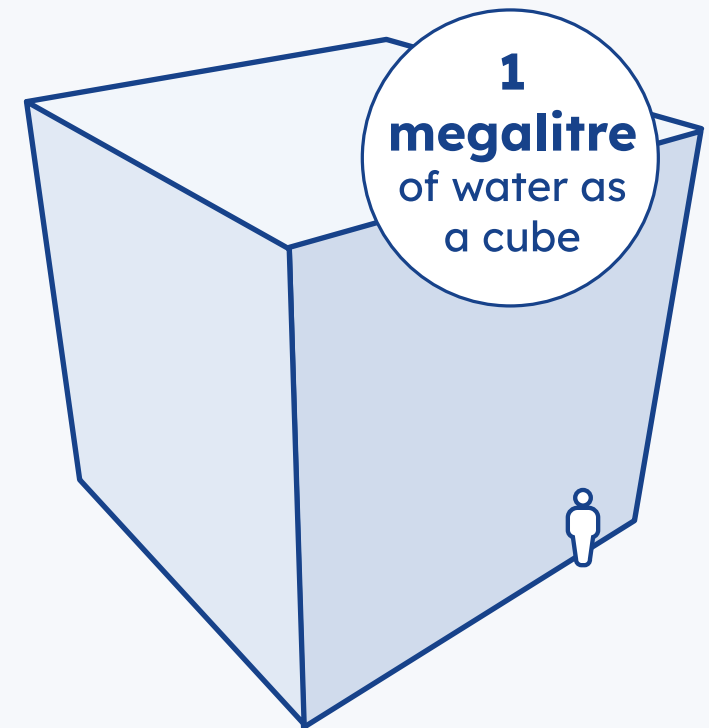


Fig 1.5: What does a million litres look like? A million litres is one megalitre, or 1,000 cubic metres, which is 10m x 10m x 10m in size.





Factory
water
use

The agriculture and horticulture industries in the county also need water to irrigate crops and plants. We have always relied here more on natural rainfall (or green water) than other countries across the world, but in Essex there are still 856 abstraction licences recorded for the primary reason of crop irrigation, and these account for consumption of 7MI/d if their maximum allowance is used. Any changes to those licences will have an impact on the recipients' water supply and the type and volume of goods they can produce.

Certain businesses, processing and leisure facilities also use larger amounts of water. For example, we have abstractions listed in Essex for breweries, golf courses and activities like washing, cooling, or dust suppression. These uses are classified as 'industrial'.

Water Resources East's (WRE) **Regional Water Resources Plan**¹⁰ for Eastern England (which covers the whole of East Anglia, Cambridgeshire, Northants and Lincolnshire) estimates that by 2050 there will be a public water supply shortage of around 730 million litres of water per day (MI/d), equal to around a third of the predicted future need. The main causes are population growth, climate change and the need to restore, protect and enhance the natural environment.

So, in having to supply more people and growth, but with the overall amount of water we will have available from existing sources reducing in this region by 2050, the Water Resource Management Plans (WRMPs) and Water Resources East's regional plan for Eastern England must explain how the deficits will be met. They do this through a combination of reducing water demand, tackling leakage, and water companies investing in new sources of supply - **see section 2**.



Dry agricultural land

1.3 Droughts and floods

A drought is a natural event which occurs when a period of low rainfall creates a shortage of water. The Environment Agency refers to three types of droughts which may occur separately or together: public water supply drought; agricultural drought; and environmental drought.

The National Drought Group (NDG) brings together government departments, water companies, and key farming and environmental groups. The role of this group is to prepare for and mitigate the impacts of dry weather, to coordinate action to maintain water supplies, consider water users and protect the environment (**Drought Response Framework for England 2017¹¹**).

During times of drought, it is likely that any conditions and restrictions on water abstraction licences will have already been triggered, so irrigation (used in agriculture for watering crops) as an example will be reduced. As a last resort to protect the environment, the Environment Agency can also reduce or stop irrigation altogether. Water companies are expected to manage and plan for water scarcity, but restrictions on non-essential use, including hosepipe bans, are part of broader drought plans to make sure that essential supplies are protected.

Although Essex is one of the driest places in the country, we also have areas defined at very high flood risk from the sea, rivers and rainfall.

Runoff and piped drainage from our buildings, roads and other impermeable surfaces is commonly known to increase the risks of flooding if unmanaged, and we are seeing more severe consequences of flash flooding as rainfall intensities increase.

For example, in 2013 the area of Canvey Island in Essex was hit by a storm; although it is well defended from the sea, 1,000 properties flooded from rainfall.

As with other areas of water management, dealing with flooding involves a variety of agencies to prepare for and protect people from it. The Environment Agency published a **National Flood and Coastal Erosion Risk Management Strategy for England**¹² in 2022. It has 3 long-term ambitions:

- 1 climate resilient places:** working with partners to bolster resilience to flooding and coastal change across the nation, both now and in the face of climate change
- 2 today's growth and infrastructure resilient in tomorrow's climate:** making the right investment and planning decisions to secure sustainable growth and environmental improvements, as well as infrastructure resilient to flooding and coastal change
- 3 a nation ready to respond and adapt to flooding and coastal change:** ensuring local people understand their risk from flooding and coastal change, and know their responsibilities and how to take action

Under these ambitions there is a call for managing the flow of water and capturing it to improve resilience to both floods and drought.



Floods on Canvey Island

1.4 Water quality

The quality of our water is just as important as the quantity. Poor quality water can devastate water environments, cause harm to human health, and have knock-on effects for the wider economy, for example when it may impact on tourism and leisure activities.

In our freshwater habitats and estuaries, increased levels of pollution (especially containing nitrogen and phosphorus nutrients) can speed up the growth of certain plants like algae, disrupting natural processes and affecting wildlife. This process (called 'eutrophication') damages the ecosystem by altering oxygen, sunlight, and sediment levels within the water environment.

In England, 16% of surface water bodies currently achieve good ecological status (Plan for Water 2023), in Essex only 5 out of 91 (5%) of our water bodies achieve a good classification status, and 18 out of 91 (20%) are poor status. **So, we have a lot of work to do.**

Figure 1.6: Map showing the ecological status of Essex waterbodies (2022)

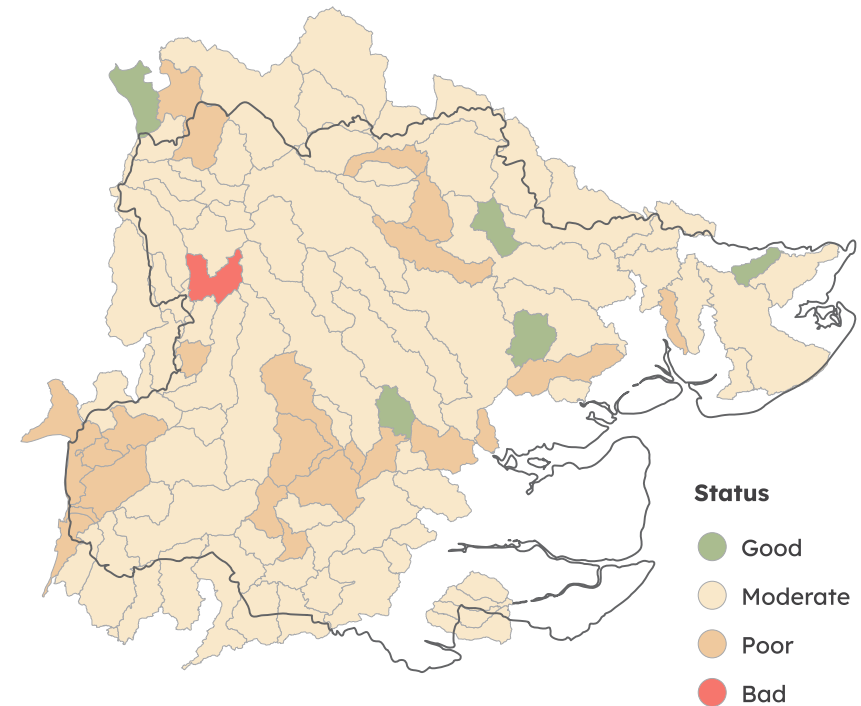
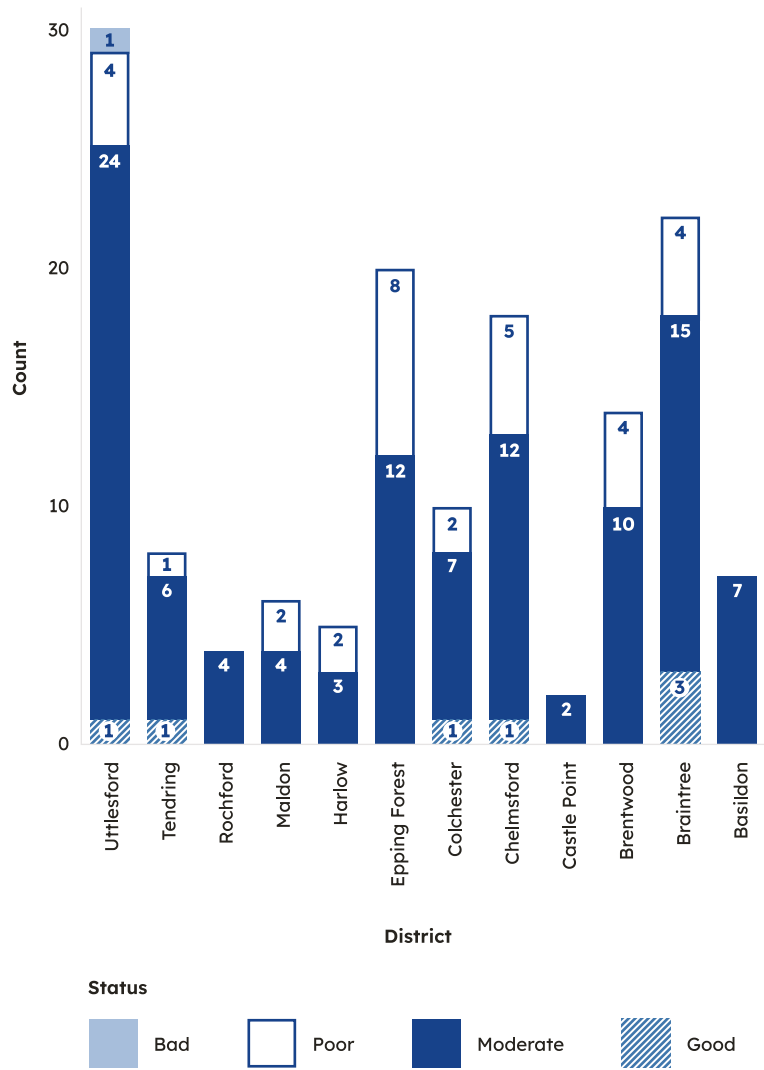


Figure 1.7 : Graph to show the status of our waterbodies by Local Planning Authority in Essex (2022).



Eutrophication
in a river



How does pollution occur?

There are three main sources:



1. Household sewage and storm overflows

Intermittent sewage discharge, also known as storm overflows or combined sewer overflows (CSOs), are a result of old Victorian sewer infrastructure. Overflows work as a way for the pressures of excess water to escape the system. They discharge excess sewage and rainwater to waterbodies which reduces the risk of properties flooding and prevents sewage backing up during heavy rainfall.

A growing population, an increase in impermeable concrete surfaces and more frequent heavy storms because of climate change, means that storm overflows are discharging more frequently than when sewers were first designed and installed.

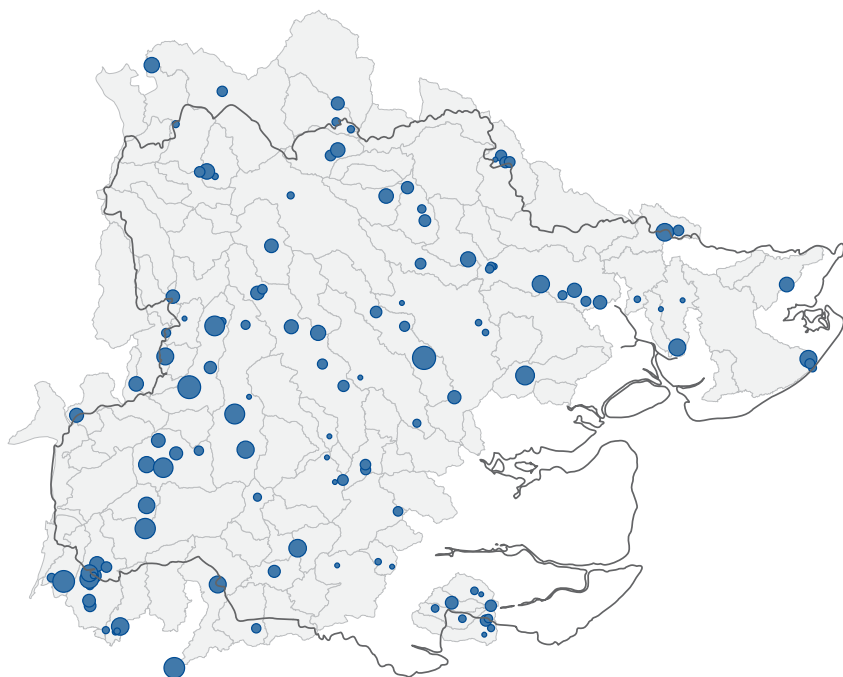
High levels of sewage discharges cause two main types of harm: harm to public health and to the environment. Discharges from storm overflows contain raw sewage, which can contain high levels of harmful viruses and bacteria. This can pose health risks to people who use water for recreation. They also lead to ecological harm due to their impact on water chemistry. Discharges of raw sewage can have organic pollutants, microplastics, pharmaceuticals, nutrients, and heavy metals, as well as visible litter that has been incorrectly flushed down toilets.

There are around 146 storm overflow points in Essex (The Rivers Trust [Sewage Map](#)¹³). They discharge at different rates depending on local conditions including rainfall, and the type of sewerage system.

In Essex in 2021, **88% of storm overflows discharged at least once**, with 15% discharging more than 50 times, including in some cases upstream of our high priority nature sites and Sites of Special Scientific Interest (SSSI).

When we look at the Environment Agency data for reasons for not achieving good status, the water industry is responsible for 25% of the known problems in Essex, although these are a combined problem of storm overflows and the continuous release of nutrients within treated effluent discharges from sewage treatment works (meeting permitted conditions).

Figure 1.8: Map showing number of combined storm overflow cases recorded in Essex waterbodies over one year.



● Frequency of Combined Sewer Overflow (CSO) discharges - a larger circle represents higher frequency

To reduce the risk of storm overflows we must reduce the volume of rainwater and sewage entering the sewage network, so that even in times of heavy rainfall, the capacity of the network is not exceeded. There is also a need to ensure that households only ever flush the **3 P's**¹⁴ (Pee, Poop and Paper!) down toilets to prevent blockages and avoid overflows containing other physical items. Many common brands of wet wipes currently contain plastic fibres which do not break down in sewage networks. Wet wipes along with fats, oils and grease are responsible for most of the material found to block sewage pipes and foul sewage pumps, causing pollution incidents. The government has therefore announced that it will be banning wet wipes containing plastic fibres (**BBC News, April 2023**¹⁵).

Water from other non-household uses will often enter the piped sewer network. At other times water will run from surface water and land drains into rivers or directly across the land straight into waterbodies, without any form of treatment. If water picks up pollutants or sediments on its journey to a waterbody in this way, this adds to water quality problems.

Preventing rainwater running into combined sewerage systems reduces the amount of wastewater that needs to be treated, and reduces the quantity of nutrients from wastewater entering watercourses.



2. Agricultural land use

To successfully grow crops, fertilisers and manures need to be spread, and the soil also needs to be worked and disturbed throughout the year. Fertilisers contain nitrogen and phosphorus, and farm work can make soils less stable and vulnerable to erosion. These necessary agricultural practices are known to contribute to water quality challenges because fertilisers (containing nitrogen and phosphorus), along with soil and sediment from the land, move into the water environment through natural processes including heavy rainfall.

Pollution from agriculture and rural land use is responsible for around **40% of the reasons why water bodies fail good status** in England, and 37% in Essex.

Farming organisations and communities are aware of these challenges. Farming is a highly regulated industry, and there is an increase in priority for protecting water and nature. By working more closely with the industry, and providing the appropriate support for and application of water management, there is opportunity for positive change.

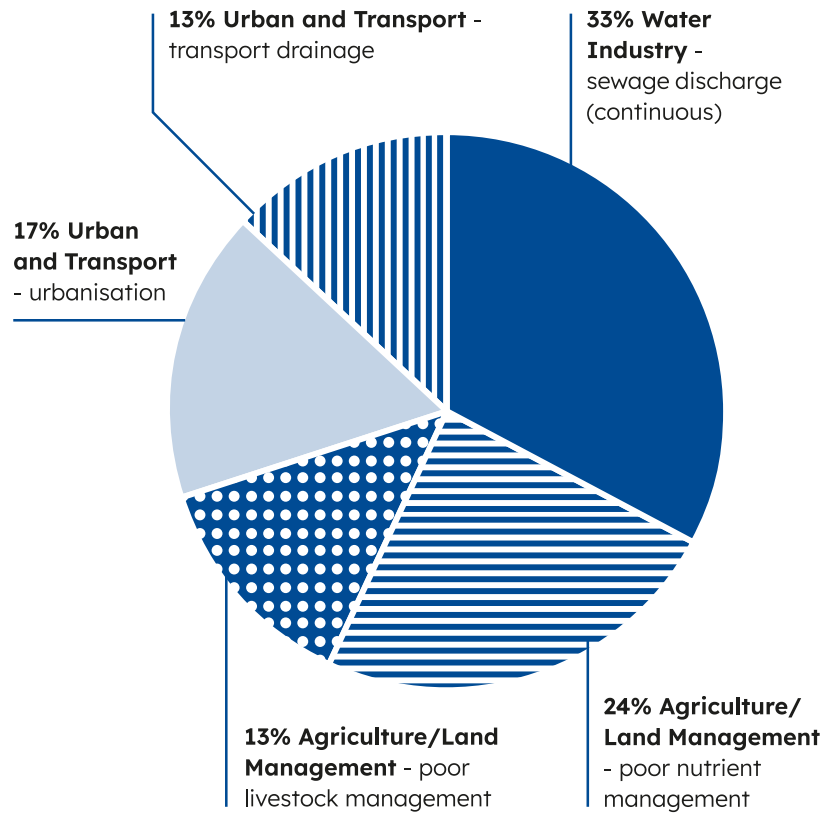


3. Built environment and transport

When new homes are built, the construction process and wastewater from the completed homes often adds additional nutrients to water bodies downstream, which are damaging in the same ways as storm overflows or agricultural pollution.

In 2022, The House of Commons Environmental Audit Committee published a Water Quality in Rivers report which called specifically for more efforts to be taken to remove pollutants from road network runoff. Elements such as exhaust fumes, brake dust, tyre and road marking particles cause a 'toxic' combination of sediment, chemical and plastic pollution which is washed into road network drainage and roadside ditches. The report identified that many highway water treatment systems do not suitably treat water runoff to intercept the risks of pollution in receiving water bodies.

Figure 1.9: Top known reasons for not achieving good status in the 91 Essex waterbodies are water company overflows and discharges, agricultural runoff, and flows from highway and other built environment drainage systems.



Pollution causes algae overgrowth



Brown Trout

1.5 Biodiversity

Ecological issues and threats

Wetland habitats face threats associated with human activity directly, and because of climate change. Some of the most significant is the abstraction of water for agricultural purposes and the use of Essex rivers for the transfer of water to and between the County's drinking water reservoirs.

Both factors **prevent stable river levels**, which has an impact on plant and animal species.

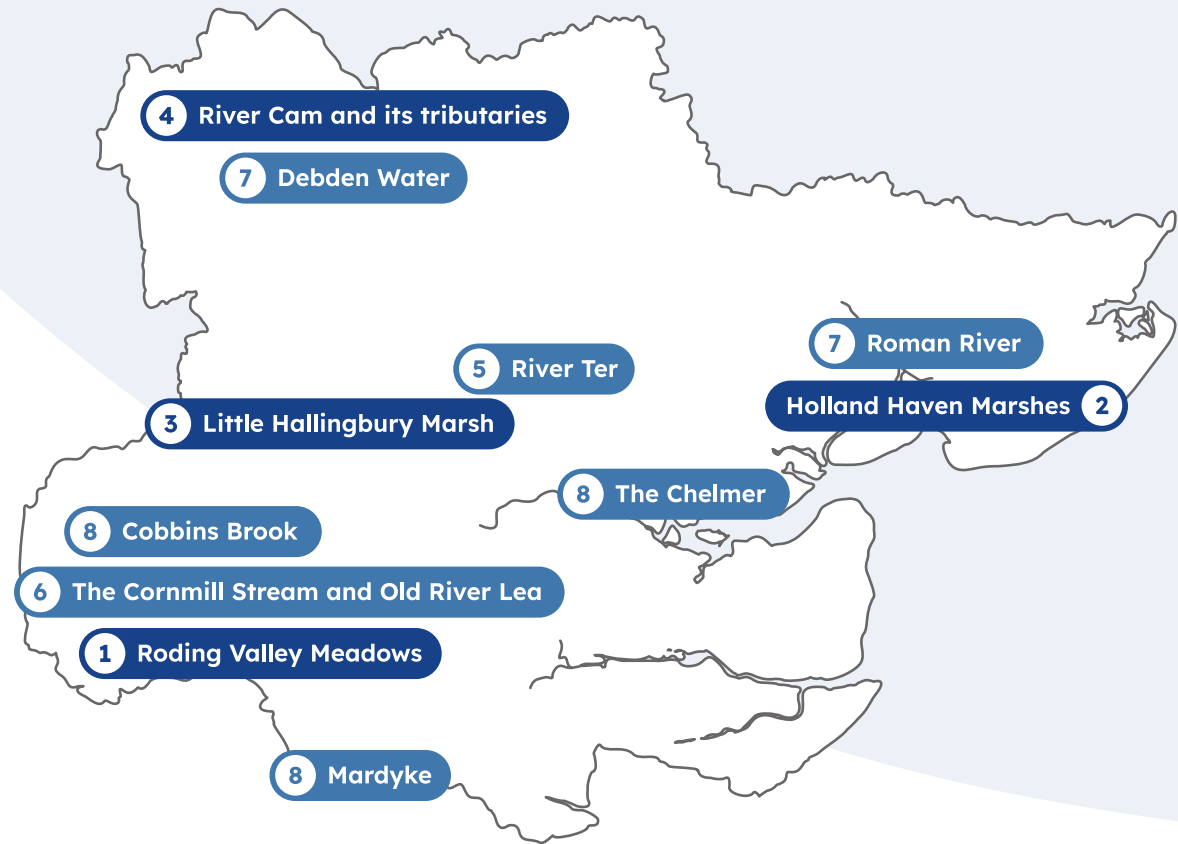
This is exacerbated in times of drought. Pollution from a variety of sources also remains an issue on Essex rivers.

A growing number of invasive non-native species affect wetland habitats and species, including plants such as New Zealand Pigmyweed, Floating Pennywort and Himalayan Balsam, and animals such as American Mink, Signal Crayfish and Zebra Mussel. Transfer of water between catchments can accelerate the spread of these species.

Priority Habitats and Designated Sites

Key habitats identified as priorities for the conservation of biodiversity in England that are associated with rivers in Essex are:

- 1 Floodplain grazing marsh, grassland habitat along river valleys, such as within the **Roding Valley Meadows SSSI**
- 2 Coastal grazing marsh, which supports a distinctive grassland community, with diverse freshwater and brackish ditch systems, such as within the **Holland Haven Marshes SSSI**
- 3 Lowland fen, stands of tall grasses and herbs, often in a mosaic with marshy grassland, such as on the **Little Hallingbury Marsh SSSI**, and often under willow plantations
Reedbeds, swamp habitat dominated by **Common Reed**, typically a component of a wider river corridor habitat mosaic
- 4 Chalk streams, limited to the **River Cam and its tributaries in Essex**, no part of which has been designated at local or national level



Several sections of Essex rivers have been designated for their national importance:

- 5 **The River Ter SSSI**, on a tributary of the Chelmer, is particularly important, as it is designated for the naturalness of its geomorphology, having escaped the engineering more typical of the county.
- 6 **The Cornmill Stream and Old River Lea SSSI** is unusual in being designated for its invertebrate populations, with species reliant on the slow-moving channel.
- 7 **The Roman River and Debdon Water SSSIs** are designated for the overall quality of their landscape taking in a mosaic of associated habitats.
- 8 **The Chelmer, Mardyke and Cobbins Brook** (a tributary of the Lea) are the only stretches designated as Local Wildlife Sites on the basis of river habitat criteria, demonstrating their biodiversity value at a county level. However, there are large numbers of Local Wildlife Sites that include rivers as part of a broader mosaic of adjacent and/or associated habitats.

Species

Wetland habitats are important for a number of priority species in Essex, but they are also associated with overall species diversity and abundance, particularly of invertebrates and birds.

Otter populations have returned to almost all of the Essex catchments over the last 30 years, as well as the large reservoirs and some gravel pit complexes. Water Vole numbers have bounced back as a result of the coordinated control of the non-native American Mink and remain a feature of coastal grazing marsh and ditch systems.

The native, White-clawed Crayfish may still live in low numbers in the upper part of the Chelmer catchment, but the prevalence of the non-native Signal Crayfish may mean that its extinction locally is inevitable. Attempts have been made to establish populations in gravel pit lakes where they are secure from the impact of non-native species.

Rivers, marshes, lakes and reservoirs offer important feeding opportunities for bats because of the abundance of flying insects associated with them. Rivers are important corridors for the movement of species through the landscape. Ponds are required by all amphibians, including Great Crested Newt, for breeding.

Rivers and canals can support high diversity of dragonflies and damselflies. Grazing marsh ditches are associated with a particularly diverse and specific assemblage of aquatic invertebrates, many of which are nationally rare or scarce. Essex wetlands, particularly (but not exclusively) those in coastal areas, support internationally important populations of breeding and non-breeding birds.



Mayfly

Standing water

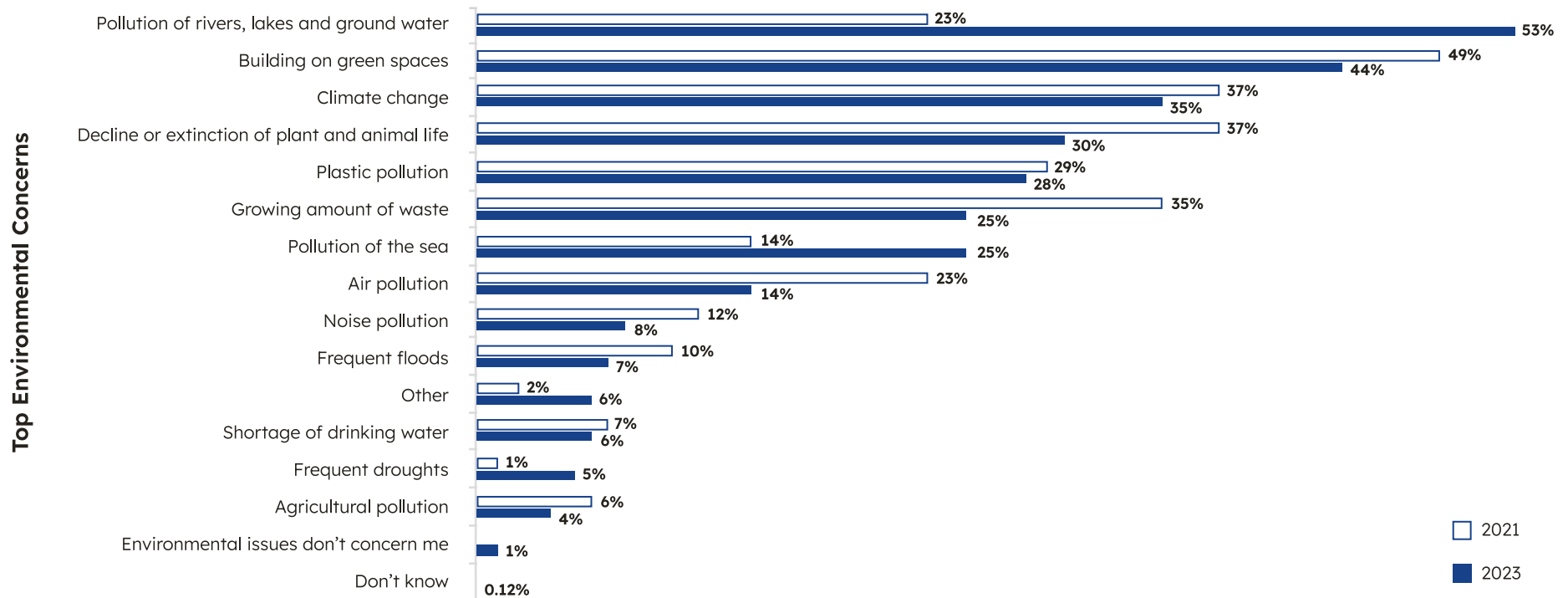
Although there are no large, natural bodies of standing water in Essex, the manmade reservoirs at Abberton and Hanningfield are also both designated as SSSIs due to their importance to breeding and over-wintering bird populations. In addition, flooded former gravel pits can be valuable to biodiversity, including designated SSSIs at Turnford and Cheshunt Pits in the Lea Valley and Glemsford Pits adjacent to the Stour. Despite historic losses, ponds, either fed by groundwater or by surface drainage, are numerous across the county.

1.6 Public concern

A recent survey of Essex residents showed the public are becoming more much concerned about water quality issues, with this now being listed as the most common environmental concern amongst Essex residents.

However, the same survey ([Appendix 1](#)) showed that 83% of residents did not know that Essex has already been named as a seriously water stressed area ([Environment Agency Water Stressed Areas – 2021 Classification](#)¹⁶).

Figure 1.11: Graph showing the change in top environmental concerns of Essex residents in 2021 and 2023



2

Solving the water challenges



The actions required to address the issues raised in part 1 of this report fall into three broad groups:



Reducing our demand for water

We all need to find ways to use less water and thus reduce pressure on our future water resources.



Changing land use for water

We should change the way we use land. This is both about working with nature and being more thoughtful when we use or develop land to take account of water supply and quality.



Our future water supply

In the medium to long term, we need to develop new sources of water supply, such as reservoirs and desalination.

We expand on each of these themes here



2.1 Reducing demand

Reducing the amount of water we use is an immediate action we should all take to reduce pressure on our future water resources. Reducing water waste and fixing leaks are obvious and essential activities.

Leakage reduction

Leakage can happen in the treatment and transportation of our water, and in the appliances we use. From water lost naturally by evaporation from our water storage reservoirs, to bursts in underground pipes, to dripping taps and leaking toilets. It is very difficult to have no leaks at all, but water companies are expected to do more by predicting and repairing leaks. We must remove all avoidable waste of this precious resource.

With water companies under pressure to do more to find and fix leaks, in Essex our four water supply companies all have plans for leakage within their Water Resources Management Plans.

Overall, our water companies are planning to **reduce leakage in Essex** by the equivalent of 107MI/d down to 56.6MI/d by 2050.

They must meet the targets set out by Ofwat and in the Environment Act or face penalties.

Figure 2.1 showing past performance of Essex water companies with regard to leakage reduction

Company	Target (megalitres / day)	Performance (megalitres / day)	Categorisation of performance
Anglian Water	191.4	191.1	▲ Top performer
Northumbrian Water ¹	133.5 ; 64.4	136.2 ; 64.9	▼ Poorer than target
Thames Water	644.3	635.6	▬ At or better than target
Affinity Water	183.7	185.5	▼ Poorer than target

1 Northumbrian Water has two leakage performance commitments, one in its Northern region and one in its Essex and Suffolk region. These are separated by a semicolon in the table.

Data taken from Ofwat <https://www.ofwat.gov.uk/wp-content/uploads/2021/11/Service-Delivery-Report-2020-2021.pdf>

???

Did you know?

Leaky Loos

A leaky loo wastes between **215 and 400 litres** of clean drinking water every day

That's up to an average of an extra **£246 a year**

On average, a leaky loo wastes between 215 and 400 litres of clean drinking water every day and is equivalent to having a couple of extra people in the home using water ([WaterWise - Leaky Loo Position Statement](#)¹⁷).

That's up to an average of an extra £246 a year. Most of the time it is the modern type of dual flush toilets that are the worst offenders.

It's easy to check if your loo leaks. Either put a few drops of food colouring into your cistern, and without flushing see if the water in the bowl becomes coloured. Or alternatively you can flush the toilet and then place a dry piece of toilet roll at the back of the pan. If you come back 30 minutes later and the toilet paper has been washed into the bowl you've probably got a leak.

Whilst leaks are cheap and easy to fix by a local plumber, check with your water company whether they can offer any help to identify and fix leaks at your property. Some can even offer money back to cover the metered charges on your bill resulting from the excess water lost to the leak.

Leaky loos www.anglianwater.co.uk/news/leaky-loos-costing-east-of-englands-households-49-million-a-year¹⁸



Smart Meter Rollout

Smart meters have been proven to reduce household water usage, which is why there is a drive from water supply companies to get them rolled out as soon as possible. Smart water meters (like smart gas and electricity meters) are self-reading meters that help you keep track of how much water you're using and how much it costs. This makes it much easier to change behaviour and spot if you have a leak within or around your own property.

Each water company covering Essex has committed to smart meter rollout for their customers.



Anglian Water intends to install **1.1M smart meters** across its supply area by 2025, with Colchester and surrounding areas being one of its prioritised upgrade locations. Essex and Suffolk Water promises to **replace all its existing water meters** in Essex with smart meters by 2035.

Essex and Suffolk Water is also introducing smart meters for business users and providing water efficiency support for some business users for the first time since 2017 (when business retail competition was introduced). The information resulting from 'smart metering' will help inform customers regarding their water usage. It will also help detect leakage, significantly reducing plumbing losses and customer supply pipe leaks.

Water Efficiency

Being water efficient means understanding water needs, using as little as possible and avoiding any water waste. Tackling leakage and installing smart meters are small steps towards water efficiency.

The government has promised to review water fitting regulations to address wasteful product issues with toilets and enable other new water efficient technologies. Putting water efficiency labelling in place for new appliances by 2025 ([DEFRA Press Release Sept 23¹⁹](#)). All Local Plans in Essex already require 110 litres per person per day (l/p/d) in new development, but the DEFRA Plan for Water considers mandating 100l/p/d in seriously water-stressed areas such as Essex in the future.

Waterwise have published a [UK Water Efficiency Strategy to 2030²⁰](#). Many objectives focus on providing more information and support as part of public campaigns for water saving. It is also vital that property owners become more water efficient in existing homes and businesses, as well as new ones.

Top tips to become more water efficient at home



Use a bowl in the sink when washing fruit, vegetables or dishes. You can then use the waste water to water your plants.



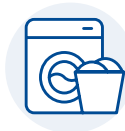
Fill a jug of water and put it in the fridge for when you want a cool drink rather than running a tap.



Turn off the tap when you clean your teeth. A running tap uses up to nine litres of water a minute.



Washing dishes in a dishwasher tends to use less water than washing-up by hand, even if you use a washing-up bowl. Usually there is no need to rinse dishes before they go in the dishwasher, saving even more water.



Wait until you have a full load before using your washing machine or your dishwasher. Some new washing machines use less than seven litres of water for each kilogramme of clothes, while modern dishwashers can use as little as 10 to 15 litres of water a cycle.



If possible, take a shower instead of a bath. A five-minute shower uses about 40 litres of water. This is about half the volume of a standard bath. If you listen to music in the shower, create a playlist of four or five minute songs so you know when to get out. Singing along in the shower is optional.



Use a water-saving device in your toilet cistern. Depending on the size of your cistern, you could save between one and three litres each time you flush the toilet.



Using a watering can in the garden instead of a sprinkler or a hosepipe. Garden sprinklers and hosepipes left running can use between 500 and 1,000 litres of water an hour.



Think about fitting a water butt to collect rainwater off your roof. Water butts usually store about 200 litres of water. As well as being better for watering your plants, using rainwater in the garden reduces the amount of treated water you use. Take advantage of Essex County Council's discount and enter your postcode at [getcomposting.com/collections/water-butts](https://www.getcomposting.com/collections/water-butts)²¹



Check your property regularly for leaks on your internal plumbing.



For other tips on how to save water in each area of your home, visit www.waterwise.org.uk/save-water²²

2.2 Changing land use

The negative impacts that our built environment and land use are having on water were described in [Section 1](#). Changing how we use available land can have a huge range of benefits and be linked to many other goals.

For example, creating natural spaces for storing, infiltrating and treating our water will not only provide benefits for water supply and quality, but will also be great for flood management, nature and biodiversity, carbon capture and amenity.

Nature-based solutions – or ‘green infrastructure’ – can accumulate and store carbon, filter water and reduce flood risk as well as enhancing biodiversity. Large areas of natural green infrastructure improve wetland habitat and act as a sponge, allowing water to percolate more slowly into groundwater and rivers, improving both water conservation and water quality. Making space for green infrastructure in all new developments would be a positive step forward for water quality and supply.

Green infrastructure is a term used to describe nature-based solutions and a diverse network of natural spaces.

For example:

- trees, hedges
- wildlife habitats
- parks and gardens
- allotments
- sport and playing fields
- coastal habitats
- urban greenspaces
- lakes and ponds
- green corridors, such as trees, footpaths, and rivers.

Water-related green infrastructure can also be referred to as blue infrastructure.





Wildlife pond

Water companies' support for nature-based solutions

Water industry national environment programmes (WINEPs)²⁴ are processes designed with water companies to address statutory environmental obligations and non-statutory environmental requirements.

The Anglian Water WINEP for 2020-2025 is one of the biggest in the industry. The five-year programme is worth £811 million and includes a wide array of river restoration, habitat improvements, river support, sustainability reductions, water treatment wetlands and pollution reduction initiatives. The current Anglian Water 'Get River Positive' plan promises to protect the environment, allowing wildlife to flourish, and providing important opportunities for recreation and welling.

Anglian Water has published five key commitments in the plan:

- 1.** Ensure storm overflows and sewage treatment works do not harm rivers
- 2.** Create more opportunities for everyone to enjoy our region's rivers
- 3.** Support others to improve and care for rivers
- 4.** Enhance our rivers and create new habitats so wildlife can thrive
- 5.** Be open and transparent about our performance and our plans

Essex County Council published its **Green Infrastructure Strategy in 2020**²⁵, and **Green Infrastructure Standards in 2022**²⁶. These documents help ECC colleagues, planning authorities and developers when they are designing and building developments, or writing plans and policies.

The strategy provides an action plan and highlights the benefits of **well-designed green infrastructure**.

The standards align with the **National Green Infrastructure Framework**²⁷ and show examples of best practice. Our aim is to standardise the approach to green infrastructure across Essex.

In keeping with recommendations made by the **Essex Climate Action Commission**²⁸, it is proposed to use natural green infrastructure as an important method of improving water resources and water quality, while at the same time helping to tackle our climate and nature crisis.

Important Essex Climate Action Commission recommendations which this strategy supports are:



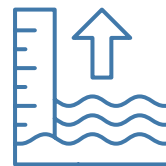
30 per cent of all land in Essex will enhance biodiversity and the natural environment by creating natural green infrastructure. We expect these figures to be 25 per cent by 2030 and 30 per cent by 2040.



50 per cent of farmland in Essex will adopt sustainable land stewardship practices by 2030; 75 per cent by 2040 and 100 per cent by 2050.



To increase urban greening – 30 per cent greening of our towns, villages, and new developments by 2040: increased greenspace creation, naturalising existing green space, greening the public realm, and developing sustainable drainage systems (SuDS) that manage water and support amenity and biodiversity.



For the 75,000 properties in Essex still at risk of flooding, we will develop schemes to increase their flood resilience by 2050 and aim for three-quarters of the schemes developed to include integrated water management and natural flood management techniques.

Flood alleviation

As a Lead Local Flood Authority (LLFA), Essex County Council has been delivering a programme of flood alleviation schemes for over eight years. During this time, we have completed attenuation basins, culvert upgrades, and more recently eight leaky dam and four rain garden projects, which are generally lower cost, have a lower carbon impact and do more than just deal with flooding.

Moving forward with our capital programme we have a target to deliver 75% natural flood management and will work with partners to utilise a wider range of water and environment funding. We will commit to ensure that opportunities for water quality and water supply are considered.

Beavers to reduce flood risk

In 2019, Eurasian beavers (which had previously been extinct in England since the early 16th century) were introduced at Spains Hall Estate near Braintree. The beavers' natural engineering skills have not only delivered natural flood management, but transformed woodland into thriving wetland, increased drought resilience, treated water quality and created a new habitat for wildlife. In 2023, a further four beavers were released into two new enclosures along the Finchingfield Brook, which cover 40 hectares (100 acres) – 10 times the size of the original enclosure.

Watch a video of beavers being released into the new second enclosure²⁹.

A study commissioned by Spains Hall Estate revealed that the beavers have created 23Ml of wetland storage.

Find out more at www.spainshallestate.co.uk³⁰



Beaver
dam at
Spains
Hall



Leaky dam in Harlow

Leaky dams

Leaky dams are a form of natural flood management. Much like naturally fallen trees, these barriers made of logs are laid within water channels and allow the normal flow of water to pass through. When flood flows are higher, they create an obstruction and reduce flooding by holding water back behind them.

Leaky dams typically have a much lower carbon footprint than alternative flood mitigation methods; they also minimise disruption of the natural landscape while creating new pond and wetland environment.

In one example in Harlow, we estimate that using the leaky dam method **saved approximately £38,000 and 95 tonnes of CO₂ equivalent.**

If a more conventional earth bund method had been used, 40 trees would have been removed, 236 litres of diesel would have been consumed, and 561km would have been travelled by vehicles transporting materials to and from the site.

Rain gardens

Rain gardens are often a small-scale sustainable drainage technique, well suited for capturing gutter rainfall and runoff from limited areas. We installed our first rain garden scheme on highway verges on Park Avenue, Canvey Island. Properties here were at risk from flooding when the road became inundated during heavy rain. The gardens are built to receive water straight from the road surface, the plants use this to grow, and the gardens remove pollutants as water naturally soaks into the ground below.

New developments: Sustainable Drainage Systems

Sustainable Drainage Systems or SuDS are a very specific form of infrastructure (preferably green infrastructure) required for managing water generated from all new development (SuDS can be retrofitted too). The idea behind SuDS is to copy nature's way of dealing with flooding.

A good SuDS system will hold storm water in the area where it has fallen, and by doing this, protect areas downstream from being flooded. The areas where floodwater is stored can be a basin, pond or sometimes an underground tank (if no other natural option is possible). The best solution is where the water can be kept near to where it falls, so that it can be allowed to soak into the ground naturally. Water can then find its natural route back into the earth's water system.

Not only do SuDS systems help manage flood risk, but they can also treat or clean built environment runoff before it returns into the natural water system. Driveways, paths and even roads can

Canvey Island rain garden





**Sustainable
Drainage
System near
Chelmsford**

be constructed with special material that removes not just large pieces of pollution but also tiny invisible particles. Ponds, basins and swales often with reeds and other special vegetation also help clean the water.

Changes in regulations could be coming soon that will mean all new development applicants must send details of their SuDS plans direct to Essex County Council as LLFA. In the past, only large development drainage plans have been checked in this way, but soon small developments will be included too. We will have more powers to ensure all development include SuDS, as set out in our **Essex SuDS Design Guide**³¹.

The regulations are also likely to remove developers' automatic right to connect new downpipes and drainage to water utility companies' existing sewerage systems to manage their rainwater. This will make those who build new properties more thoughtful on what they will do with surface water and the use of effective SuDS.

Although SuDS and green infrastructure are strongly promoted or required for all new development, there is no necessity to retrofit these measures on previous development, which we know contributes to our water problems.

Water companies do identify SuDS as a very effective measure in helping remove pressure on sewers and reduce the likelihood of their combined sewers overflowing. A programme of work within some water company **Drainage and Wastewater Management Plans**³² (DWMPs) show long term plans in Essex to reduce up to 50% of surface water entering some of our sewerage systems by retrofitting SuDS.

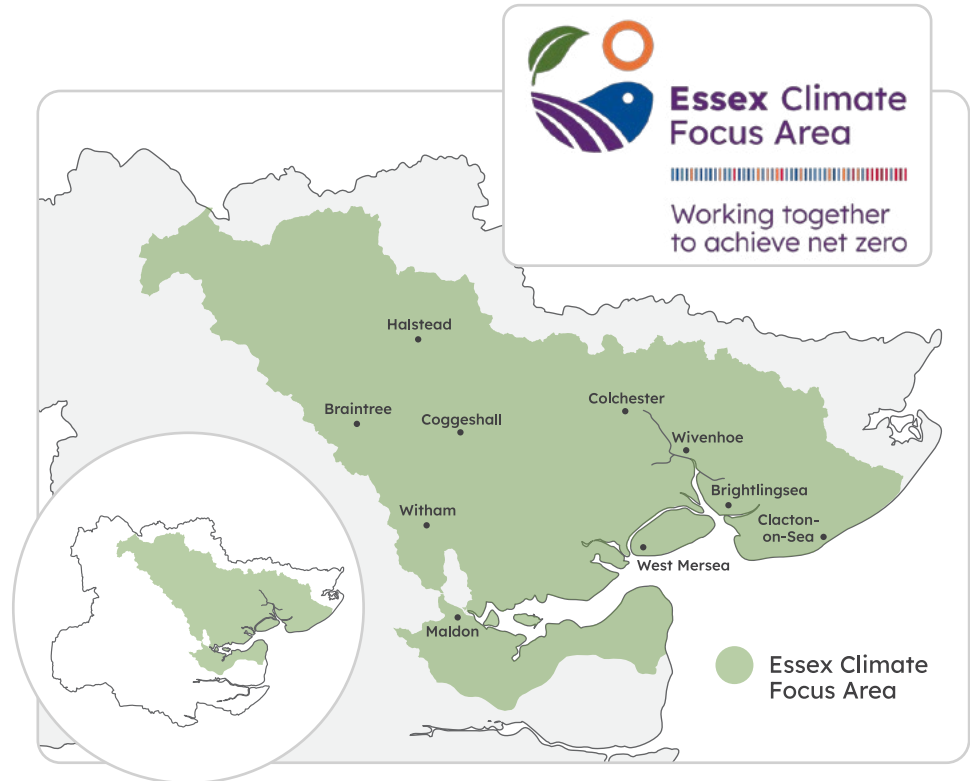
Sustainable Land Management

To support the targets set in the Environment Management Plan, the government has promised to pay farmers to protect and enhance watercourses through farming schemes (such as Environment Land Management Schemes, ELMS), providing further advice to improve their practices via expanded Catchment Sensitive Farming partnerships, and ensuring farmers are meeting legal standards of responsible farming through targeted farm visits.

Essex Climate Focus Area and the North Essex Farm Cluster

The Essex Climate Focus Area (CFA) has been created to pilot accelerated climate action and showcase best practice in sustainable land stewardship, in collaboration with local councils, charities, residents, landowners and businesses. The area covers almost one third of the county, the Blackwater and River Colne catchment area.

To help deliver its aims, the CFA has part funded the North Essex Farm Cluster Group. The farm cluster involves landowners and farmers working together to discuss farming for nature, exchange knowledge and experience, and deliver nature-based projects. Identifying land on which to deliver 25 Year Environmental Plan, Local Nature Recovery, Water and Environment Improvement, Net Zero **and** Flood Risk Reduction can be challenging. A farm cluster offers support, a community of learning, guidance, access to expertise, funding, and trust of outcomes.



Really positive progress is already being made. The North Essex Farm Cluster is planning a joint application for the Environment Agency Water Environment Improvement Fund (WEIF) to restore the River Pant.

The vision includes eight farms with river frontages from Wethersfield to Bocking, and the scheme will include surveys and monitoring of the impacts of nature based solutions such as new ponds, trees and hedgerows, reservoirs along the watercourse, along with removal of river obstacles.

2.3 Future water supply

Besides reducing demand and changing land use, additional options for future water supply are being considered. Some are already in progress through the work of regional water planning teams, while others will only be delivered locally by working at a catchment area level and require bigger changes in approach.

New reservoirs

Reservoirs are a relatively low risk investment by water companies, which can add considerable resilience to a supply network through the addition of significant water storage. They are also great sites for nature and biodiversity such as nightingales and even ospreys. There is an approximate development time lag of 10-15 years to build a reservoir and get it online, but they are a tried and tested option with known carbon impacts which can be managed.

In the Regional Plan, two new reservoirs in Lincolnshire and Cambridgeshire are considered 'low regret' options for building water supply resilience in the East, together with a further, smaller new reservoir in North Suffolk.

The Lincolnshire and Cambridgeshire reservoirs will supply a combined 253ml/d output in the region when they are finished, feeding 625,000 households with water.

Water transfers

Water transfers are not new: one of the most well-known existing transfer systems supplying Essex is the Ely Ouse Essex Water Transfer Scheme. This Scheme takes surplus water from the Ely Ouse river in Norfolk, which is diverted at Denver into a purpose-built channel, and then transfers it by pumping it from there through a series of pipelines into Essex. You can read more about the scheme in the [Cam and Ely Ouse abstraction licensing strategy \(ALS\)](#)³³.

Water Companies talk in more detail about plans for new water transfers in their Water Resources Management Plans (WRMPs), Anglian Water are laying 550km of transfer pipeline between 2020 and 2025 to move water from areas of surplus to those in deficit.

Water reuse

Water reuse or recycling generally refers to the capture, treatment and use of alternative water supplies for non-drinkable purposes. There are three types of water reuse:

- **Rainwater** – more frequently collecting rainfall straight from building roofs and gutters, although other surface runoff can be considered, but it varies in quality
- **Greywater** – collecting the used water from baths, showers and hand basins
- **Blackwater** - sewage recycling and any other type of water recycling or reuse

In larger buildings, such as commercial offices or multistorey residential flats, where water demand is high, reuse systems become most cost effective. DEFRA has committed to developing clear guidance on 'water positive' or 'net zero water' developments and roles for developers and water companies, including water company incentives.

The retrofit of reuse and recycling of grey and rain water is more complicated for existing property, but new development should be routinely assessing the viability of this technology in new buildings.

Being more water efficient and recycling water in our buildings will also help everyone to save money on water bills.

Desalination

Desalination is not an uncommon source of water supply in other parts of the world. It is the process through which seawater is forced through a membrane at high pressure to remove salts, minerals and other elements. Desalination could be, however, an energy intensive process and returns a concentrated brine waste to the environment. Based on current targets for Net Zero, a method will need to be found to reduce the carbon intensity of desalination and the environmental impact of the brine before desalination is taken forward.

Regional plans that consider desalination therefore refer to 'next generation' desalination – an option planned for the long term as part of an adaptive strategy that will change if demand can be reduced or alternatives measures can be found.

Due to the extent of pressures we face, the current Water Resources Management Plan for Anglian Water suggests that three new 'next generation' desalination plants may be needed to provide a total of 50MI/d for their customers beyond 2040. One plant is proposed in Holland on Sea, Essex, and others in Norfolk (Bacton) and Lincolnshire (Mablethorpe).

Anglian Water Reuse

Anglian Water has plans to build a new water reuse plant in Colchester, Essex from 2030. The reuse plant will take final effluent from Colchester Water Recycling Centre and clean and purify it using state-of-the-art treatment. This will then be pumped into Ardleigh raw water reservoir where it will mix with water from the River Colne before being treated again through Ardleigh Water Treatment Works.

The reuse plant will provide Anglian Water customers with an additional **16.8 million litres of water a day by 2032**, replacing water that will be lost due to the impacts of climate change and drought.


Cranfield University surveyed 1,618 people and found that there was a relatively high level of support (79%) for the utilisation of water reuse to support drinking water supplies. Anglian Water will continue working with Cranfield University, the Environment Agency, Natural England and others, undertaking full investigations over the next few years before implementation begins.

Smaller-scale local supply options

The water supply challenges facing us have highlighted the importance of greater cross-sector planning and collaboration. All sectors which use water must plan for their future needs. We need a clear framework for Essex business and industries to carry out water resources planning and share more information about what their future water needs will be.

It is believed that by far the best way to support as many of society's water needs as possible is to maximise multi-sector and multi-organisation solutions. The sharing of resources would be cost-beneficial, and provide a better and more integrated profile of water use. For example the shared creation and construction of water pipelines and storage reservoirs, such as the Felixstowe Hydrocycle scheme in Suffolk.

Water management plans will be needed at all levels in all sectors to set out how industries and businesses should and may have to adapt to less available water. The National Farmers Union (NFU) **Integrated Water Management**³⁴ document promotes collaboration and innovation, along with more clarity, support and funding for the farming industry to make changes. Our work with Essex Farm Cluster Groups has shown that there is already great interest and effort ongoing to find new sources of water within local catchments.



Low water level at Hanningfield reservoir



Responsibilities for managing water



A wide range of organisations interact with each other in the management of water and we set out here the main actors and their responsibilities.

3.1 Water companies

We currently have four water supply companies serving different parts of Essex: Essex and Suffolk Water, Affinity Water, Anglian Water and Thames Water.

After water companies abstract the water they need, they filter and treat it at water treatment works to strict regulatory standards before being put into supply. If you're not sure who your water supplier is, find out [here](#)³⁵ (Water UK).

Figure 3.2: Number of households by water company

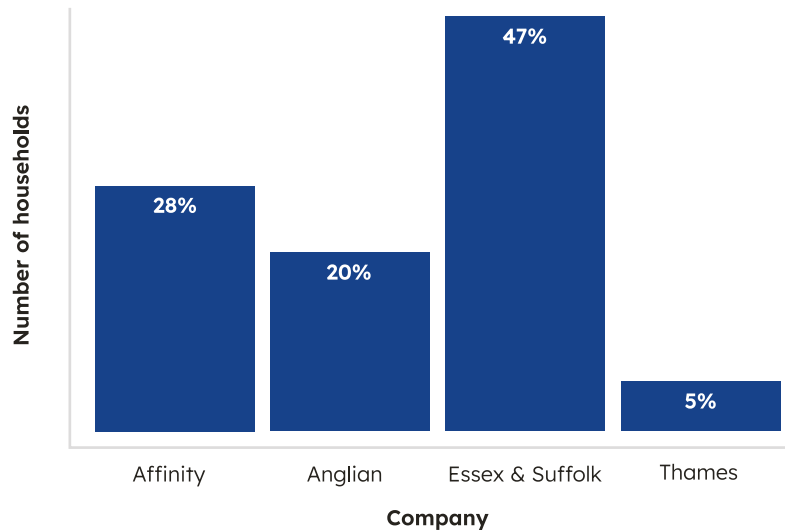
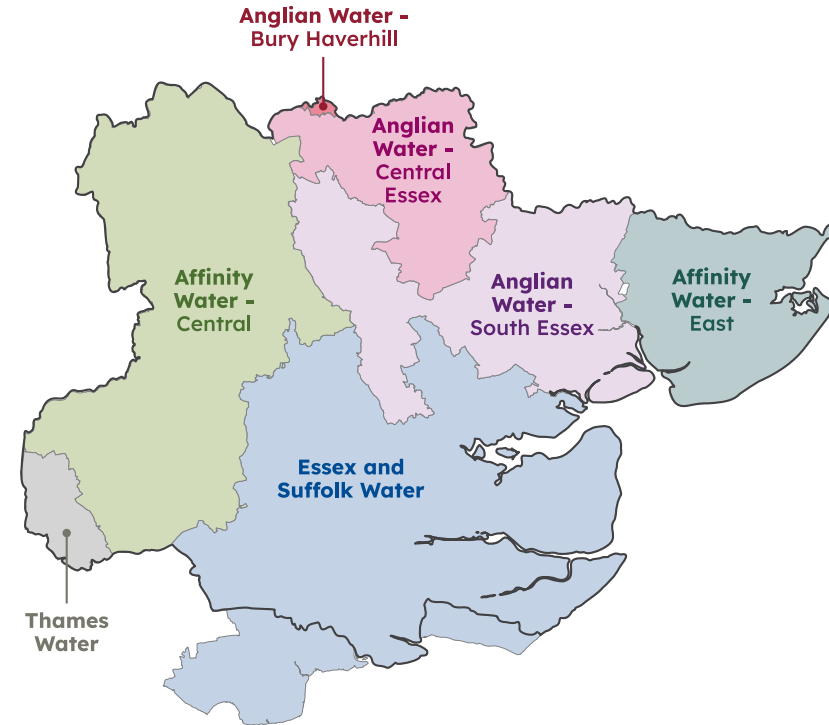


Figure 3.1: Map of Water company supply areas in Essex and pie chart showing proportion of population covered by each water company.



Water Management (WRMPs)

All our water companies have responsibility for creating **Water Resource Management Plans**³⁶ (WRMPs), which factor in the challenges of future abstraction restrictions, as well as climate change, economic growth, housing development and the risk of drought. The WRMPs provide a forward plan of investment over the next 25 years to make sure there will be sufficient water supplies to meet the projected demand. WRMPs are updated every five years.

A WRMP must set out the supply of water that is available in a water company area and the demand for the water that exists. If there is less supply than demand, then this is called a supply-demand deficit. The Government does not allow water company WRMPs to expect a deficit, even in the long-term, so appropriate action and alternative water sources must be found. This comes at a cost, which is then assessed by OFWAT as part of five-yearly Price Review processes.

The WRMPs include the full range of measures that a water company can put in place, such as savings from fixing leaks and increased efficiency measures (like smart metering and customer engagement) to new infrastructure that they will need to build (e.g. pipelines, reservoirs or desalination plants).

The arrangement for business and other abstractors is different from household water supplies. Some businesses may still receive their water from the water company, but businesses can also choose who they buy water from, just like choosing what electricity company to buy electricity or gas from. What are known as 'water retailers' therefore act as middlemen between the customer and the water company generating the supplies. In either case, the water company will still be taking future needs into consideration.

Large industries and power companies, and almost all the agriculture and horticulture sectors, abstract their own water directly from local rivers and/or groundwater aquifers.

These users will need to think very carefully about their medium- and long-term plans for water supply, as water company Water Resource Management Plans **do not take their needs into account.**

Individual abstractors are responsible for developing their own plans and securing new sources of water if they need to.

Focus on Anglian Water’s Water Resource Management Plan

It isn’t always that obvious where the water flowing out of your tap comes from.

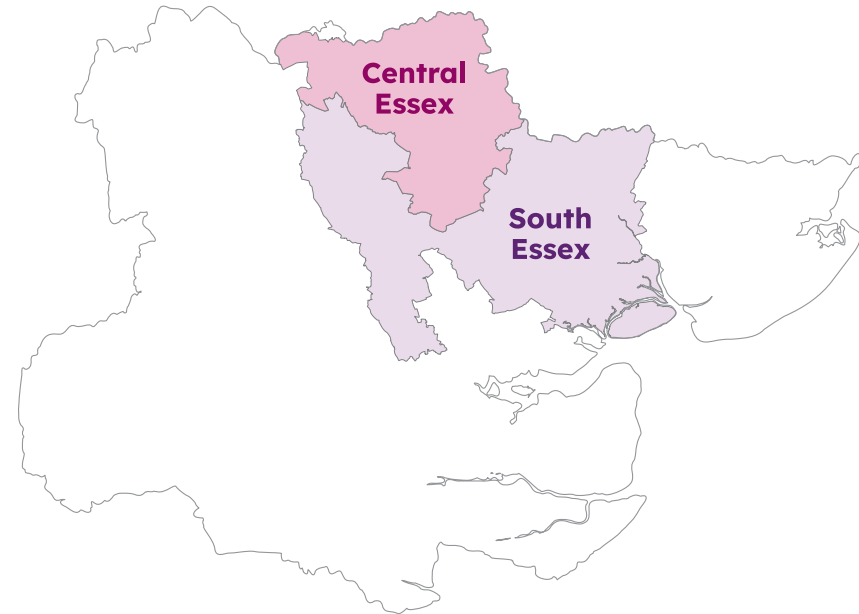
20% of Essex households, along with other water users, are served by Anglian Water in two Water Resource Zones (WRZs), named ‘Central Essex’ and ‘South Essex’, which cover the region between Colchester and Braintree.

Central Essex customers are currently supplied water via four main groundwater abstraction points. 100% of that abstracted groundwater is treated and goes to customers in this area. This means that if the licensed abstraction amounts change, or if the groundwater supply becomes depleted, the area needs new options for alternative water sources.

The South Essex zone is provided by a mixture of groundwater and surface water abstraction. Some abstraction licences allow water to be moved from groundwater into rivers, which increases flow and in turn enables surface water to be abstracted for public water supply. Around 5% of the South Essex WRZ is also fed by Abberton reservoir, which is owned and managed by Essex and Suffolk Water outside of this WRZ.

Anglian Water have published useful **WRMP summaries**³⁷ for each of their Essex WRZs (along with others they supply outside Essex) to show where future water will come from.

Figure 3.3: Map showing the two Anglian Water ‘Water Resource Zones’ in Essex.





Water
treatment
plant

3.2 OFWAT

OFWAT is the Water Services Regulation Authority. It is a non-ministerial government department, established in 1989 when the water and sewerage industry was privatised. As set out in the Water Industry Act 1991, OFWAT's role ensures that water companies are delivering their statutory duties.

Current OFWAT plans include transforming water companies' performance, driving water companies to meet long-term challenges through increased collaboration, and for water companies to provide greater social and environmental value. OFWAT has committed to achieve this by monitoring water company performance, taking enforcement action, ensuring best value for money, and improving the environment while delivering strategic water resource solutions.

3.3 National Government

In 2018, the Government's **25 Year Environment Plan (25YEP)**³⁸ set out a vision for a quarter-of-a century of action to help the natural world regain and retain good health. Many of the commitments made were set into law in the Environment Act 2021.

The government's goal as stated in the **Environmental Improvement Plan**³⁹ is to achieve clean and plentiful water by improving at least 75% of the country's waters to be close to their natural state as soon as is practical (also known as good ecological status).

The latest update to the 25YEP is the **2023 Environmental Improvement Plan**⁴⁰.

The Environmental Improvement Plan sets and reinforces clear goals and targets for Clean and Plentiful Water:

Water supply

- **Reduce the use of public water supply in England per head of population by 20%**, by 31 March 2038, with interim targets of 9% by 31 March 2027 and 14% by 31 March 2032, and to reduce leakage by 20% by 31 March 2027, 30% by 31 March 2032 and 50% by 2050.
- **Water companies to cut leaks by 50% by 2050**, with interim targets of 20% by 31 March 2027 and 30% by March 2032.
- **Achieving a level of drought resilience** so that emergency drought order restrictions are expected to be implemented no more often than once in 500 years on average.

Water quality

- **Reduce phosphorus loadings from treated wastewater by 80%** by 2038, with an interim target of 50% by 31 January 2028.
- Reduce nitrogen, phosphorus, and sediment pollution from agriculture into the water environment by at least 40% by 2038, with an interim target of 10% by 31 January 2028.
- **Improve the targeting of investment** to ensure environmental improvements are done where they will have the greatest impact, to achieve the objective of restoring 75% of waters to good ecological status.
- **Require water companies to have eliminated all adverse ecological impact from sewage discharges** at all sensitive sites by 2035, and at all other overflows by 2050. Organisations funded by national government via the Department of Environment, Food and Rural Affairs (DEFRA), such as the Environment Agency, Natural England and catchment partnerships, are working with the above priorities in mind.

3.4 The Environment Agency

The Environment Agency aims to help the country thrive through the challenges of a changing climate. In relation to water, key responsibilities include river basin management plans, rules and strategy on water abstraction, and the framework for regional water planning.

River Basin Management Plans

Each River Basin District (group of catchments) across England has its own **River Basin Management Plan**⁴¹ (RBMP), which outlines the main issues for the water environment and the actions that have been developed to tackle them. RBMPs set the legally binding locally specific environmental objectives that underpin water regulation and planning activities. They provide a stable planning base for economic development. This includes investment programmes such as the:

- Water Industry National Environment Improvement Programme (WINEP)
- strategic water resources solutions being developed by the Regulators Alliance for Progressing Infrastructure Development (RAPID)
- government's new environmental land management schemes (ELMS) and England Trees Action Plan

The Environment Agency must review and update RBMPs every six years in line with ministerial guidance and the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. The latest updates were carried out in 2022. Essex County area falls under the Anglian and Thames **River Basin Management Plan areas**⁴².

Abstraction Licences

You need a **water abstraction licence**⁴³ from the Environment Agency to remove more than 20 cubic metres (20,000 litres) of water a day from a watercourse or groundwater borehole in England.

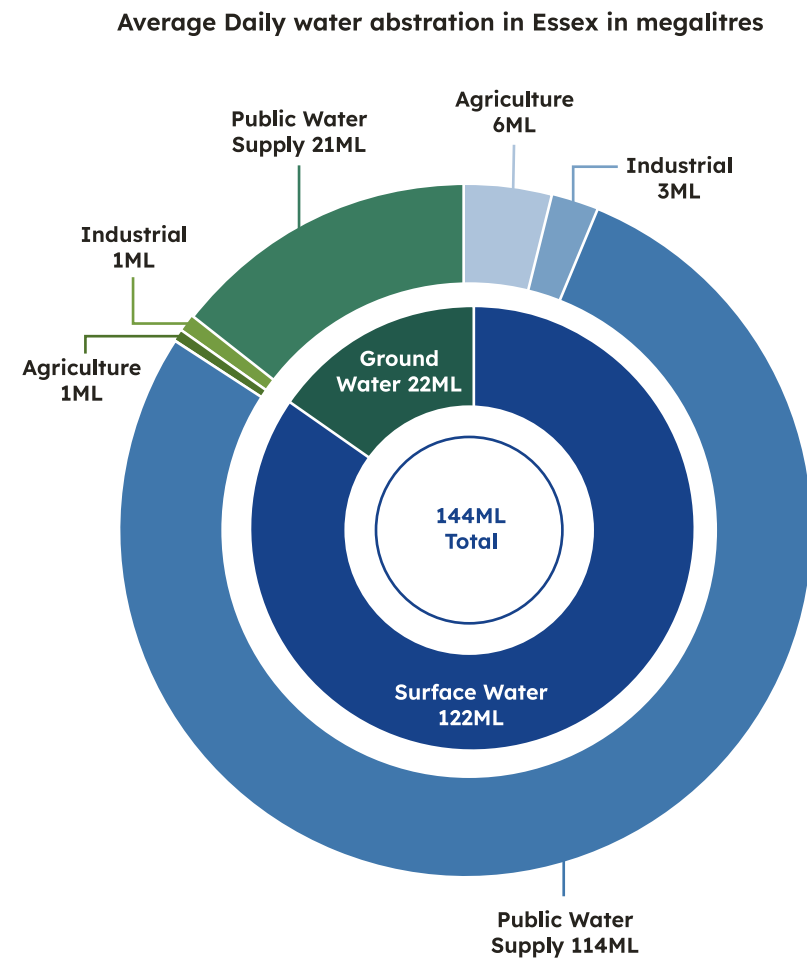
When abstraction licence applications and renewals are submitted to the Environment Agency, it considers each with regards to environmental sustainability, justification of need and efficient use of water. It aims to ensure that going forward licensing of abstraction is sustainable and won't cause deterioration in the ecology of our rivers, wetlands and estuaries or deplete groundwater resources. Most recent licences contain flow conditions (called Hands of Flow conditions or HOFs) stating when abstraction needs to cease due to low water levels.

Every area has its own **Catchment Abstraction Management Strategy**⁴⁴ (CAMS) which sets out the approach to managing new and existing water abstraction. These documents include information about the availability of water at different flow levels, which helps the Environment Agency to determine if a licence will be sustainable or not.

The **Essex Abstraction Licensing Strategy**⁴⁵ states that “the confined chalk groundwater (aquifer) is fully committed, and no further consumptive abstraction can be considered”, even though there may be some water availability in Essex rivers at times of high flow and closer to the coast.

From 2023 the regulation of abstraction will be moved into the **Environmental Permitting (England and Wales) Regulations (EPR) 2016**⁴⁶. This will result in several changes to how licences are managed, with the aim of reducing and ultimately preventing unsustainable abstraction altogether. Previously issued permanent

Figure 3.4 : Infographic showing the daily amounts of water abstracted by each sector in Essex split by Surface Water and Groundwater



licences ('licences of right') as well as time-limited licences will become permits under EPR, and then be subject to six-yearly review. This means that all licences will become time-limited, because there is no guarantee that permanent licences will continue at current licensed volumes beyond the next review point.

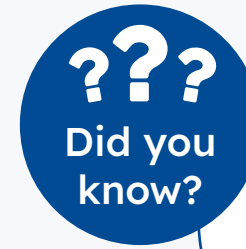
Powers included in the **Environment Act 2021**⁴⁷ allows regulators to reduce or withdraw permanent licences without compensation from January 2028 if the abstraction has an impact on the water environment.

Regional Water Planning

The Environment Agency's **National Framework for Water Resources**⁴⁸, published in 2020, aims to enable a clearer national response to water resource planning. The framework gives water companies and other sectors the task of developing long-term regional water resource plans together, ensuring that all the different water company WRMPs align well across the country, so there is enough to go around. They also enable better planning for other sectors to be developed alongside the water companies' plans.

The concept of 'Environmental Destination' was also introduced by the Environment Agency in the 2020 **National Framework for Water Resources**⁴⁹. The 'Environmental Destination' can be defined as the long-term targets established to restore environmental flows in locations where there are the greatest environmental benefits, typically addressing unsustainable abstraction.

In the short-term, caps are being placed on abstraction licences to prevent existing environmental degradation getting worse. Even lower caps and tighter restrictions on abstraction are likely to be necessary in the longer term once the amount of water needed to support a return to healthy ecosystems in each waterbody has been quantified.



Water for crops in Norfolk

In the Ant Valley in Norfolk, a lack of water is already having a negative impact on internationally designated nature sites.

Existing permissions to take river and groundwater for crop irrigation are therefore being removed by October 2024 to protect the environment (**Gov.uk Press release - Habitats protected in Norfolk through stricter abstraction limits**⁵⁰).



3.5 Regional Water Planning Groups

Following the National Framework for Water Resources⁵¹ in East Anglia, Water Resources East (WRE) was set up as an independent organisation to deliver a Regional Water Resources Plan for Eastern England⁵² that looks ahead to 2050 and beyond. This covers the majority of Essex. Another group called Water Resources South East (WRSE) covers the West of Essex County and will also publish a Regional Plan. Three other regional groups represent the rest of England.

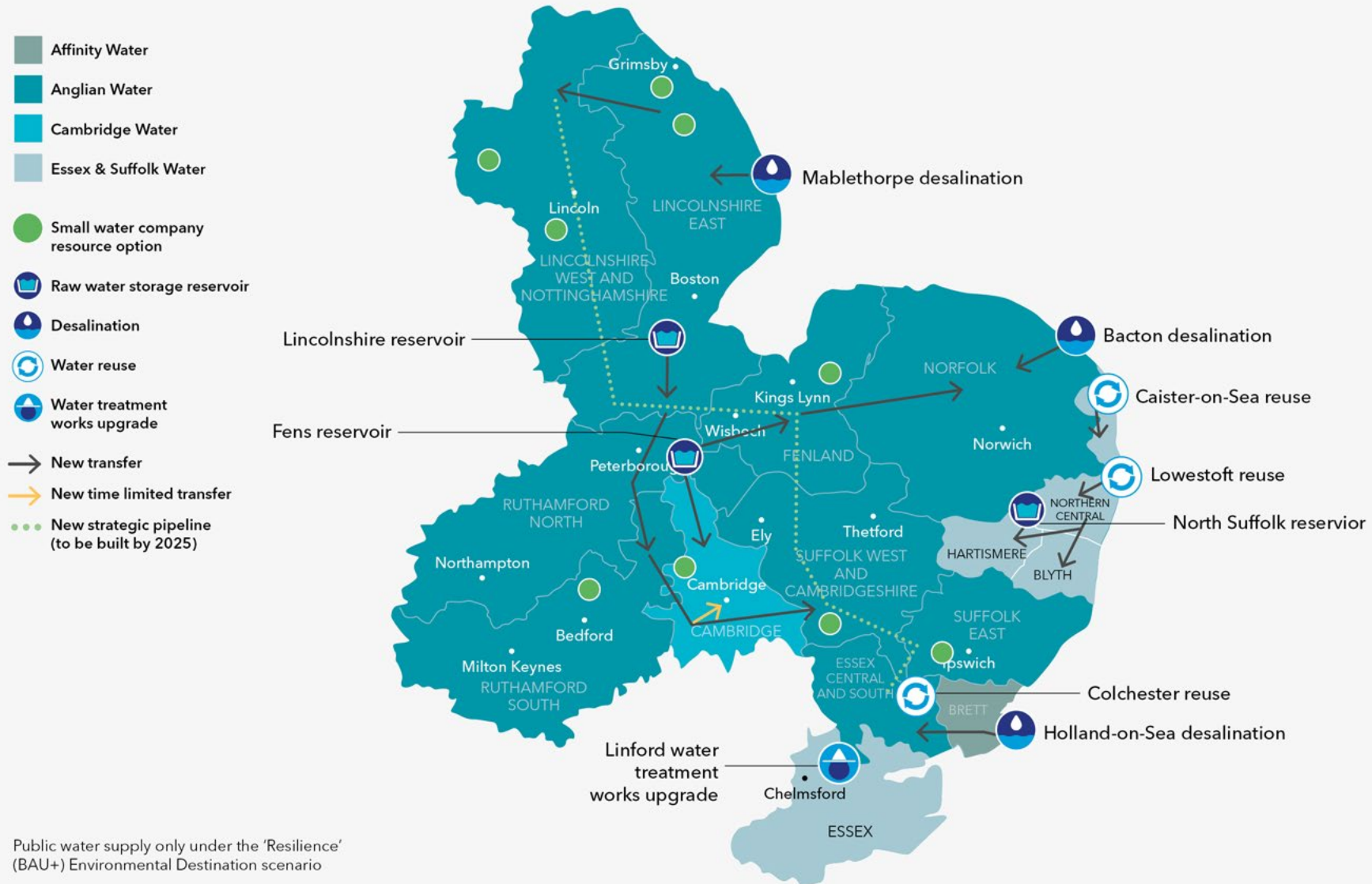


The WRE Water Resources Regional Plan sets out a summary of the **major measures and infrastructure** that are likely to need to be implemented in the region to **enable water supply to meet water demand from 2025 to 2050**.

Significant investment will be needed by all sectors in demand management and water supply schemes to enable population and industrial growth, greater resilience to drought in the changing climate, and to enable more water to be left in the environment for nature. The images below provide a summary of the regional plan's supply side options to 2050, taken from the 2022 Draft Plan.

The plan brings together the measures in the separate water company WRMPs, as well as considering the water needs of other sectors, resulting in a best value plan for the region.

Figure 3.6: Map showing the preferred East of England future water supply options, as shown in the current Water Resources East (WRE) best value plan to 2050



3.6 Essex County Council

Essex County Council is a Lead Local Flood Authority (LLFA) which means we have powers and responsibilities for flood management from rainfall and surface water under the Flood and Water Management Act 2010.

We assist in the preparation for and recovery from rainfall flooding, comment on the surface water flood risk and drainage proposed for new developments and have a programme of flood alleviation projects. Our Local Flood Risk Management Strategy and Surface Water Management Plans provide further detail. We have no statutory responsibility to plan for water resources or improve water quality.

However, Climate Action and Levelling Up Essex are key priorities for Essex County Council. Whilst they are distinct in definition, they are fundamentally interconnected due to the risks posed by – and potential impacts of – climate change on water resources and quality.

The **Everyone's Essex**⁵³ plan for 2021 to 2025 commits to Levelling Up the Environment and Transport and Built Environment. These commitments support water resources, water quality and the water environment by promoting green infrastructure and sustainable development.

Everyone's Essex commitments:



Levelling up the Environment

We will help all our communities to enjoy a high-quality environment, by making them more resilient against flooding, heat stress and water shortages, by enhancing our county's green infrastructure and by reducing air pollution.



Transport and built Environment

We will ensure we support the move towards net zero, climate resilient developments, including our new garden communities, by delivering sustainable, healthy neighbourhoods for the future.

Highways drainage

Essex Highways on behalf of Essex County Council maintains a vast network of roads, over 5,000 miles in total length, together with a footway network of 4,000 miles (including footways shared with cycleways), and 4,000 miles of public rights of way.

Essex Highways has developed the Highways Maintenance Policy and General Principles which sets out how these assets will be maintained. Highway drainage systems are maintained on a reactive risk-based approach, being picked up on routine safety inspections or when reported by a member of the public.

Nature recovery

Essex County Council has been appointed as the Responsible Authority to deliver the Local Nature Recovery Strategy (LNRS) on behalf of Greater Essex. Local Nature Recovery Strategies are a new, statutory, England-wide system of spatial strategies that must establish priorities for various habitats, and map proposals for actions to drive their recovery and provide wider environmental benefits. Connectivity is key, allowing habitats to connect to each other and further support biodiversity. Each responsible authority across England will create an LNRS for each County, which will form part of the UK-wide Nature Recovery Network, a key flagship of the Government's 25-Year Environment Plan.

One of the many benefits of our LNRS will be improvement of water quality through enhancing or improving existing water habitats, as well as creating new ones. Woodlands and green spaces act as natural barriers, breaking the flow of pollutants travelling into water courses, therefore improving water quality. Larger features such as wetlands, ponds and flood storage areas do this too, but can also reduce the likelihood of flooding by storing sudden high flow volumes and could be used as supply options if carefully planned – **see Section 2**.

The findings and recommendations of this water strategy will be incorporated into the LNRS via its Freshwater Working Group.



Woodland
corridor in
Tendring

3.7 Catchment partnerships

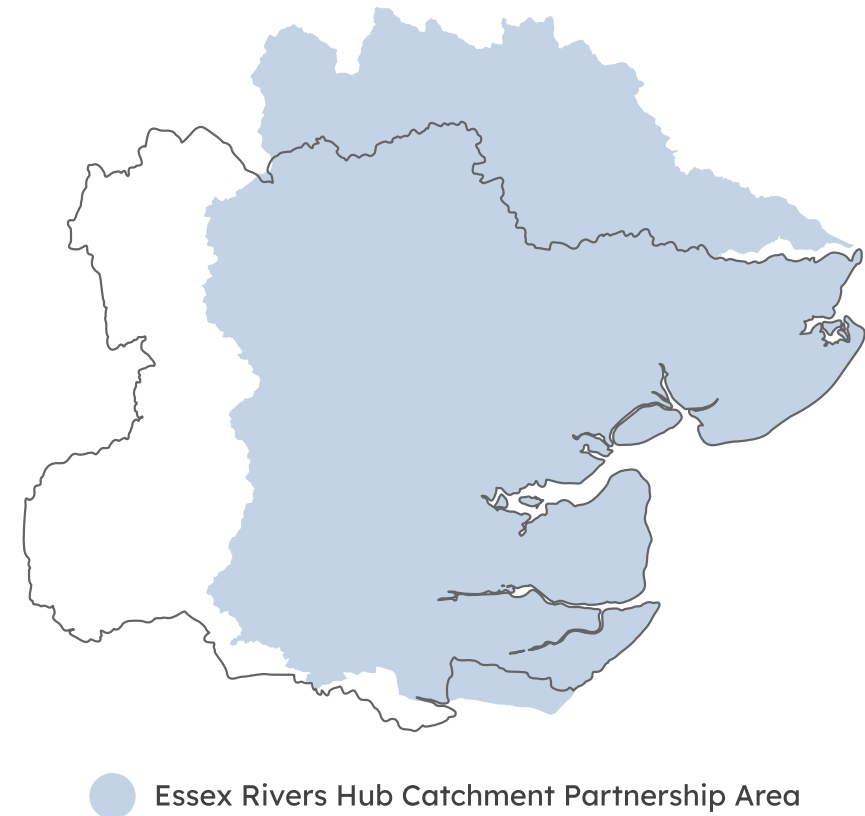
Catchment Partnerships are officer groups who operate together at a local level; they understand the water challenges and character of their area by involving a range of groups.

Catchment partnerships are actively working in all 100+ river catchments across England, directly supporting achievement of many of the targets under the Government's 25 Year Environment Plan.

There are five catchments partnerships in Essex, these are:

- Essex Rivers Hub
- South Essex Catchment Partnership
- Roding, Beam & Ingrebourne (RBI) Catchment Partnership
- Lea and Lower Lea Catchment Partnerships
- CamEO Catchment Partnership

Figure 3.8: Map of the Catchment partnership boundaries in Essex



Essex Rivers Hub

The **Essex Rivers Hub**⁵⁴ works through a catchment partnership to protect and enhance rivers and watercourses.

Over the next 10 years, The Essex Rivers Hub, will work to ensure:

- ✓ rivers and wetlands are restored at priority sites
- ✓ water resources can meet human demands without compromising the needs of wildlife and habitats in a changing climate
- ✓ the challenges and impacts of climate change and population growth are addressed through innovative adaptation and mitigation.

The Essex Rivers Hub intends to increase its reach with landowners, farmers, businesses and local communities to ensure people in Essex are more conscious of the pressures on the water environment and are more actively engaged in efforts to reduce demand, reduce pollution, improve water quality and increase biodiversity. The partnership meets quarterly and is setting out an annual action plan.

**Water
vole**



3.8 Other bodies

Essex Climate Action Commission

The Essex Climate Action Commission (ECAC) is an independent advisory body established by Essex County Council. Its report, **Net Zero: Making Essex Carbon Neutral**⁵⁵, contains more than 100 recommendations, which were endorsed by Essex County Council in full in November 2021. These recommendations form the basis of the Essex **Climate Action Plan**⁵⁶, which was **updated in July 2023**⁵⁷ and outlines £250m of funding over four years.

Local Nature Partnerships

The Essex Local Nature Partnership (LNP), launched in March 2022, works to steer collaborative work of conservationists, government, businesses, NGOs, local authorities and any organisations in partnership. Their aim is to protect, improve, create and connect our county's natural landscape to deliver multiple, environment, social and economic benefits.

The partnership is now formed of **40+ organisations** in Essex.

The Essex LNP was launched with one of the primary aims being to support the delivery of the Essex Local Nature Recovery Strategy (LNRS).

The Government stated that Local Nature Partnerships should form in the most appropriate way for their area. After identifying the needs and priorities for Essex, the Local Nature Partnership Board agreed on the following targets, to be achieved by 2030, which will support improvement in our water environment:

- 14% of Natural Green Infrastructure coverage of Essex to be increased to 25% Natural Green infrastructure coverage by 2030
- 50% of farmland in Essex to adopt Sustainable stewardship practices by 2030. This target has been adopted from the Essex Climate Action Commission.
- One in four people in Essex taking action for Nature Recovery. Target adopted from the Essex Wildlife Trust.

Charities and representative groups

Charities and representative groups, like the National Farmers Union (NFU) and Country Land and Business Association (CLA), have also developed their own **Integrated Water Management**⁵⁸ plan and **A Vision for The Water Environment**⁵⁹, to consider the importance of water for their own sectors.

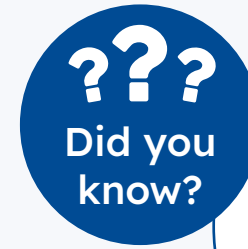
Local Planning Authorities

It is for local planning authorities, with their communities, to identify the strategic priorities for the development and use of land in their area. They must plan for these priorities accordingly within Local Plans, and must have regard to the National Planning Policy Framework. Local Plans are often supported by Water Cycle Studies and Strategic Flood Risk Assessments to gather evidence on local water pressures and potential solutions.

Local Planning Authorities also determine individual planning applications in consultation with key partners (statutory consultees). Under the Habitats Regulations, they must assess the environmental impact of projects which affect special habitat sites.

Natural England issued new advice in 2022 for 31 habitat sites, which affected 27 river catchments and a total of 74 local planning authorities. The advice said that these sites are in unfavourable condition due to excess nutrient pollution in water bodies, and that new development applications may only be approved if the increase in nutrient loads caused by the development are treated or offset by nutrient savings of an equivalent amount nearby.

It was proposed that Natural England would review proposed mitigation projects, and then provide developers with a certificate to submit to their planning authority to accompany their application before proceeding. Further information on tackling nutrient pollution from new development is detailed in the **Nutrient pollution: reducing the impact on protected sites**⁶⁰ policy.



Water Availability and Planning

Future water supply has already become so uncertain that planning applications for some types of new development are unable to be guaranteed a supply of water.

Essex and Suffolk Water is operating a moratorium (a temporary need to stop) on some non-residential development which is limiting growth (**BBC Suffolk News, August 2023**⁶¹). It could take years until alternative sources of water are put in place by the water company, or a different way of meeting water needs is found.

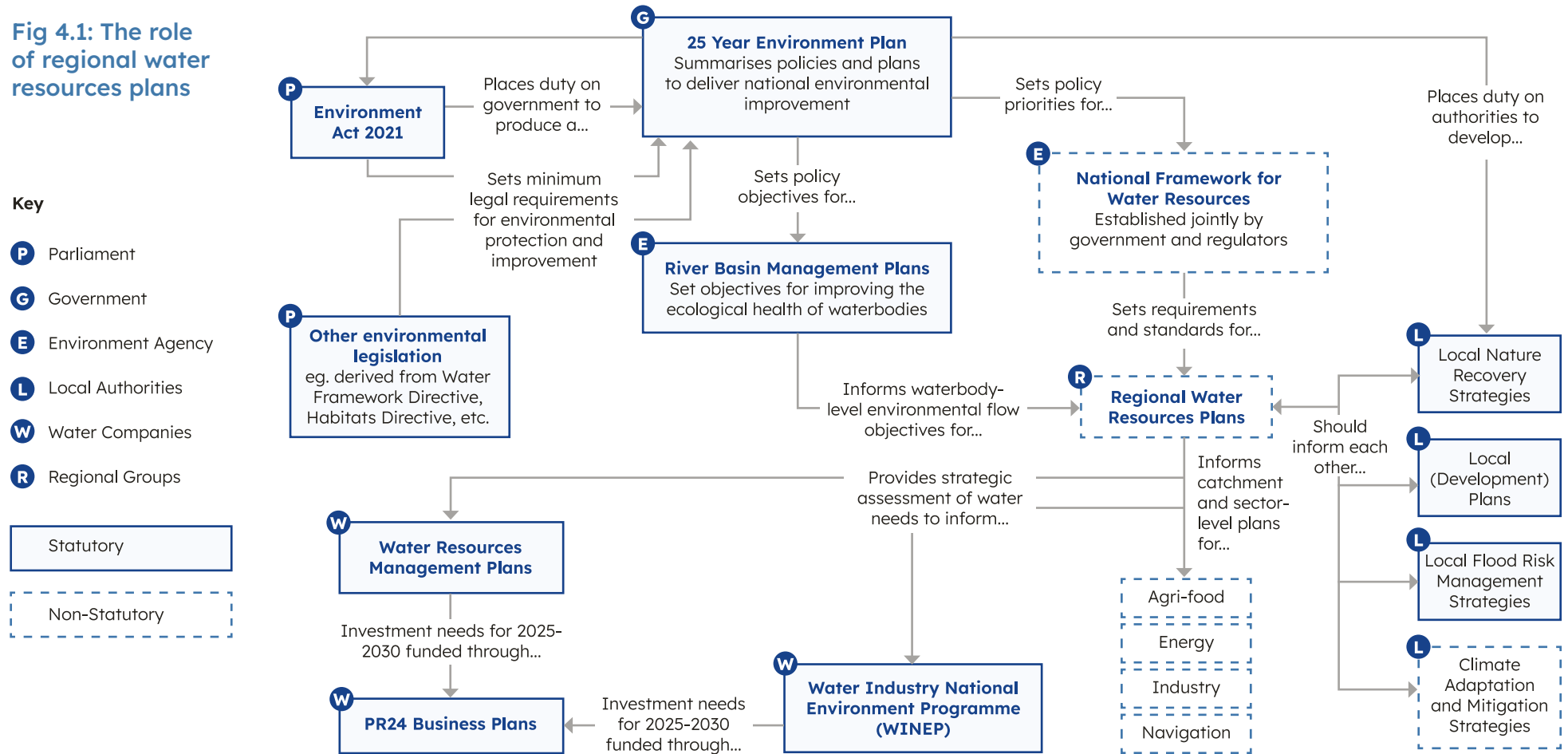
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Recommendations



As is clear from section 3, multiple organisations have responsibilities for water or commitments for improvements to it, and the web of interactions is complex.

Fig 4.1: The role of regional water resources plans



































































Nevertheless, the three overall themes we have identified – reducing water demand, changing land use and developing alternative supply – are common to all of them.






















The table in Fig 4.2 brings together the main activities we have identified as being relevant to making progress in Essex over the next five years – the horizon of the current strategy – and identifies, for each, which organisation is in the lead and which theme or themes the action addresses.
























Fig. 4.2: Essex Water Strategy Recommendations




















Key:  **Leading**  **Supporting**

























Our Ref	Activity	Supporting the govt commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
Government Led															
EWS1	Increase climate engagement and communications programmes to include the water crisis, water efficiency advice and behaviour change.	EIP3													
EWS2	Provide further guidance for public services to assess their water usage and the feasibility of options for grey and rainwater recycling. Support public sector bodies to be retrofitted with water efficiency and water recycling measures by 2035.	RWE5													
EWS3	Allocate more resources over the next five years, to help landowners, farmers and businesses to use less water and become resilient to shortages through water efficient technologies and practices	PFW3, RWE5													
EWS4	Allocate more resource over the next five years for government agencies and catchment partnerships to support citizen science, community, or partner projects across Essex to gather more detailed information on local sources of pollution to inform where action is needed most urgently.	PFW2													
EWS5	Add water companies as statutory consultees on all major and non-household planning applications as soon as possible.	PFW1													
EWS6	Update the Highways Standards Design Manual for Roads and Bridges (DMRB) to bring it in line with the sustainable drainage (SUDS) design approach in residential, commercial and industrial developments as soon as possible.	PFW2													

Our Ref	Activity	Supporting the gov't commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
Water Companies Led															
EWS7	Water supply companies to meet their Water Resource Management Plan (WRMP) rollout targets for household smart metering programmes in Essex by 2027, to support government interim target of 9% usage reduction.	EIP3, RWE5													
EWS8	Provide a water butt discount scheme for Essex homeowners immediately and rollout of further intelligent water butt pilot schemes in Essex by 2025.	EIP3, RWE5													
EWS9	Share a programme of communications containing further detail on water company plans for retrofitting water efficient products at household (including private rented sector) and non-household level by 2025.	RWE5													
EWS10	Water companies to publish locality based data on leakage reduction in a clear and accessible way as soon as possible. More regularly engage with partners and customers explaining how they will reduce leakage by 20% by 31 March 2027.	EIP5													
EWS11	Improve monitoring of wastewater and combined sewer overflows in Essex to understand the scale and severity of this problem and prioritise action to reduce phosphorus loadings from treated wastewater by 50% by 31 January 2028. Provide detail on where investment is being made in Essex to reduce overflows.	EIP2, EIP6													
EWS12	Utilise water improvement funds, such as Water Industry Nature and Environment Programmes (WINEP), to deliver Green Infrastructure and nature based solutions in Essex which work towards reducing phosphorus loadings from treated wastewater by 50% by 31 January 2028.	EIP2, PFW2													


















Our Ref	Activity	Supporting the gov commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
EWS13	Develop and prioritise nature based solutions in Essex which deliver Local Nature Recovery Strategy targets and restore 75% of our water bodies to good ecological status. Nature based solutions include wildlife corridors, wetlands, flood storage, sustainable drainage, and other green infrastructure.	EIP4, PFW1													
EWS14	Allocate more resource over the next five years for project coordinator and management roles working with Catchment Partnerships and Farm Clusters in Essex. Contribute to emerging catchment plans and projects and ensure that all opportunities for collaboration and water management funding are utilised to reduce pollution and increase water efficiency.	PFW1, PFW2, PFW3													
EWS15	Work with Essex highways authority to support increased roll out of nature based solutions on highways and support pollution reduction strategies that reduce polluting road run-off entering our waterbodies.	EIP4													


















Our Ref	Activity	Supporting the gov't commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
Essex County Council Led															
EWS16	Run the Essex Water Your Future campaign from 2024 - 2027 to increase understanding of the water challenge in Essex, include calls to action for water efficiency through behaviour change.	EIP3													
EWS17	Developers of new schools, housing, community and public buildings should integrate grey and/or rainwater harvesting systems as a key design requirement in line with the Essex SUDS Design Guide ⁶² drainage hierarchy and further supporting water efficiency design guidance.	RWE9, RWE10													
EWS18	As a statutory consultee on surface water for major planning applications, Essex County Council will require that all new developments must implement the Essex SUDS Design Guide ⁶³ and Green Infrastructure Standards ⁶⁴ (3, 4 7 and 9) to ensure they do not add pressure to existing sewerage systems or negatively impact the ecological status of waterbodies.	RWE1													
EWS19	Assess the feasibility of retrofitting Sustainable Drainage Systems (SUDS) and Green Infrastructure on Essex County Council estate to reduce the impact of built environment and transport drainage on the ecological status of our waterbodies.	RWE1													
EWS20	As a statutory consultee on surface water for major planning applications, Essex County Council should promote regional and/or rural Sustainable Drainage Systems (SUDS) within the master planning process to create new opportunities for development runoff to be used for local water supply.	PFW1, PFW2, PFW3													

Our Ref	Activity	Supporting the gov commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
EWS21	Include water targets within Essex County Council procurement, sustainability charters and other strategies as soon as possible	PFW1, PFW3, RWE5													
EWS22	Consider the use of nature based solutions, natural flood management and flood storage in our capital schemes, to improve water quality and retain water within the local environment.	PFW1													
EWS23	Prioritise providing infrastructure for local water supply (e.g. new reservoirs, floodwater and winter storage opportunities) as part of after use options for mineral and waste sites, especially where the impact of the mineral extractions creates a water storage opportunity and where there may be local need to increase water resources.	PFW1, PFW3													
Essex Highways Led															
EWS24	Increase sustainable drainage and tree cover on our highways to reduce water run-off, and provide increased protecting from flooding and overheating. Prioritise those with high annual average daily traffic volumes (30,000 vehicles or more) as these are most likely to contribute to water pollution when it rains.	PFW2													
EWS25	Explore mechanisms and work with partners such as Anglian Water and Thames Water to create a pollution reduction strategy that reduces polluting road run-off entering our waterbodies.	PFW2													

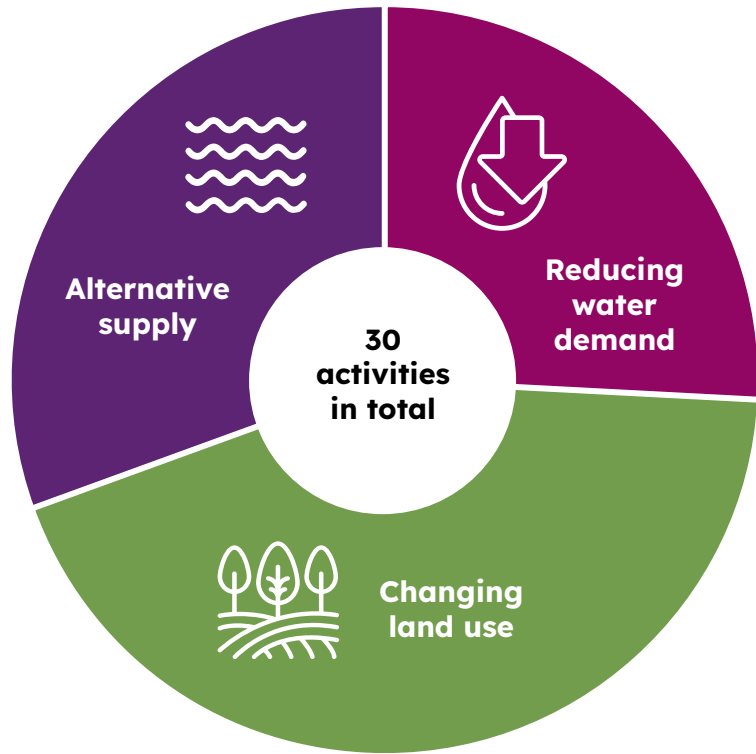
Our Ref	Activity	Supporting the gov't commitment (page 71-72)	Reduce Demand	Change Land Use	Alternative Supply	Government	Water Companies	Essex County Council	Essex Highways	Local Planning Authorities	Environment Agency	Catchment Partnerships	Landowners and Farmers	Businesses	Residents
Local Planning Authority Led															
EWS26	Set ambitious policies for water efficiency and resilience for new homes and non-residential development within Local Plans (policies to be locally appropriate based on further evidence particularly considering the impact of water security on economic growth). Ensure water efficiency standards are being inspected and enforced through building regulations.	RWE3, RW4													
EWS27	Require the provision of grey and rainwater reuse systems for all new developments in line with the <u>Essex SUDS Design Guide</u> ⁶⁵ drainage hierarchy and further supporting water efficiency design guidance.	RWE9, RWE10													
Environment Agency Led															
EWS28	Lead and support the creation of Water Abstraction Groups within Essex potentially associated with emerging farm cluster groups.	EIP1, PFW1													
EWS29	Prioritise resources over the next 5 years to engage with Essex farm cluster groups. Raise awareness of local water quality issues and water improvement funding available, to reduce the ecological impact of agricultural runoff on our water bodies. Ensure the Farming Rules for Water (and tighter rules in Nitrate Vulnerable Zones) are understood, complied with and enforced.	EIP1, PFW2													
EWS30	Capital Flood Programmes should deliver benefits for water quality and prioritise treating local 'reasons for not achieving good status' (RNAG) as far as possible.	EIP4													

Summary of Government Water Commitments

Our Ref:	Source	Government Commitment or Target	Reduce Demand	Change Land Use	Alternative Supply
EIP1	Environment Improvement Plan	Reduce nitrogen, phosphorus and sediment pollution from agriculture into the water environment by at least 40% by 2038, compared to a 2018 baseline, with an interim target of 10% by 31 January 2028, and 15% in catchments containing protected sites in unfavourable condition due to nutrient pollution by 31 January 2028.			
EIP2	Environment Improvement Plan	Reduce phosphorus loadings from treated wastewater by 80% by 2038 against a 2020 baseline, with an interim target of 50% by 31 January 2028.			
EIP3	Environment Improvement Plan	Reduce the use of public water supply in England per head of population by 20% from the 2019 to 2020 baseline reporting figures, by 31 March 2038, with interim targets of 9% by 31 March 2027 and 14% by 31 March 2032, and to reduce leakage by 20% by 31 March 2027 and 30% by 31 March 2032.			
EIP4	Environment Improvement Plan	Restore 75% of our water bodies to good ecological status.			
EIP5	Environment Improvement Plan	Water companies to cut leaks by 50% by 2050. We will reduce leakage by 20% by 31 March 2027 and 30% by March 2032.			
EIP6	Environment Improvement Plan	Require water companies to have eliminated all adverse ecological impact from sewage discharges at all sensitive sites by 2035, and at all other overflows by 2050.			
EIP7	Environment Improvement Plan	Target a level of resilience to drought so that emergency measures are needed only once in 500-years.			
PFW1	Plan for Water	Transform management of the whole water system – improve how we manage our water system in a joined-up way to make sure it is fit to deliver for water supply and the environment.			
PFW2	Plan for Water	Deliver a clean water environment for nature and people – address each of the multiple pressures and sources of pollution on our water bodies.			

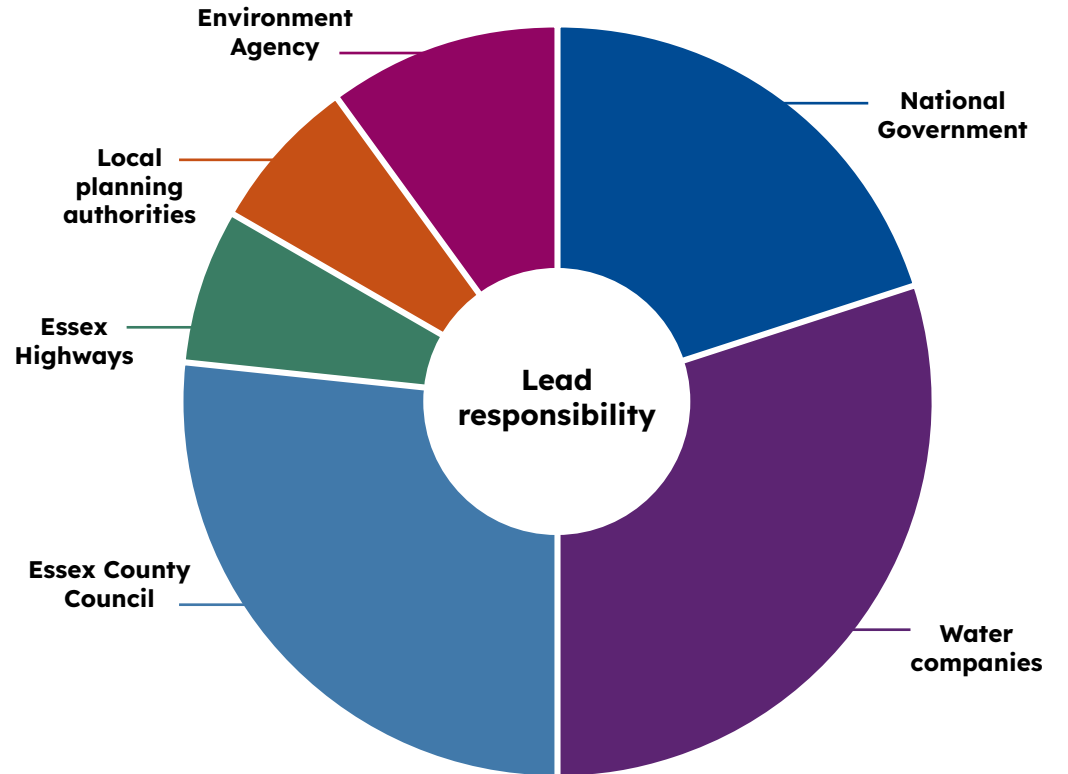
Our Ref:	Source	Government Commitment or Target	Reduce Demand	Change Land Use	Alternative Supply
PFW3	Plan for Water	Secure a plentiful supply of water – meet our long-term water needs for people, businesses, and the environment by closing the 4 billion litre a day supply-demand gap in public water supply.			
RWE1	Roadmap to Water Efficiency	Require standardised sustainable drainage systems for new developments subject to final scope, threshold, and process.			
RWE2	Roadmap to Water Efficiency	Review the Water Supply (Water Fittings) Regulations 1999, the Water Supply (Water Quality) Regulations 2016 and/or any other relevant legislation to address wasteful product issues with toilets and enable new water efficient technologies.			
RWE3	Roadmap to Water Efficiency	Develop clear guidance on ‘water positive’ or ‘net zero water’ developments and roles for developers and water companies, including water company incentives.			
RWE4	Roadmap to Water Efficiency	Review water efficiency options in planning, building regulations, and voluntary schemes for non-household buildings such as offices and hotels.			
RWE5	Roadmap to Water Efficiency	Work with Ofwat to ensure the water industry can play a central role in retrofitting water efficient products in households, businesses, charities, and the public sector.			
RWE6	Roadmap to Water Efficiency	Work across government to integrate water efficiency into energy efficiency advice and retrofit programmes.			
RWE7	Roadmap to Water Efficiency	Review the Building Regulations 2010, and the water efficiency, water recycling and drainage standards (regulation 36 and Part G2, H1, H2, H3 of Schedule 1), considering industry competence and skills.			
RWE8	Roadmap to Water Efficiency	Deliver the mandatory water efficiency labelling scheme by 2025.			
RWE9	Roadmap to Water Efficiency	Investigate dual pipe systems and water recycling options for new housing development as part of the review of the planning framework.			
RWE10	Roadmap to Water Efficiency	Enable innovative water efficiency approaches in buildings, including technologies and approaches to funding and maintenance.			

There are 30 activities in all and some address more than one theme. Our analysis is that 12 involve reducing water demand, 20 are concerned with changing land use and 14 relate to alternative supply.



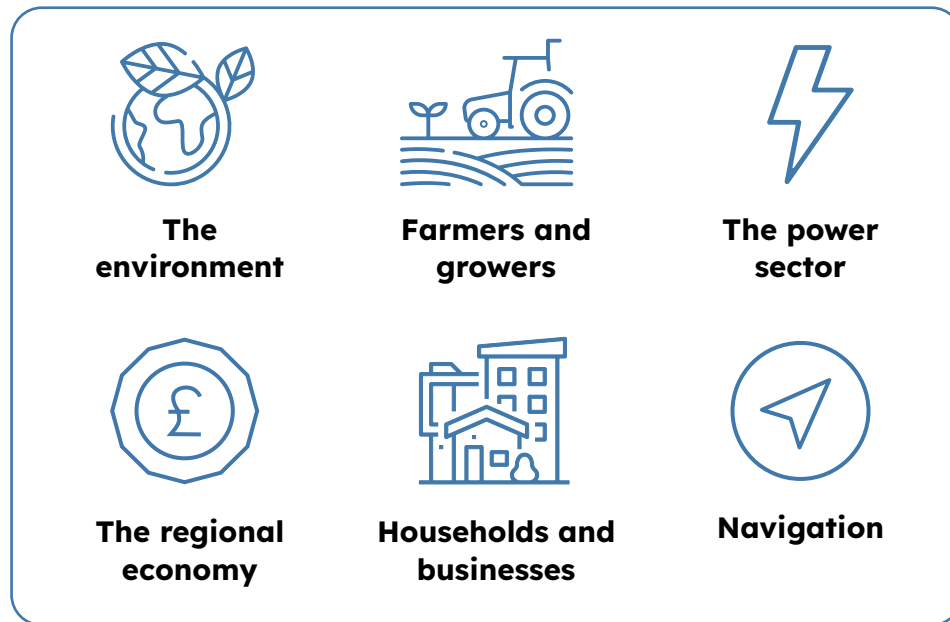
Lead responsibility for the 30 breaks down as follows:

- National Government – 6
- Water companies – 9
- Essex County Council – 8
- Essex Highways – 2
- Local planning authorities – 2
- Environment Agency – 3



If we are to make significant progress in solving the water issues we face, however, we have to count on the players outside of Essex County Council's control to play their part, and we will do our bit to support them.

We will also continue to work with Water Resources East and raise awareness for how their regional findings are anticipated to impact:



Further work is required to fully understand these impacts at an Essex county scale. This is supported by WRE in their own recommendations for future projects and requirements for the next multi-sector plan.

Given that we all have an interest in better water management, whoever we are, we need to be **united in how we think about our water.**

If the recommendations in this strategy are followed, we believe that all of us in Essex can look forward to a **brighter future** where the problems of droughts and floods are considerably reduced.

Appendices



Essex Catchment Areas

A catchment boundary is the natural boundary for a river and includes the full area draining naturally to that catchment. Flood risk and water quality plans usually work with natural catchment boundaries. Water resources planning, particularly for drinking water, often uses a different system because artificial pipelines exist which can move water between catchments. A town in one catchment can be supplied by a river, aquifer or reservoir in a different river catchment.

In Essex we have a lot of varied and cross boundaries catchment environments. There are three main catchment management scales to note:

Management catchments - built up from river water bodies into similar sized units across England that suit management and planning from an Environment Agency perspective.

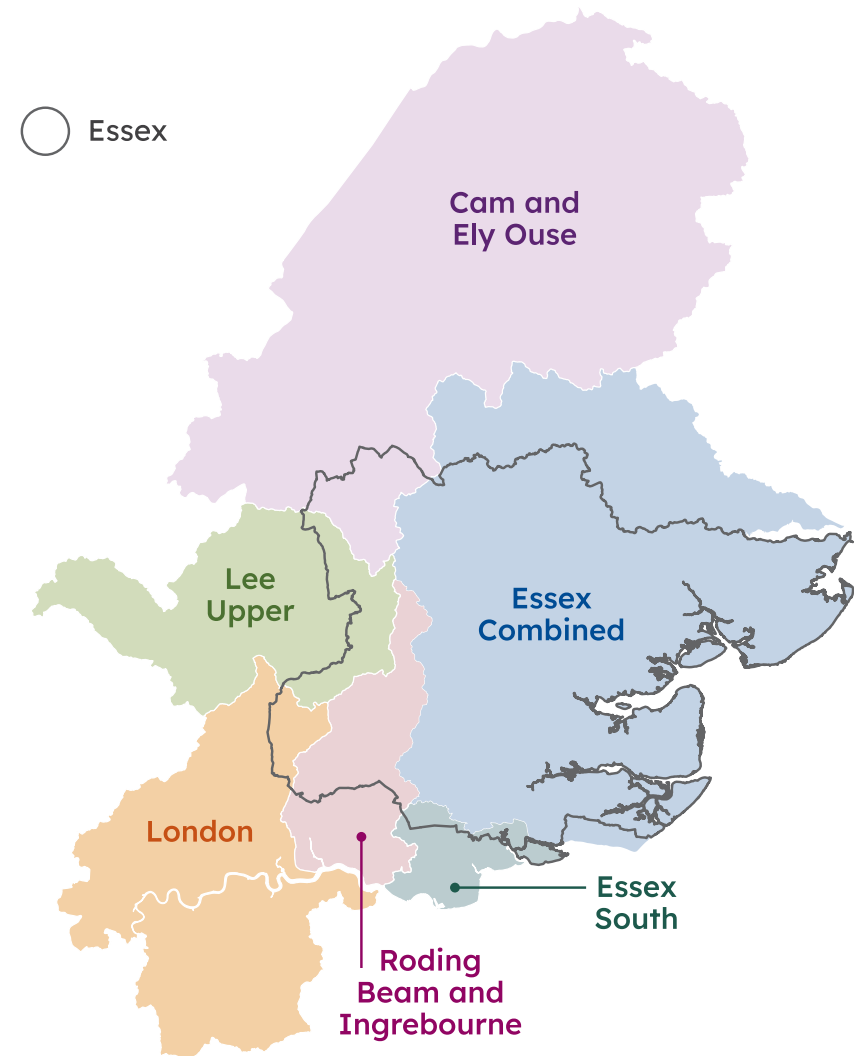
Operational catchments - smaller than management catchments, they are used in the economic analysis process to identify packages of measures that can be applied to improve the ecological status of the water bodies within it.

Water body - the whole (or part) of a stream, river or canal, lake or reservoir, estuary or stretch of coastal water. A groundwater water body is the defined area of an aquifer.

The management catchments falling in Essex are listed below. Our largest management catchment (known as 'Combined Essex') covers a total area of 3,413km, 76% of which falls within Essex's council area.

Further information can be found on the [Environment Agency Catchment Data Explorer](#)⁶⁶.

Figure: Essex Catchment Management Boundaries



Essex Management Catchment ‘fact file’:

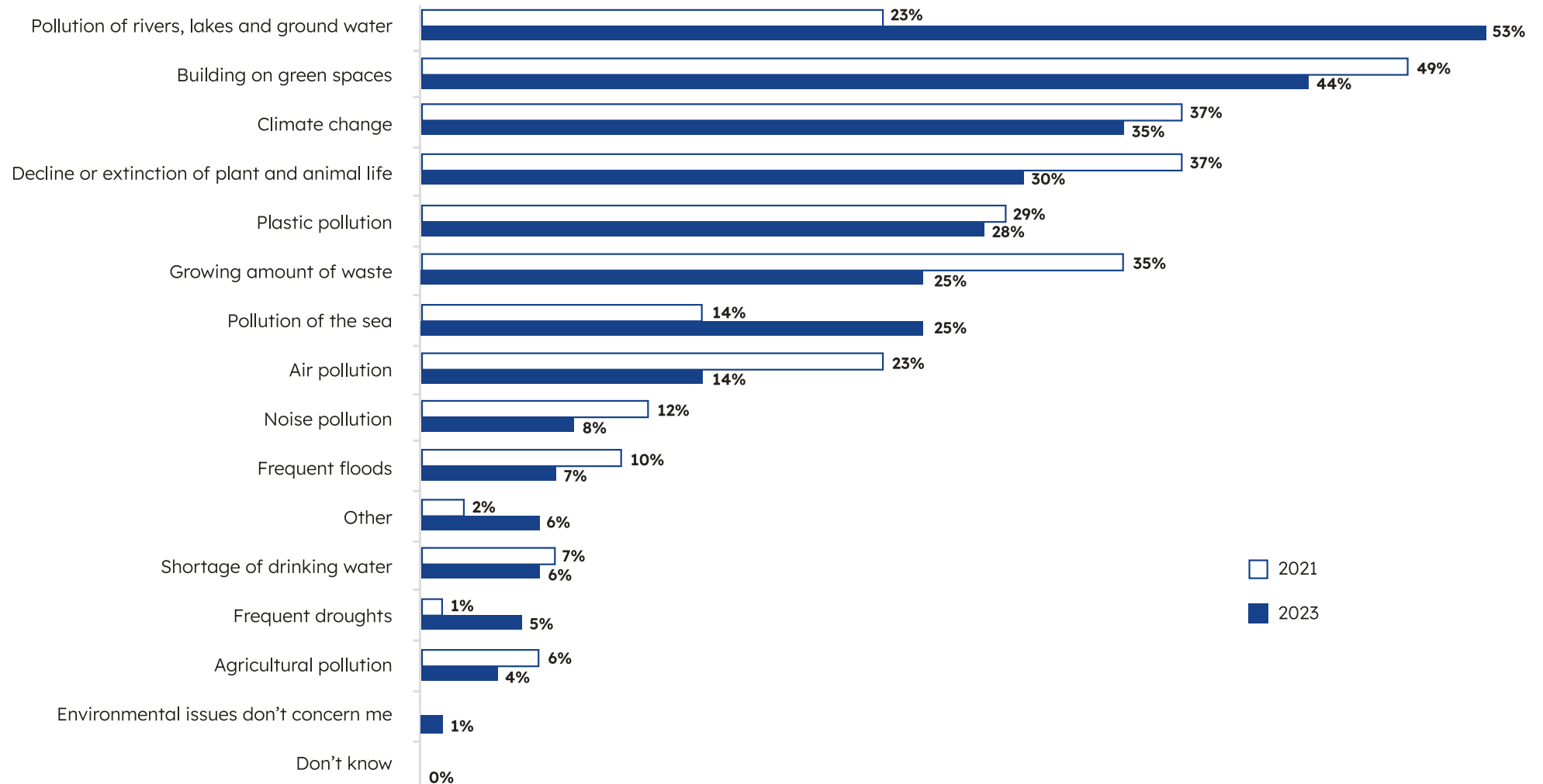
Management Catchment Name	Total Area (km ²)	% of Essex within this catchment	% of this catchment within Essex	Characteristics
Combined Essex	3412	75	76	<p>There are five operational catchments here.</p> <p>The Stour, Blackwater, Colne and Chelmer (and their tributaries) are predominantly rural and have retained extensive areas of floodplain meadows, alongside willow plantations over fen and marsh vegetation. Downstream of Chelmsford, the Chelmer has been canalised as far as the estuary, the associated stability in water levels encouraging biodiversity.</p> <p>The Crouch and Roach are one operational catchment. Short rivers, both arising in urban areas and with little exposure to open countryside before becoming tidal.</p>
Roding, Beam and Ingrebourne	542	9	60	<p>The Roding’s course is largely agricultural until it reaches the urban setting of Loughton, at which point it is flanked by floodplain meadows</p>
Essex South	233	2	29	<p>The Mardyke, predominantly within Thurrock, is associated with a very significant corridor of semi-natural habitats that reach into the heart of an intensively urban landscape. The floodplain and valley slopes support lowland fen, reedbeds, floodplain grassland, acid grassland and Ancient woodland.</p>
Lee Upper	1025	6	20	<p>Despite flowing through and by a number of larger settlements, much of the valley of the Stort is occupied by semi-natural, fen, marsh and wet woodland habitat before it joins the Lee, which shares its floodplain with extensive flooded gravel workings and the Lee Navigation canal.</p>
Cam and Ely Ouse	3752	5	5	<p>The Cam’s landscape is a mixture of agricultural, woodland, pasture and small settlements, and it doesn’t really reflect its chalk stream status within Essex. Most of its tributaries are winterbourne meaning that they are largely dry during the summer months.</p>
London	1488	3	5	<p>Essex contains some of the tributaries of the River Lee which flow into the Lee Lower Rivers and Lakes operational catchment within the north east part of the London management catchment.</p>

Essex Residents Survey

Q.1

Out of the following environmental issues, which are your top 3 concerns?

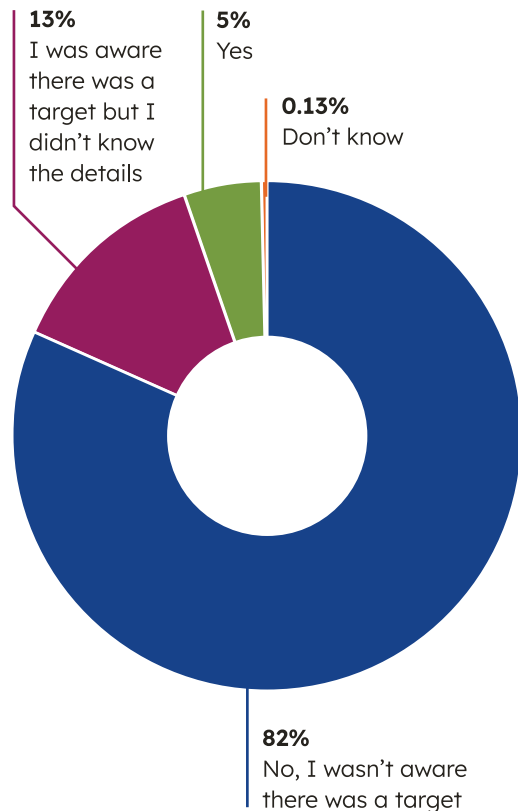
Data compared with the same question asked in 2021.



Q.2

The UK government has an Environment Improvement Plan. This plan includes a target to reduce each person in England's use of the public water supply by 20%. The target date is 31 March 2038.

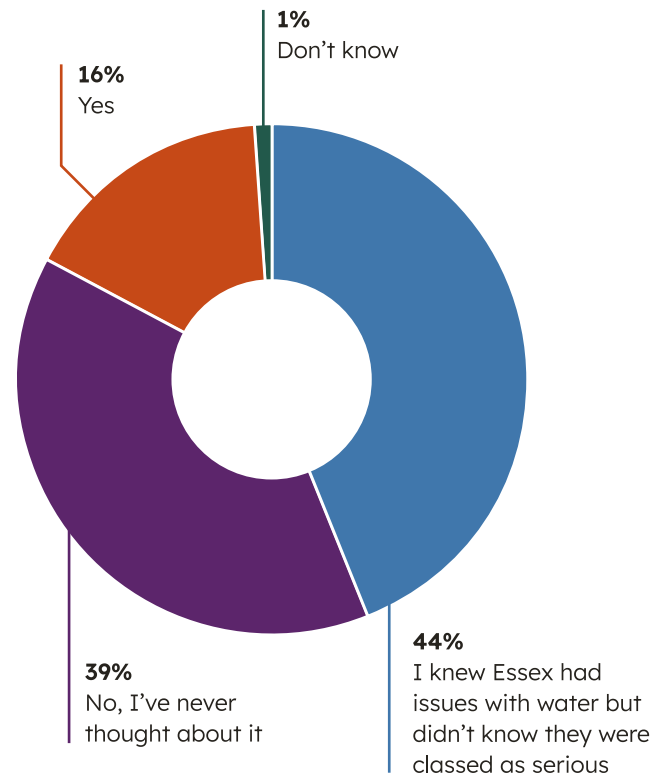
Before today, were you aware of this target?



Q.3

The UK Environment Agency classes Essex as a serious water-stressed area.

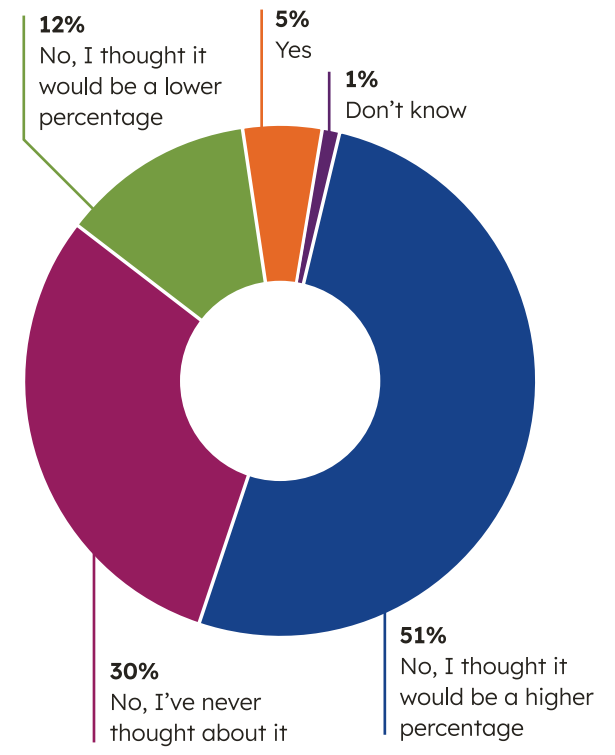
Before today, were you aware that Essex is classified as a serious water-stressed area?



Q.3b

Only 7% (6 out of 91) of the rivers and streams that cross the Essex border are classified as having a 'good' ecological status. The government target is to achieve 75% good status as soon as reasonably practicable.

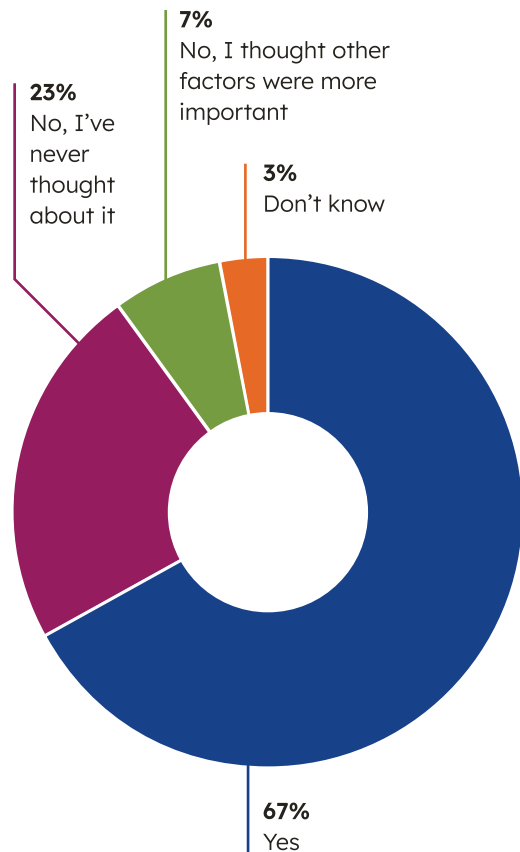
Still thinking about your knowledge before today, were you aware that only 7% of the rivers and streams that cross the Essex border are classified as having a 'good' ecological status?



Q.3c

The main known reasons for not achieving good ecological status in our Essex rivers and streams are water company outfalls, agricultural runoff, urbanisation and transport drainage.

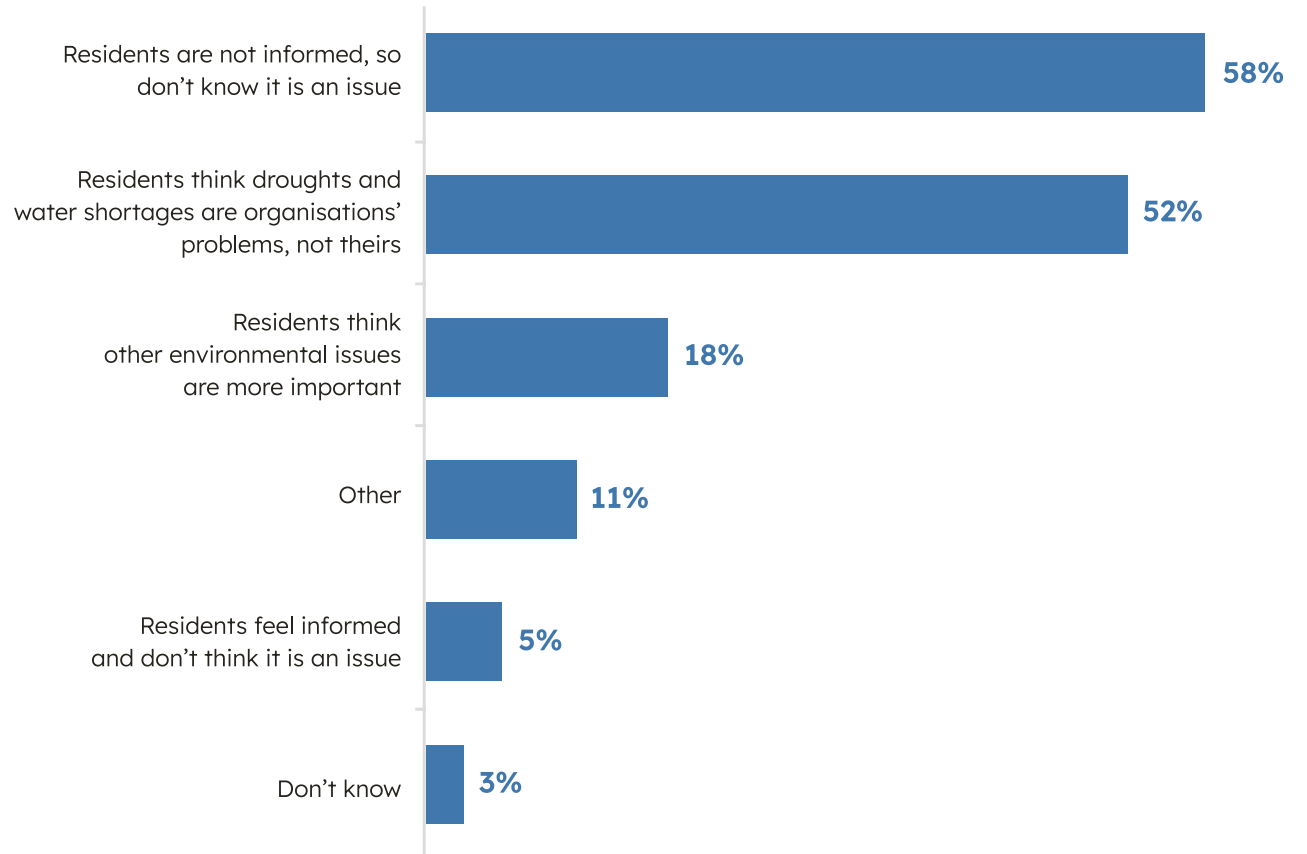
Were you aware of that these are the main reasons for not achieving good ecological status in rivers and streams?



Q.4

In 2021, a study found that people in Essex were not worried about droughts and water shortages.

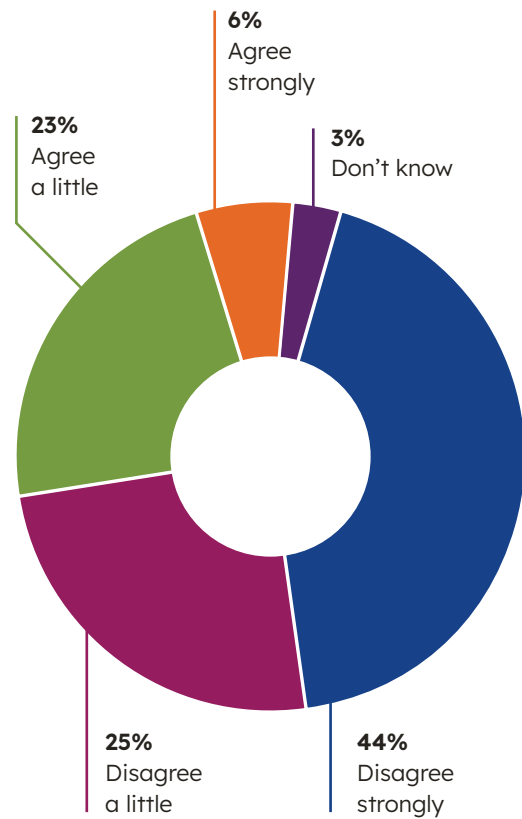
Why do you think this is? You may select more than one answer if you wish.



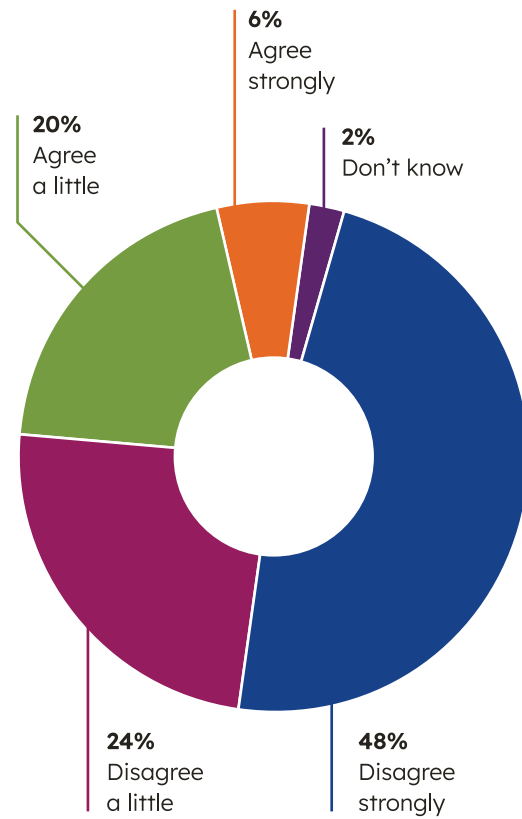
Q.5

How far do you agree or disagree with the following statements?

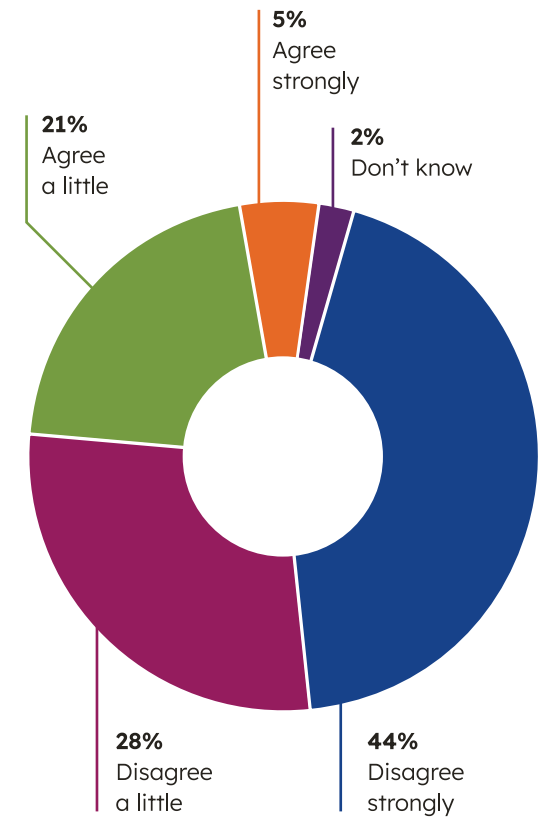
**I feel adequately informed about...
Essex's drought status**



**I feel adequately informed about...
water quality in Essex**



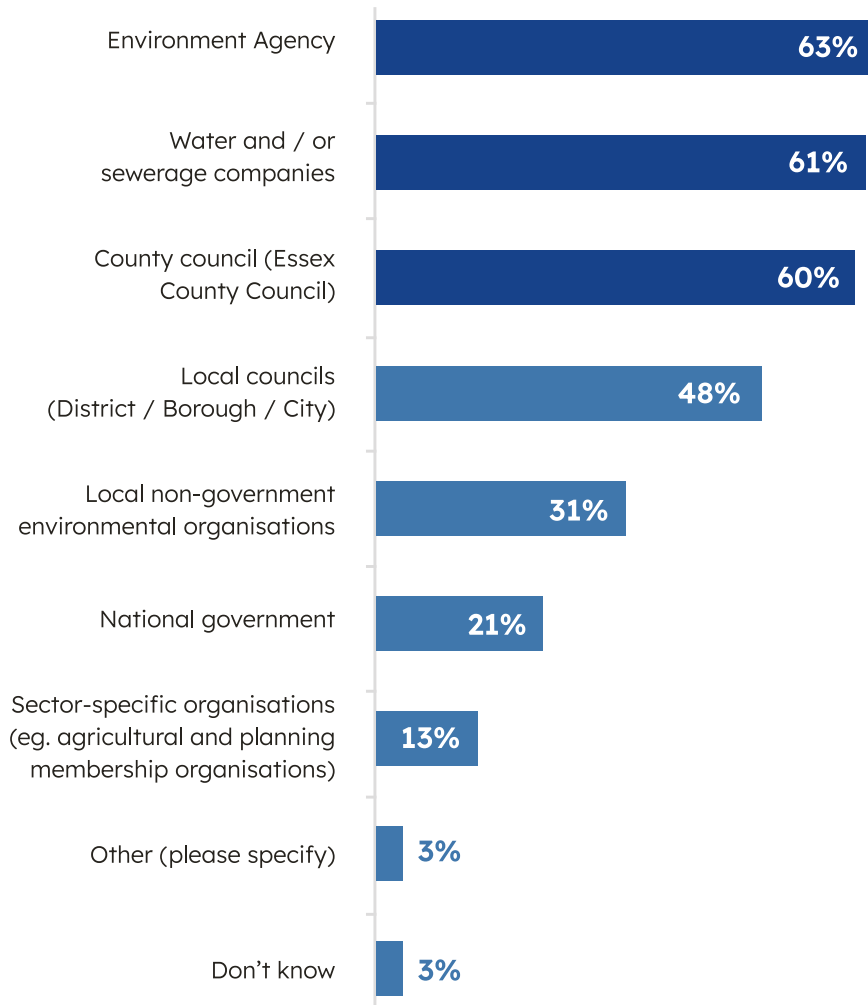
**I feel adequately informed about...
water availability in Essex**



Q.6

Who do you think would be in the best position to provide updates and information to residents on the water situation in Essex?

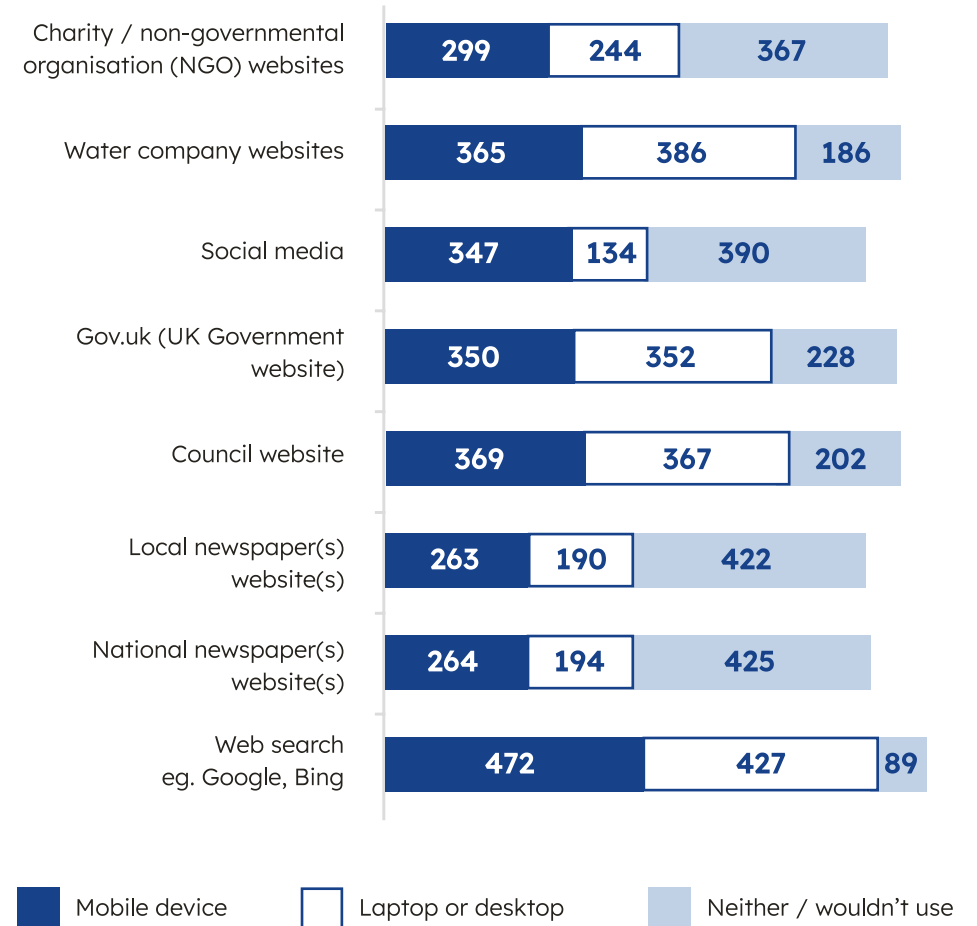
Please select all that apply.



Q.7

If you wanted to find out more information on drought, water availability and water quality in Essex, where would you go to find it online?

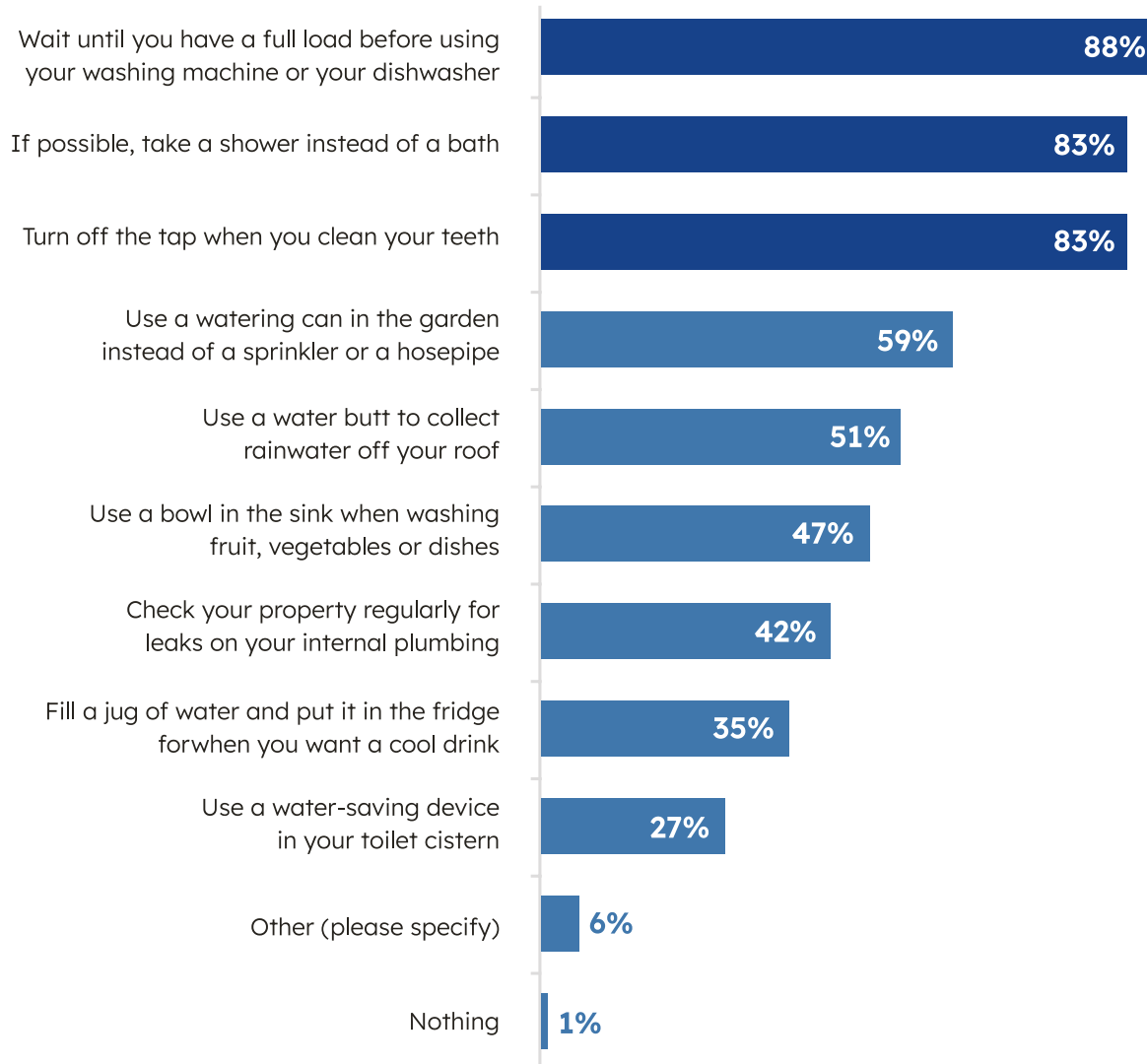
And would you use a mobile device, or a laptop or desktop?



Q.8

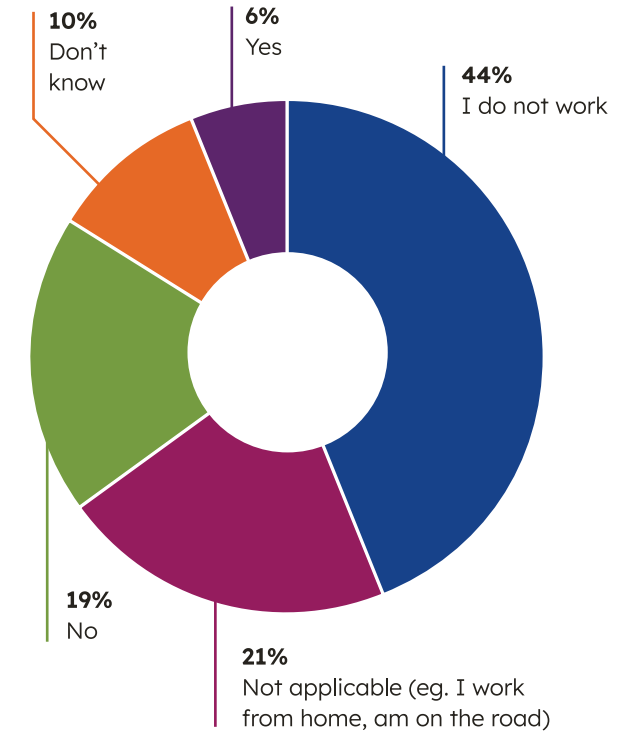
Do you or your household do any of the following to consciously save water at home or in the garden?

Please select all that apply.



Q.9

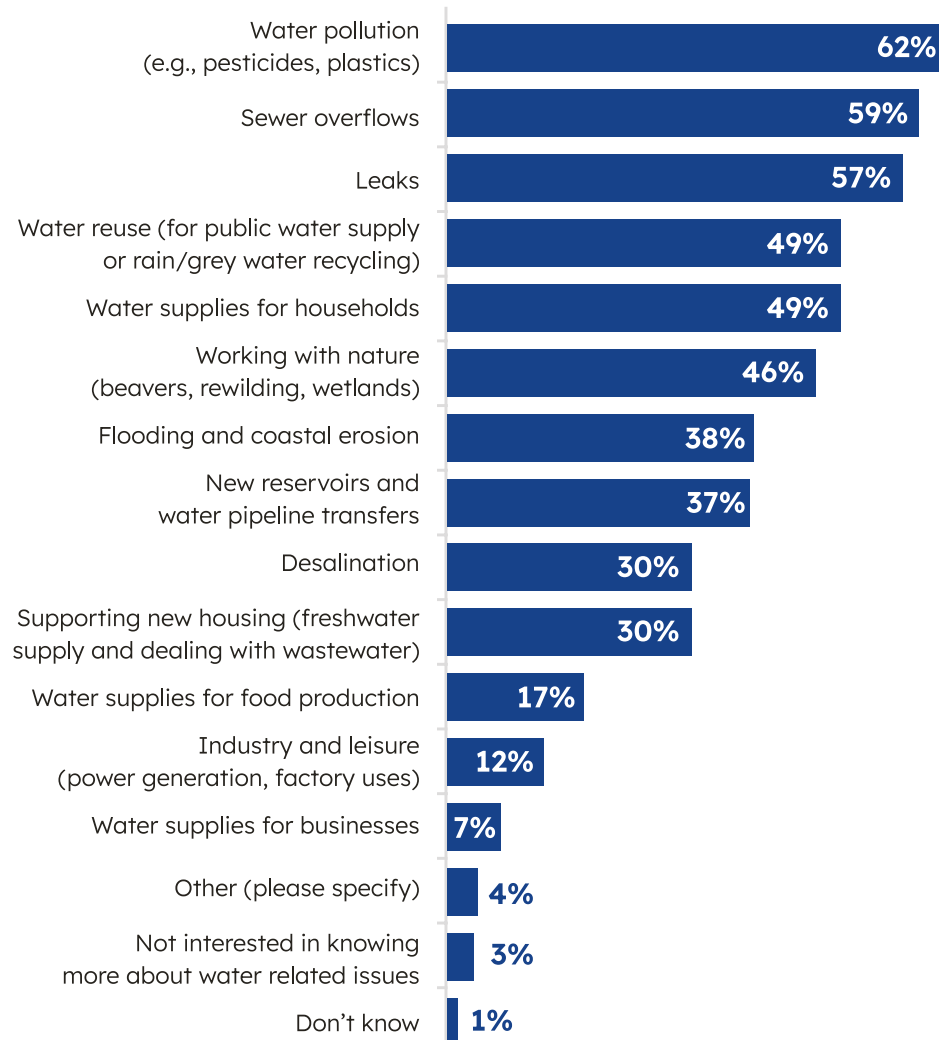
Does your employer or workplace encourage water-saving at work?



Q.10

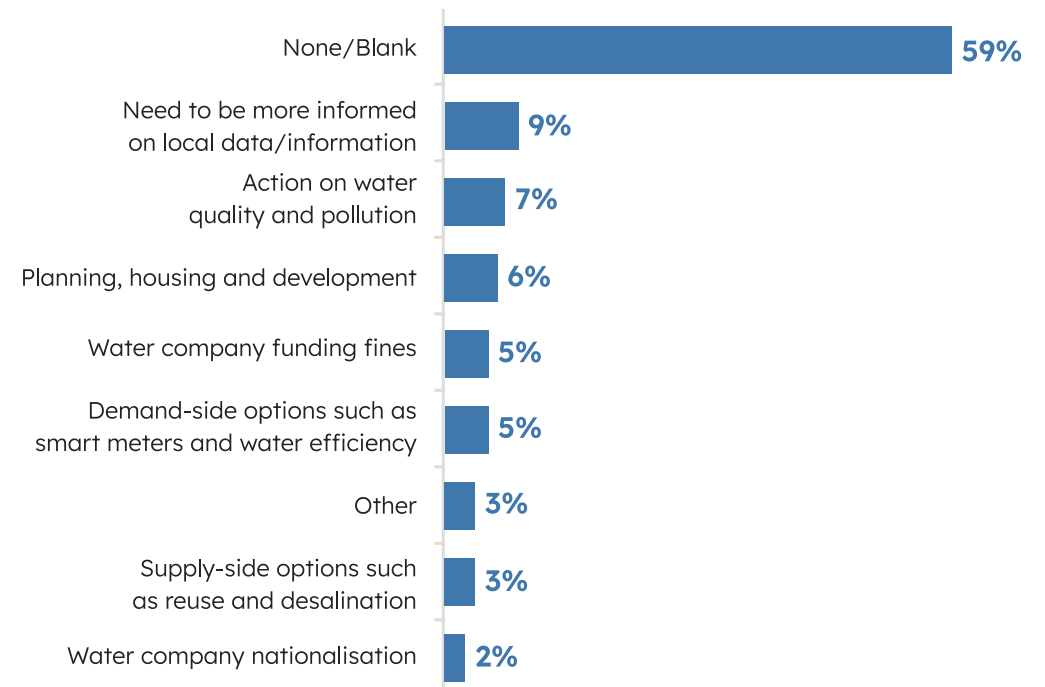
In principle which, if any, of these water-related issues would you be most interested in knowing more about?

Please select all that apply.



Q.11

And lastly, do you have any other comments that you would like to make relating to the water situation in Essex?



References and Resources

Hyperlinks

- 1 <https://www.gov.uk/government/publications/water-resources-planning-guideline>
- 2 <https://www.gov.uk/government/publications/25-year-environment-plan>
- 3 <http://www.essexwateryourfuture.co.uk/>
- 4 <https://www.essex.gov.uk/running-council/everyones-essex-our-plan-levelling-county-2021-2025>
- 5 <https://www.essex.gov.uk/sites/default/files/2023-12/Climate%20Action%20Plan%20-%2008.12.23.pdf>
- 6 <https://data.essex.gov.uk/>
- 7 <https://rmetsonline.wiley.com/doi/10.1002/joc.8167>
- 8 <https://www.theguardian.com/environment/2023/jun/15/kent-water-shortages-school-closures#:~:text=Four%20schools%20in%20East%20Sussex%20have%20been%20closed%20because%20of,to%20some%20residents%20in%20Wadhurst>
- 9 <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp>
- 10 <https://wre.org.uk/the-regional-plan/>
- 11 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/625006/LIT_10104.pdf
- 12 <https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england--2>
- 13 <https://theriverstrust.org/key-issues/sewage-in-rivers>
- 14 <https://flush3p.org/>
- 15 <https://www.bbc.co.uk/news/science-environment-65166859>
- 16 <https://www.gov.uk/government/publications/water-stressed-areas-2021-classification>
- 17 <https://www.waterwise.org.uk/wp-content/uploads/2019/03/Leaky-Loo-Position-Statement.pdf>
- 18 <https://www.anglianwater.co.uk/news/leaky-loos-costing-east-of-englands-households-49-million-a-year/>
- 19 <https://www.gov.uk/government/news/household-goods-to-carry-water-efficiency-labels>
- 20 https://database.waterwise.org.uk/wp-content/uploads/2022/09/J37880-Waterwise_Water_Efficiency_Strategy_Inners_Landscape_WEB.pdf
- 21 https://getcomposting.com/collections/water-butts/filtered?filter_pf_opt_admin_area_code=DEFAULT_VAR&page=1
- 22 <https://www.waterwise.org.uk/save-water/>

- 23 <https://www.ofwat.gov.uk/households/conservingwater/watersavingtips/>
- 24 <https://www.gov.uk/government/publications/developing-the-environmental-resilience-and-flood-risk-actions-for-the-price-review-2024/water-industry-national-environment-programme-winep-methodology>
- 25 <https://www.essexdesignguide.co.uk/supplementary-guidance/essex-green-infrastructure-standards/essex-green-infrastructure-strategy-2020/>
- 26 <https://www.essexdesignguide.co.uk/supplementary-guidance/essex-green-infrastructure-standards/>
- 27 <https://designatedsites.naturalengland.org.uk/GreenInfrastructure/Home.aspx>
- 28 <https://www.essex.gov.uk/planning-land-and-recycling/energy-climate-and-environment/essex-climate-action-commission>
- 29 <https://vimeo.com/797753444/d7838df8d6>
- 30 <https://www.spainshallestate.co.uk/>
- 31 <https://www.essexdesignguide.co.uk/suds>
- 32 <https://www.gov.uk/government/publications/drainage-and-wastewater-management-plans-guiding-principles-for-the-water-industry>
- 33 <https://www.gov.uk/government/publications/cam-and-ely-ouse-abstraction-licensing-strategy/cam-and-ely-ouse-abstraction-licensing-strategy>
- 34 <https://www.nfuonline.com/media/03dpvggn/integrated-water-management.pdf>
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- 37 <https://www.anglianwater.co.uk/about-us/our-strategies-and-plans/water-resources-management-plan/water-resource-zone-summaries/>
- 38 <https://www.gov.uk/government/publications/25-year-environment-plan>
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- 40 <https://www.gov.uk/government/publications/environmental-improvement-plan>
- 41 <https://www.gov.uk/guidance/river-basin-management-plans-updated-2022>
- 42 <https://www.gov.uk/guidance/river-basin-management-plans-updated-2022>
- 43 <https://www.gov.uk/guidance/water-management-apply-for-a-water-abstraction-or-impoundment-licence>
- 44 [https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process#east-anglia-\(map-area-10\)](https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process#east-anglia-(map-area-10))
- 45 <https://www.gov.uk/government/publications/cams-essex-abstraction-licensing-strategy>
- 46 <https://www.legislation.gov.uk/uksi/2016/1154/contents/made>
- 47 <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

- 48 <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>
- 49 <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>
- 50 <https://www.gov.uk/government/news/habitats-protected-in-norfolk-through-stricter-abstraction-limits>
- 51 <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>
- 52 <https://wre.org.uk/the-draft-regional-plan/>
- 53 https://www.essex.gov.uk/sites/default/files/migration_data/files/assets.ctfassets.net/knkzaf64jx5x/QfCTFvZFWm6jBFzKIcxU8/3033e555110ddb553603919ae00c638d/ECC-Everyones-Essex-plan-2021-to-2025.pdf
- 54 <https://www.essexrivershub.org.uk/>
- 55 <https://www.essex.gov.uk/sites/default/files/2023-07/Net%20Zero%20-%20Making%20Essex%20Carbon%20Neutral%20%282023%29.pdf>
- 56 https://www.essex.gov.uk/sites/default/files/migration_data/files/assets.ctfassets.net/knkzaf64jx5x/4Ihrw6uXe2g19YxYWkfsk6/eba8f76776738b010f21d3e7f3b9add2/9422_Climate_Action_Plan_Report_v3_-_Digital_Accessible.pdf
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- 61 <https://www.bbc.co.uk/news/uk-england-suffolk-66504376>
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- 63 <https://www.essexdesignguide.co.uk/suds>
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- 65 <https://www.essexdesignguide.co.uk/suds>
- 66 <https://environment.data.gov.uk/catchment-planning>
- 67 <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>
- 68 <https://wre.org.uk/the-draft-regional-plan/>

Legislation	How it impacts abstraction and licences
Environment Act	Provides new powers to regulators to withdraw or amend permanent licences without compensation if the abstraction has an impact on the water environment.
Water Resources Act 1991	Regulates water resources, water quality and pollution and flood risk
Habitats Directive/ Regulations	European law, transposed into UK legislation, gives a high level of protection to certain types of designated nature sites (SPA, SAC, RAMSAR and SSSIs) which overrides other Environment Agency considerations. If your abstraction location would impact these sites a more stringent review will take place which may result in new licences being refused and/or existing licences being ended (as is currently the case in the Broads SAC)
Water Environment (Water Framework Directive) (England and Wales) Regulations	The WFD led to the development of management plans for catchments and aims to improve the quality of water bodies to Good. It also requires there to be no further deterioration in water bodies and as a result licence caps are being applied.
River Basin Management Plans	WFD requires the publication of River Basin Management Plans, updated every six years. These Environment Agency-led plans aim to develop a holistic approach to managing the water environment.
Environmental Permitting Regulations (EPR)	At present most licences issued prior to the 1990s contain no end date and hence were considered permanent. Some of these are now considered to be unsustainable. EPR brings in the ability for the EA to now review all licences every six years to address these concerns.

Glossary

Abstraction - Taking water from rivers, lakes and reservoirs and groundwater.

Abstraction licence - Licence from the Environment Agency to remove more than 20 cubic metres (20,000 litres) of water a day from a watercourse or groundwater borehole in England.

Aquifer - Groundwater source.

Catchment area - A catchment boundary is the natural boundary for a river and includes the full area draining naturally to that catchment.

Catchment partnerships - Local authority officer groups who operate together at a local level. They understand the water challenges and character of their area by involving a range of groups.

Combined sewer overflows (CSOs) - See 'Storm overflows'

Environmental destination - Long-term targets established by the Environment Agency to restore environmental flows in locations where there are the greatest environmental benefits.

Essex Climate Action Commission (ECAC) - An independent advisory body on climate established by Essex County Council.

Eutrophication - Acceleration of the growth of certain plants, like algae, disrupting natural processes and affecting wildlife. Caused by increased levels of pollution (especially containing nitrogen and phosphorus nutrients)

Geomorphology - The study of the physical features of the surface of the earth and their relation to its geological structures.

Infiltration - The part of the water cycle which occurs when water moves into the ground from the surface and begins to soak into the soil and rock layers underneath.

Intermittent sewage discharge - See 'Storm overflows'

Lead Local Flood Authority (LLFA) - Body established under the Flood and Water Management Act in 2010 and required to develop, maintain, apply and monitor a strategy for local flood risk management in its area.

Local Nature Recovery Strategies (LNRS) - A new, statutory, England-wide system of spatial strategies that must establish priorities for various habitats, and map proposals for actions to drive their recovery and provide wider environmental benefits.

Low regret actions - Actions that are relatively low cost and provide relatively large benefits under predicted future climates.

Management catchments - These are built up from river water bodies into similar sized units across England that suit management and planning from an Environment Agency perspective.

National Framework for Water Resources⁶⁷ - A national response to water resource planning produced by the Environment Agency

Operational catchments - Smaller than management catchments, they are used in the economic analysis process to identify packages of measures that can be applied to improve the ecological status of the water bodies within it.

Sustainable Drainage Systems (SuDS) - A means of holding storm water in the area where it has fallen, and by doing this, protect areas downstream from being flooded.

SSSI - Site of Special Scientific Interest

Storm overflows - Storm overflows discharge excess sewage and rainwater to water bodies, to reduce the risk of properties flooding and to prevent sewage backing up during heavy rainfall.

Water body - The whole (or part) of a stream, river or canal, lake or reservoir, estuary or stretch of coastal water. A groundwater water body is the defined area of an aquifer.

Water Resources East (WRE) - An independent organisation established to deliver a **Regional Water Resources Plan for Eastern England**⁶⁸ that looks ahead to 2050 and beyond.

Water Resource Management Plan (WRMP) - Forward plan of investment for a water company over the next 25 years to make sure there will be sufficient water supplies to meet the projected demand.

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All public water supply figures are based on 2023 revised draft Water Resource Management Plan (rdWRMP) data published by water companies

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