
CLIMATE ADAPTATION REPORT

A SUMMARY

NORTHUMBRIAN
WATER *living water*

ESSEX & SUFFOLK
WATER *living water*

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FOREWORD

Climate change is one of the biggest challenges we face today.

The future is uncertain because we don't know exactly how climate change will affect things like the weather, sea levels, or how much rain we'll get. Some changes might happen quickly, while others could take longer. Since we provide your important water and wastewater services, we're directly affected by these changes.

Even though we can't predict everything, it's important to be ready.

In this report, we'll tell you how we're preparing for climate change. By preparing now, we can protect our local communities and the environment from the challenges climate change might bring.

There is a full version of this report written for our regulator, Defra, [here](#).

We're not just planning for the future - we're also tackling the immediate risks from extreme weather. For example, the 2023/24 storm season had a record number of storms, putting a lot of pressure on our water and wastewater pipe networks and treatment works.

In our Business Plan for 2025-30, we plan to invest in making our systems stronger so they can handle more frequent and severe weather, making sure we can keep providing reliable services.

We're also working to upgrade our systems to reduce the amount of carbon dioxide (CO₂) and other greenhouse gases released into the atmosphere. Instead of relying only on traditional engineering, we're using more natural solutions that fit with the UK's climate goals. This approach not only helps reduce carbon emissions but also boosts wildlife and benefits local communities, improving the environment while still providing the services people rely on.

Times are tough for many of our customers, with rising costs making it harder for some households to pay their bills. Because of this, we're faced with difficult choices about delaying some investments in the short term to help keep bills more affordable between 2025 and 2030.

We're working hard to balance keeping bills manageable now with making sure our services are reliable in the future. We're committed to keeping bills as affordable as possible and helping those in financial need, while still being best prepared for the future.



Heidi Mottram CBE
CEO



Heidi Mottram, CEO

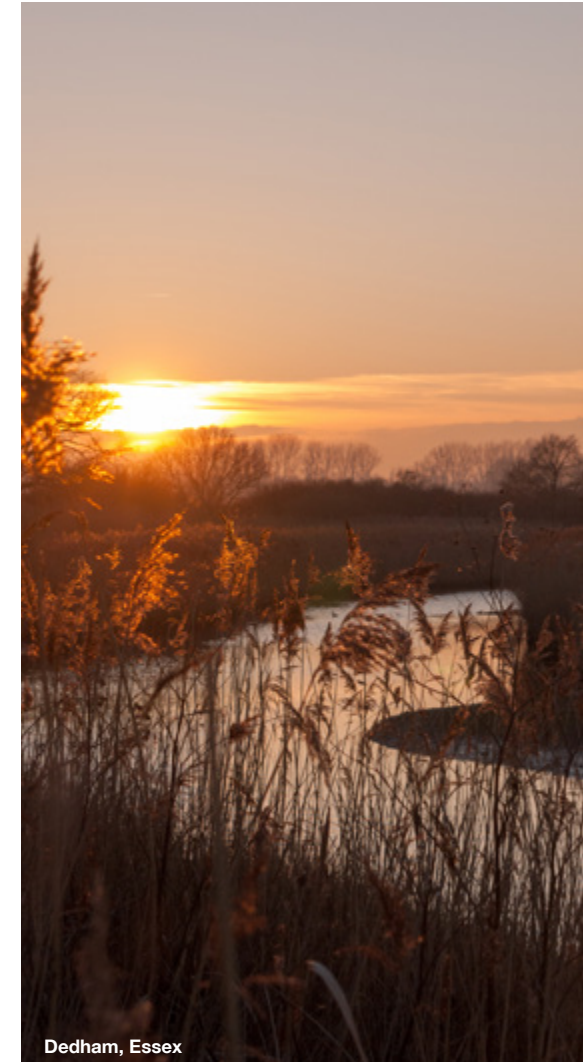
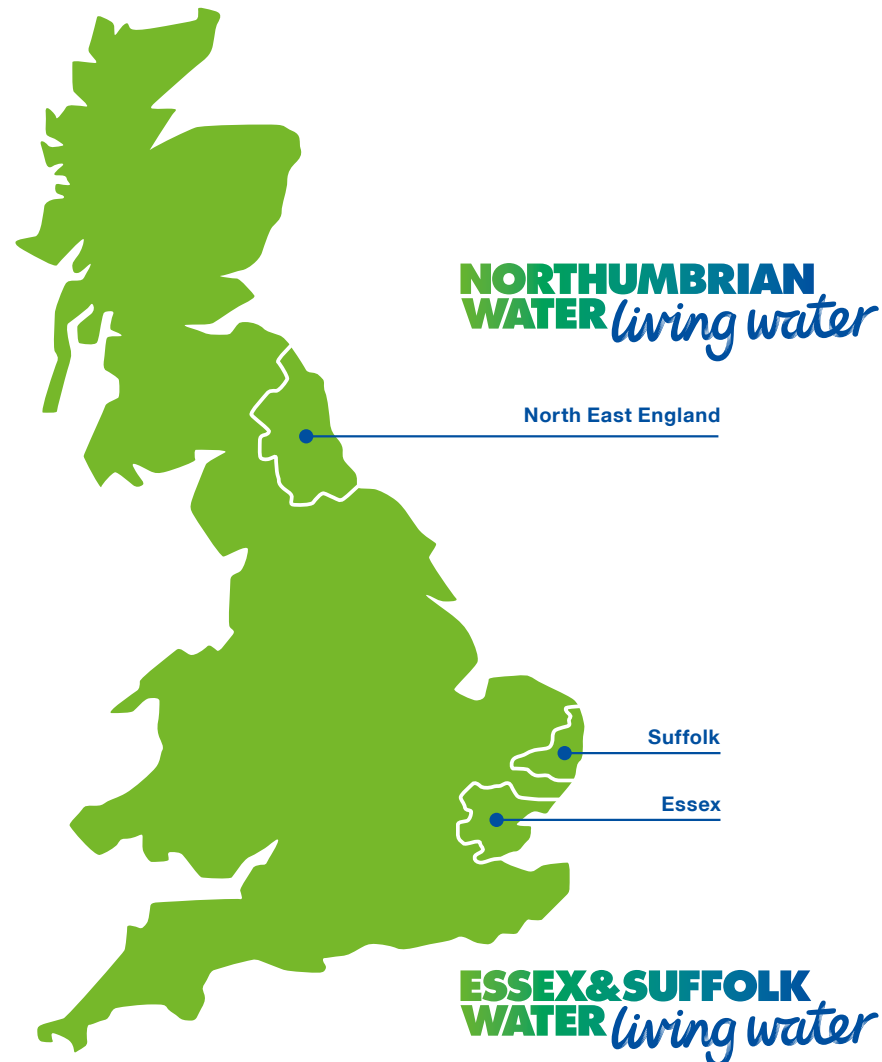


Dunstanburgh, Northumberland

2. WHO WE ARE

As Northumbrian Water we provide both water and wastewater services (except for Hartlepool where we provide wastewater services only) to 2.7 million customers in the North East of England.

As Essex & Suffolk Water we provide water services only to 2 million customers in Essex and 0.4 million customers in Suffolk.



Dedham, Essex

3. PLANNING FOR LONG-TERM CHALLENGES

Our main goal is to provide reliable water and wastewater services in a way that cares for the environment, now and for generations to come. This purpose is at the heart of everything we do, helping us make decisions that meet your needs and tackle the challenges of climate change.

We've made climate adaptation a key part of how we run our business. You can see this in:



Our **Long-term Strategy**, which takes a 25 year view and sets out a series of long-term targets that we want to deliver by 2050.



Our **Environment Strategy**, which sets the direction for our environmental ambition.



Our **Water Resource Management Plans**, twenty five year plans that set out how we will provide a reliable and sustainable supply of water to our customers.



Our **Drainage and Wastewater Management Plan**, our twenty five year plan to make sure the North East region's drainage and wastewater system remains reliable and resilient for the years ahead.



Our **Business Plan for 2025-30** that sets out all the things we want to deliver for you, our customers, such as reductions in flooding, or improvements in water quality.

4. WHAT ARE THE CLIMATE CHALLENGES?

In the North East (Northumbrian Water).

We serve our customers in Tyneside, Wearside, Teesside, and rural regions like Northumberland and County Durham. This region has diverse landscapes, from the Northumberland coast to the high Pennines, and varied rainfall patterns - wet in the Pennines and much drier on the east coast. The climate is mild, with cool winters and mild summers, and most rain falls in autumn.



The North East faces more frequent and severe windstorms.

The North East faces more frequent and severe windstorms, like Storm Desmond in 2015 and Storm Arwen in 2021, which caused major disruption. During the 2023/34 storm season, the UK had its most number of named storms since the system was launched in 2015. Extreme weather is expected to worsen with climate change, so we need to invest quickly to prepare for more wind and winter rain, especially in rural areas that are less able to handle challenges like storms, power outages, or sudden changes in demand.

Temperature increases will affect the North East less than southern England, but we still need to adapt. For example, we're already protecting critical water treatment chemicals that can break down in extreme heat as record heatwaves become more common. However, we're still learning how rising temperatures will impact the local environment.



Heavy rainfall and flooding



Damage from Storm Arwen

In the South East and East of England (Essex & Suffolk Water)

Our Essex area has both rural and urban regions, with major population centres in Chelmsford, Southend, and parts of London. Our Suffolk supply area is mainly rural, with towns like Great Yarmouth and Lowestoft.

The East of England is mostly flat and low-lying, with lots of farmland, wetlands, and coastlines. This makes water runoff faster and can impact water quality. In Suffolk, some of the water sources are below sea level, which puts them at risk from tidal surges and flooding.

This region is one of the driest in the UK, with less than 700mm of rain a year, which makes it more prone to droughts and water shortages. The population is also expected to grow, with more people and businesses needing water, putting pressure on our resources.

In the past few years, investigations have shown that we need to take less water from rivers to protect the environment, which could lead to even more water shortages in the future.

Higher temperatures are also causing problems. Our water treatment systems, built many years ago, can't work as efficiently when treating warmer water. Rising temperatures and more nitrates in the water also lead to issues like algae growth, making it harder to manage water quality. These challenges will only get worse.



This region is one of the driest in the UK, with less than 700mm of rain a year.



River Can, Chelmsford City Centre



Hanningfield Reservoir, Essex

5. WHAT ARE WE DOING ABOUT IT?

There are five main ways we are taking action to prepare for and adjust to the impacts of climate change.

1) Sustainable water supplies.

Our Water Resources Management Plans (WRMPs) ensure we can continue to supply water, even during extreme events like a 1-in-500-year drought. Our latest WRMP (published in 2024) focuses on increasing resilience, reducing water leakage, and improving water efficiency, including a smart metering program in Essex and Suffolk. We're also developing new water sources and making better use of existing ones, which will help reduce the need to take water from certain areas, benefiting the environment.

In Essex and Suffolk, we have the lowest leakage rate in the UK, and we're working to reduce it even more by 2030. Our smart metering program has helped identify thousands of leaks, and we're pushing for greater water efficiency across homes and businesses. We've also worked with the government to improve water efficiency standards for new appliances, and by 2025, we'll raise awareness of climate change's impact on water resources.

We're also focused on improving water quality, especially where climate change is causing problems like more algae growth or higher levels of organic material in the water. We'll investigate these issues and work with local partners, such as farmers, to find solutions and improve the quality of rivers and groundwater in the face of climate change.



Smart metering literature

Case Study

New pipelines to future-proof water supplies

More than 200,000 customers across the south of County Durham and into the Tees Valley are benefiting from a £155m investment to upgrade and futureproof our water supply network across the area. The programme – 'Project Pipeline: County Durham and Tees Valley' – will involve installing entirely new pipelines and replacing sections of the network that have served the area for over 100 years. This multi-year project will improve resilience and allow us to continue to deliver for the people of the area for generations to come.

In Essex, we are also currently constructing a pipeline to transfer untreated water from Layer-de-la-Haye Water Treatment Works to the existing reservoir at Langford Water Treatment Works, making sure we can still supply water even when there's not enough rainfall or when temperatures are very high, so people don't run out of water during dry spells or heatwaves.

£155 million investment to upgrade and futureproof our water supply network across the North East.

This £20m investment will install 19km of new pipeline, carrying up to 50 million litres of water a day, linking and balancing the use of water resources in the northern part of Essex with those in the south of the county. The pipeline will add resilience to supplies for more than 370,000 customers.



Our Project Pipeline

Case Study

Smart Sewer Networks

2) Restoring and enhancing the local environment.

We are committed to making rivers and beaches the best in the country. We've reduced phosphorus in wastewater more than any other company and exceeded our targets for improving the water environment.

We achieved a good 3-star rating in the Environment Agency's 2023 performance assessment, after achieving 4 stars in previous years. This was due to missing targets for treatment works compliance and pollution incidents caused by unreliable power supplies. We've already planned improvements, including adding more backup power.

We're expanding the use of nature-based solutions and smart wastewater networks (making sure the sewage system can manage higher volumes without needing to build entirely new infrastructure).

Our Business Plan for 2025-30 includes a record £1.7 billion investment in the environment, with £1 billion to tackle storm overflows. We will also reduce nutrient pollution, improve biodiversity, and monitor rivers for future improvements. We're focusing on sustainable, nature-based solutions and working with partners to restore and protect the environment.

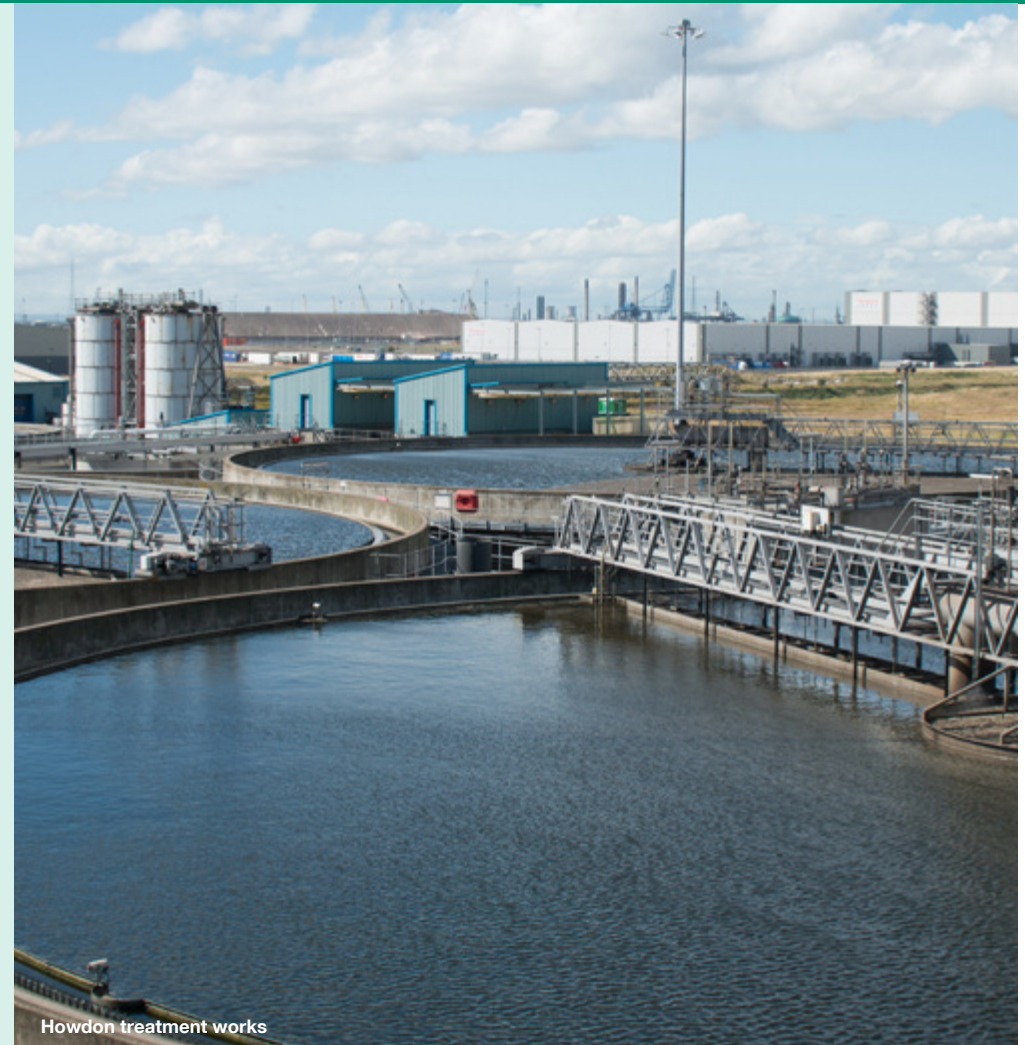
In our Northumbrian Water operating area, we have begun a ground-breaking £20m project which is set to significantly reduce spills from storm overflows across Tyneside.

The project, which is set to be the first of its kind in the UK, will see a combination of new technology, sensors and AI analytics used to lower the risk of storm overflows happening. Storm overflows act as a relief valve on the wastewater network and operate during times of heavy rainfall to prevent sewer flooding from taking place in customers' homes. They are used with Environment Agency consent to protect homes from the devastation that can be caused by internal flooding.

The 'smart sewer' project is revolutionary. Using a mix of AI technology and hundreds of smart sensors placed along sewer pipes, it will predict when and where rain is about to hit in the region and when and where the sewer networks are more likely to reach capacity and spill. It will then automatically balance the flows of the network, diverting this wastewater to the emptier parts of the network, managing capacity and reducing the likelihood of spills taking place.

£20 million

World first investments in innovative smart sewer



Howdon treatment works

3) Making sure we are strong enough to handle climate change.

We've taken steps to protect our systems from flooding and storms, like using mobile generators for power. We've worked with Water UK and the National Infrastructure Commission to set climate resilience standards for the water industry and have pushed regulators to address barriers to climate adaptation.

In the North East, storms pose a risk of power failures that can affect water treatment and pumping stations. In its final determination for our price limits, Ofwat has not allowed all of the funding we requested to improve our power resilience, and so we will have to implement a reduced programme of investment. While we've proposed backup power solutions, a better approach would involve improving the overall resilience of the power system. This requires collaboration between water and energy companies, regulators, and the Government to share costs and responsibilities fairly.

We're concerned that past limits on how much we could spend on maintaining our equipment and systems (set by regulators) haven't been enough to keep them in good shape. While this isn't directly caused by climate change, putting off maintenance makes it more likely that our systems will fail during extreme weather, which could cause more problems across our network.

Throughout 2025-30 we will be investing c£4.5bn in the North East and £1.5bn in Essex and Suffolk, creating 3,000 jobs a year across our business and adding £5.7bn to the North East local economy and c.£1.7bn in Essex and Suffolk through employment and using local suppliers.

We will invest 60p in every £1 in our operating areas to support local jobs and communities. Our focus will be on establishing new training academies and apprenticeship programs to develop the current and future workforce needed to deliver on our ambitious commitments.

4) Delivering net zero.

We had a net zero target to reduce operational emissions by 2027 and have made significant progress, reducing these emissions by 72% since 2019/20. As science has advanced and our emissions tracking now includes all sources (such as wastewater, supply chain emissions, capital construction, and chemical use), we've set a broader target: achieving net zero for all emissions by 2050. Importantly, we remain fully committed to meeting our original 2027 target for operational emissions. This broader goal reflects the need to address a much wider range of emissions while maintaining our progress on operational reductions.

We are following recommendations to prepare for the effects of a two degrees rise in global temperatures and even the possibility of a four degrees rise.

At the same time, we are working to set official long-term climate goals that are approved by the Science Based Targets initiative (SBTi). These goals, guided by ISO50001 standards and a detailed Energy Savings Opportunity Scheme plan by 2025, will make sure our plans to cut greenhouse gas emissions match the global commitment made in the Paris Agreement to limit warming to one and a half degrees above pre-industrial levels.

Achieving net zero demands a transformation in the way we and our supply chain operate, encompassing everything from small adjustments, such as optimising energy usage, to groundbreaking innovations in low-carbon materials and processes.

Energy is key to this transition. We're moving to 100% low-carbon electricity and working on local energy projects that benefit the environment and communities. For example, by 2030, we'll electrify nearly 30% of our light commercial vehicles. Collaboration across sectors and with stakeholders will help drive collective progress toward net zero by 2050.

The **Paris Agreement** is a global climate treaty adopted in 2015 by nearly every country in the world. Its main goal is to limit global warming to **well below 2°C** above pre-industrial levels, with efforts to keep it to **1.5°C**, to reduce the harmful effects of climate change.

Case Study

The green machine for sustainable water treatment

We are testing an innovative project at our Bran Sands facility to use microalgae to treat wastewater more efficiently and reduce emissions.

Currently, treating waste at the site is expensive and releases a lot of CO₂. Traditional methods also produce harmful greenhouse gases, which conflict with our net zero goals. However, we discovered a unique type of algae that can help. By building a small-scale algae treatment system, we've found it can produce more biogas, lower our carbon emissions significantly and cut treatment costs by £170,000 a year.

We've tested this idea on a smaller scale and are now working to expand it to fully treat the 5,500 tonnes of waste produced at the site each year.



Algal treatment

5) Innovation.

To adapt to climate change and continue providing reliable services, we are focusing on research and innovation. Being innovative is one of our values, and we demonstrate this through events like our Innovation Festival, which has been running since 2017. The festival brings together a diverse group of people and has resulted in over 250 ideas being put into action, with the value from the projects contributing £100M to the local economy annually. The ideas from the festival have led to major projects, including one funded by Ofwat to use artificial intelligence to reduce river pollution.

Our Business Plan for 2025-30 includes many of our innovation pipeline projects, such as new nature-based solutions to reduce nutrients in rivers, such as restoring sea grass and oysters, rather than relying on traditional treatments.

We are working on improving our data about the locations and features of land and water (called geospatial data) and creating tools that show information in real-time. These tools will help us plan and manage projects that protect and improve rivers in the North East and work more effectively with other groups or partners involved in these projects.

£100 million
added to the local
economy annually



NWG Innovation Festival



6. HOW CUSTOMERS HELPED SHAPE OUR PLAN

We care about the essential needs of our communities, including decisions about climate change adaptation.

Our customers recognise the importance of preparing for severe weather and changing demand, with many seeing climate change as a major concern for their communities. While most customers agree that climate change action is needed immediately, they also have other priorities, such as clean drinking water, reducing bills, and improving rivers and beaches. This means balancing investments in climate adaptation with the need to keep costs affordable.

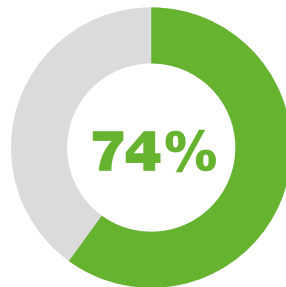
During our customer engagement program from 2021 to 2023, we received diverse perspectives on climate change adaptation. Younger customers and those in Essex & Suffolk were more supportive of investing in adaptation, while others questioned its urgency. Exploring these issues with customers helps to set the right balance of investment and affordability, so that we make sure this is balanced in a way that is acceptable to customers.

This means discussing difficult topics, and we did this through our new People Panels approach, working with groups of customers over time to build understanding and develop a more detailed and informed approach.

We then worked with the independent Water Forum, who discussed and challenged our overall approach to resilience including the details of climate change adaptation, to make sure that we had incorporated customer views, legal obligations, and the wider evidence.

We used customer feedback to guide our Business Plan for 2025-30, focusing on areas where climate change is likely to impact services in the near term, such as water supply interruptions and pollution from sewage systems. For long-term risks, like algae growth, customers were less certain, so we did not prioritise them in our plan.

We aim to balance investment with affordability, making sure we remain aligned with customer views, legal obligations, and evidence-based solutions. In our plan, we will focus on understanding the uncertain risks to water and wastewater systems and share these findings with customers as we develop solutions.



of our customers thought our
Business Plan was acceptable



Northumbrian Water customers

7. HOW CAN YOU HELP AND NEXT STEPS

Lots of small everyday actions can make a difference.

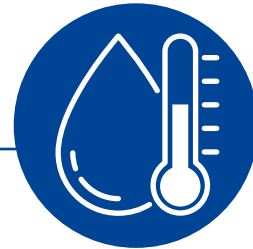


Did you know leaving the tap on when you brush your teeth can waste **6 litres a minute?**

You can play your part by using water wisely and making some simple savings.

Northumbrian Water customers can find more [water saving tips here](#).

Essex & Suffolk Water customers can find more [water saving tips here](#).



Boiling one cup of water instead of a full kettle could save you around **£72 a year.**

17% of energy use in the home is used to heat water. Saving water can also help lower your energy bills too, you could save as much as £280 a year on your energy bill.

Northumbrian Water customers can try our [water and energy calculator here](#), and Essex & Suffolk Water customers [here](#), to see how much you use, you might be surprised.

IS YOUR LOO COSTING YOU?

A leaking toilet can increase your water bill by up to £200 but they are not always easy to see.

HIDDEN TRICKLING FLOWING

Visit: nwl.co.uk/leakyloo
or eswater.co.uk/leakyloo

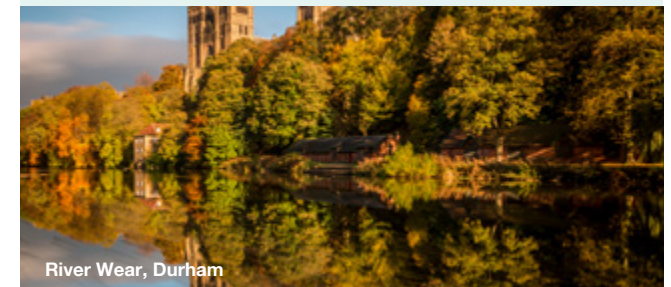
NORTHUMBRIAN WATER *living water* | ESSEX & SUFFOLK WATER *living water* | WATER'S WORTH SAVING



Next steps

If you want to keep up to speed with our progress on climate adaption, we report progress against our targets in our [Annual Performance Report](#).

Please contact us at haveyoursay@nwl.co.uk if you have any questions.



www.nwl.co.uk | www.eswater.co.uk | www.nwg.co.uk

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Cover image: Craster, Northumberland
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