

---

# A vision for our coasts and rivers

An update for 2023

---

**NORTHUMBRIAN  
WATER** *living water*

**ESSEX & SUFFOLK  
WATER** *living water*

# Foreword

**Caring for the environment is right at the heart of our purpose at Northumbrian Water Group.**

Our business could not be successful without a sustainable, high quality water environment.

We take water from the environment, and after treating it to a high standard we deliver it to our customers for them to use. We are then responsible for taking their wastewater away, and returning it to the environment after a careful treatment process.

It is therefore essential that we protect this precious resource and pass on a thriving environment to future generations.

We are also a business dedicated to our communities. We serve specific geographic areas in the north east and south east of England.

We are rooted in these communities, where our employees and their families live.

In our regions, we enjoy some of the most beautiful rivers and coasts in the country, and looking after them is a huge part of what motivates our people to do the essential jobs they do each day.

We are proud of how we have delivered on this. In the last two years, we have achieved the highest possible Four Star rating from the Environment Agency in its Environmental Performance Assessment.

In the North East, 32 out of the 34 bathing waters are rated Good or Excellent. We have overseen dramatic reductions in pollution in the past decade.

We were also the first and remain the only water company to use 100% of our sewage sludge to produce clean energy through advanced anaerobic digestion at our green power stations at Howdon on Tyneside and Bran Sands on Teesside. That is a significant factor in putting us on track to achieve our ambitious goal of making our operations carbon net zero by 2027.

Our Emission Possible report, published in autumn 2022 demonstrates how much progress we have made towards this objective.

 [Click here to view our Emission Possible report](#)

This, of course, is also vital to our water environment.

Climate change increases the risk of drought, affecting the health of our waterbodies, and intense storms, increasing the risk of unplanned discharges to the environment.

For that reason, we are not only playing our part as an individual business, but in the last year I have helped to establish and agreed to co-chair a new partnership, Net Zero North East England, bringing together a series of organisations in our northern operating area to make a bigger collective difference.

But we must continue to strive for improvement. Last year we launched nine pledges setting out how we would go further in taking care of our coasts and rivers.

This report sets out the steps we have taken since then, often working in partnership with other organisations who are similarly committed to our water environment.

During this year we will publish a series of important strategies, including our long-term Water Resources Management Plans and Drainage and Wastewater Management Plan. We are committed to understanding and meeting our customers' ambition for these – while recognising we must continue to deliver value for money to them as bill payers.

I am pleased to present this report, which details our progress as we seek to care for our water environment, now and for generations to come.

We cannot deliver on this alone and I would invite anyone with ideas on how we could collaborate to meet these challenges to get in touch – we always welcome the opportunity for a conversation.



*Heidi*

**Heidi Mottram**

CEO, Northumbrian Water Group

# Executive Summary

**One year ago, we made a series of ambitious pledges to care for our water environment. I am delighted to introduce this report, which sets out the progress we have made, and the plans we have put in place to make sure we deliver against them in full in the years ahead.**

We set these out in recognition of a cultural shift among many stakeholders and customers, and a renewed interest in our local environment.

We welcome this. The water environment is not only critical to our business, but a major factor in making our communities great places in which to live and work.

We often ask our customers to play their part in taking care of it – whether by using water wisely to protect these resources, or committing to Bin The Wipe to avoid blockages that can lead to pollution. However, we understand that in turn our customers expect us to continually improve our own processes and services.

We have done that over many years – bringing pollutions down by two-thirds over a decade; lifting the number of beaches rated Good or Excellent from 8 in 2000 to 32 today; and reducing our greenhouse gas emissions by 90% since 2008. This has been supported by millions of pounds of investment, which we continue to make each year.

These pledges are about making sure we continue on the positive trajectory we have established in our regions. While we are not the only organisation that can have an impact on the water environment, we take our responsibility to show leadership very seriously. And at times, even though our operations may not be not responsible for impacts on the environment, we often have the assets and expertise that can support partner organisations in the improvements they need to make.

In the past year we have made great progress, and I am pleased to report we are on track to meet all these commitments.

They include reducing spills from our storm overflows to an average of 20 per year by 2025. The number came down from 25.3 to 20.3 in 2022. However, we are not complacent – while this was in part down to our actions and investment, it was also a year in which we saw fewer intense storms, so we recognise there is more to do to make sure we can consistently achieve this level, or better.

We expect to deliver on our pledge to put real time monitoring in place for all our storm overflows during 2023. We have also developed a clear plan to implement water quality monitoring at our highest priority sites.

Important work is taking place at the two bathing waters that are not rated Good or Excellent, and we are playing a full part in this even though their lower status does not appear to be due to our assets. We have also taken steps to protect the standards achieved elsewhere in our region.

Many of our pledges cannot be achieved without the support of partners – whether those are statutory bodies supporting bathing water improvements, charities and environmental organisations delivering bluespaces projects, or community groups and individuals volunteering through our Water Rangers scheme.

One of the most exciting partnerships we have developed is with The Rivers Trust, which endorsed these pledges when we first made them in 2022.

Over the past year they have worked with us to establish the North East Catchments Hub and through this new approach, develop a series of catchment and nature-based solutions we hope to take forward from 2025. This would see us deliver water quality improvements for North East rivers, while working more closely with communities, catalysing more investment, and providing a range of other benefits including flood resilience, biodiversity net gain and carbon sequestration.

There is much work still to do. While we are making good progress on our pledges, this report also sets out the activity we need to carry out in this year and beyond to hit the targets we have set.

We are also looking to the long term. We are grateful to the customers and organisations who have taken part in important consultations during the last 12 months for our Water Resources Management Plans and Drainage and Wastewater Management Plan.

These will contribute to our next business plan for 2025-30, which will be submitted in October and will set out further details of how we take the challenges in this report forward.

This report marks the latest steps on our journey, and I hope you find it both interesting and reassuring as we seek to deliver on our customers', stakeholders' and regulators' expectations.



*Richard*

**Richard Warneford**

Wastewater Director, Northumbrian Water Group

# Key data

Storm overflows		2021	2022	2025 target
Permitted Storm Overflows	Overall number of SOs operating under permit in our network	1,567	1,564	
Storm overflows with EDM	SOs with event duration monitoring fitted	1,542 (98.4%)	1,542 (98.6%)	100%
Average number of spills	Number of times each SO spilled, on average	25.3	20.3	20
Average duration per spill event	Length of time each SO spill lasted for, on average	6.0 hours	3.6 hours	
Total number of spill events	Overall number of times one of our SOs has spilled	36,483	29,697	
Average percentage of time operating (spilling)	How much time a SO was spilling for on average	1.7%	0.8%	

[Click here to see how we are reducing spills from Storm Overflows](#)

[Click here to see how we will install 100% monitoring in 2023](#)

Environmental Performance Assessment		2020	2021	2025 target
EPA	An overall assessment of environmental performance by the Environment Agency, graded from one to four stars	Four star	Four star	Four star

[Click here to find out more about our environmental performance](#)

Pollution		2020	2021	2022 (est)	2025 target
Serious pollutions	Pollutions classed as Category 1 (major, serious, persistent and/or extensive impact) or Category 2 (significant impact) by the Environment Agency	1	1	0	0
Less serious pollutions	Pollutions classed as Category 3 (minor or minimal impact) by the Environment Agency	42	68	60	58
Pollution incidents	Incidents per 10,000km of sewer	14	23	20	20

[Click here to see how we have substantially reduced pollutions in the last 10 years](#)

Misconnections		2021	2022	2025 target
Polluted surface water outfall (PWSO) initial investigations completed	Investigations of polluted surface water outfalls where there is a suspected misconnection	66	83	
Property surveys completed	Number of individual properties surveyed as part of investigations into possible misconnections	1646	1785	
Properties with misconnections identified	Properties where a misconnection is found where we work with the property owner to find a resolution	173	199	

[Click here to see how we have tackled misconnections](#)

Water Industry National Environment Plan (WINEP)		2021/22	2022/23	2025 target
WINEP deliverables completed (cumulative)	Number of environmental improvement schemes agreed under the Water Industry National Environment Plan for 2020-25 that have been completed	328	439	657

# Background

**Rivers are essential to the water cycle and allow us to deliver water and wastewater services for our customers. We take water from the natural environment, treat it to the highest quality and deliver it to customers.**

Abstraction of water from rivers and reservoirs has an impact on flows, so we manage this carefully. We invest heavily in efficient treatment systems and our distribution network to avoid wasting the water we abstract. We also help households and businesses use water ever more efficiently.

High quality treated wastewater from our customers and businesses is then returned to rivers and the sea where it joins agricultural runoff and industrial discharges, as well as surface water from rainfall.

When we consider the impact of various sources on our rivers, data from the Environment Agency shows that agriculture (36%) is the biggest contributor to rivers not being in a good ecological state, with water companies the second biggest contributor at just under a quarter (24%).

Unlike our treated water network, our wastewater system is open to sources beyond our control, so we manage a high level of uncertainty on what flows will be coming in at any time.

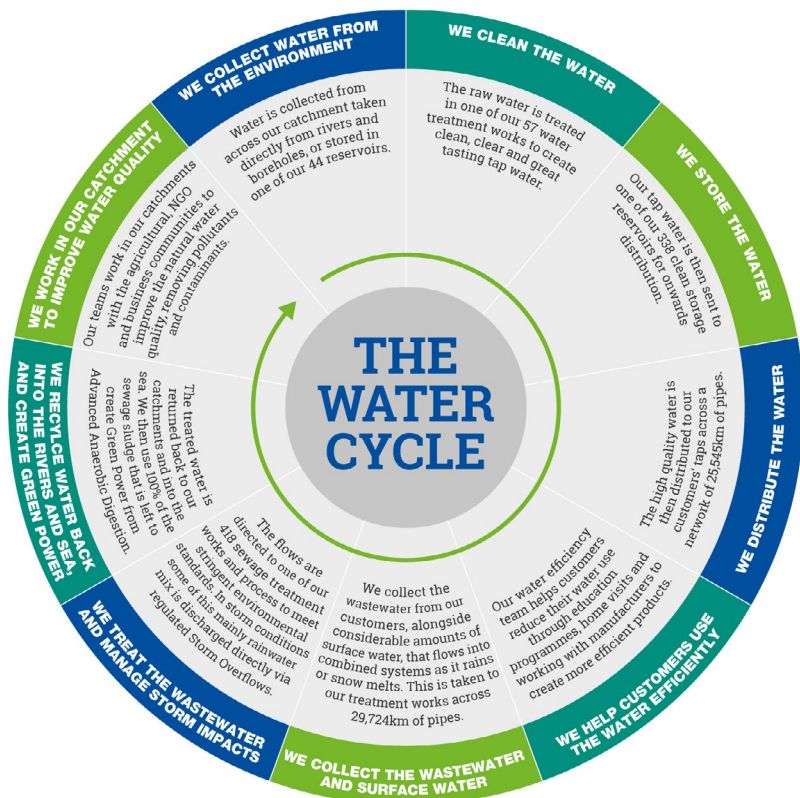
Sometimes, harmful items are put into the system by customers or businesses, like wet wipes or oils, which cause blockages.

For these reasons, the system requires relief valves. These come in different forms, like storm tanks (giant concrete structures that hold excess flows beyond system capacity) and storm overflows, which in certain permitted circumstances, discharge into watercourses directly. This will happen when flows are very high, so this will normally be mostly rainwater or snowmelt that has come into the system, but will also include an element of wastewater.

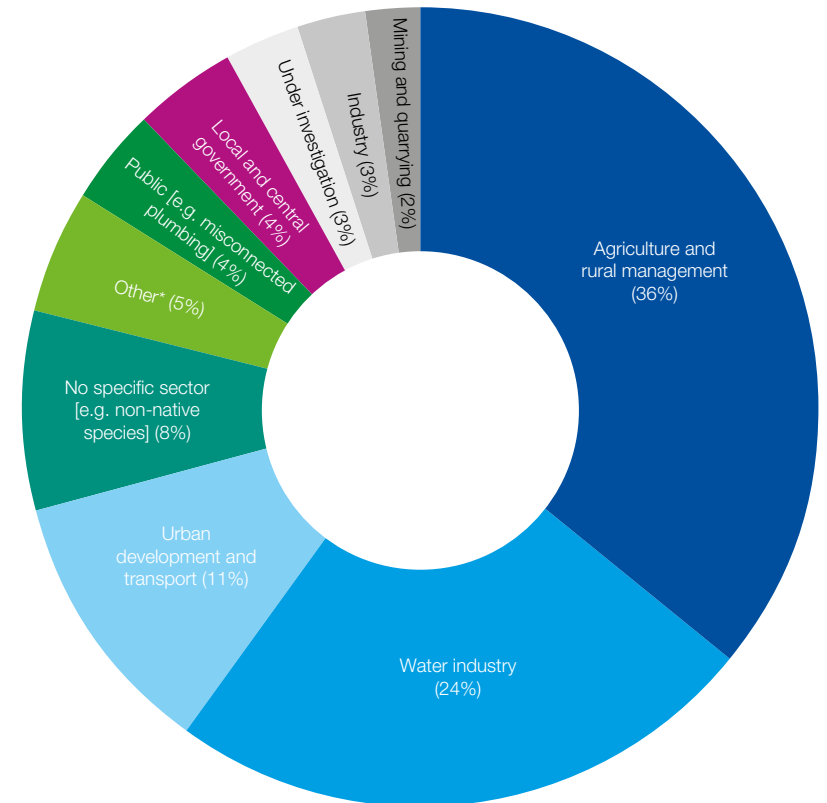
We monitor these discharges to make sure that they only happen when necessary and in line with permits issued by the Environment Agency. If they show any indications of working outside of this, action is taken promptly to discover and correct any issues. Any issues outside of our permit are promptly reported to the Environment Agency.



## The water cycle



## Rivers in England: Reasons for Not Achieving Good Ecological Status by Sector and Activity<sup>1</sup>



<sup>1</sup>As we operate in two separate areas of England, we are using the national picture to give a clearer overview.

\*Other includes: Navigation | Recreation | Waste

## Abstraction

We abstract water from rivers across our supply areas to help meet our customers' needs for clean, clear and great tasting tap water.

The amount we take varies on a day-to-day basis, dependent on both the demand for water and the amount of available water in rivers. This is carefully monitored by our water resource experts and the Environment Agency, who will regulate what we can abstract from any given water course.

Alongside this, our reservoirs are designed to be topped up when there is lots of water, and then drawn down when river flows decrease, or demand is higher. We can even support rivers in times of drought to maintain more steady flows by opening supplies from larger reservoirs such as Kielder.

We will only take from a river when there is enough water for the environment as well as for our needs, and make sure that compensation flows from reservoirs support the health of the river.



## Case study: Water's Worth Saving

The importance of not wasting water is at the heart of our Water's Worth Saving messaging and the campaign runs every year, throughout the year.

However, after several years of below average rainfall we recorded the lowest reservoir levels for 19 years in 2022 and the forecast was one of a long period of dry and warmer than average weather.

We already know that there is a 30% higher demand than average for water over the summer months, and experience had taught us to expect an even greater demand on our water supplies when it is hot.

In Spring 2022, we launched the Water's Worth Saving campaign aimed to:


- Encourage customers to reduce their own water consumption voluntarily
- Help customers to understand water resources
- Reduce leaky loos which are a big source of wasted water
- Reduce water use of our top 5% of high-water using households by offering free water saving audits.

This campaign ran for six months and was very successful in helping us meet our objectives. We found that:

- 61% had changed behaviour to reduce water use and more than 1 in 2 were happy that we were offering tips for water efficiency
- There were 24,000 visits to the saving water pages on our website
- Nine out of ten people took action at home to save water

The prolonged hot and dry weather of 2022 ultimately led to the Environment Agency declaring a drought across several areas of the UK, including ours. However, with the help of this campaign and the dedication of teams throughout the business we were able to avoid a temporary usage ban, unlike many other parts of the country.



 [Click here to find out how you can save water in your home and garden.](#)

## Case study: Invasive Non-Native Species

Water quality in Durham and East Anglia is set to benefit from work aimed at tackling invasive species in local watercourses supported by Northumbrian Water Group.

Our Branch Out fund awarded almost £15,000 to help a project run by Essex and Suffolk Rivers Trust looking at invasive crayfish species.

The project will investigate and understand the status of native and non-native crayfish, across three catchments including the Blackwater, Chelmer and Colne.

We also awarded a total of £32,000 to Wear Rivers Trust to support experts and volunteers working to remove species such as Giant Hogweed, Himalayan Balsam and Japanese Knotweed, all of which are harmful to people and habitats.

A £7,000 grant is supporting the Wear Invasive Non-Native Species (WINNS) project and £25,000 will go towards the 'Old Durham Beck Renewed' project to support the management and treatment of Giant Hogweed.

Both projects will not only improve habitats and safe accessibility along watercourses, including the River Wear, but will also contribute to water quality improvements.



## Water quality

The Environment Agency is responsible for monitoring the water quality of our rivers. They measure it by assessing directly the concentrations of things like nutrients and chemicals.

Water quality can also be assessed indirectly by looking at the condition of aquatic plant and animal communities.

Their health depends greatly on the quality of the water.

Monitoring by the Environment Agency and water companies, alongside data captured by independent environmental organisations such as The Rivers Trust, shows that far too few of our rivers across the country achieve Good Ecological Status - just 14% nationally, compared to 30% in the North East.

Figure 1: Ecological class of surface water bodies, including rivers, streams, lakes and reservoirs, by EA region<sup>1</sup>

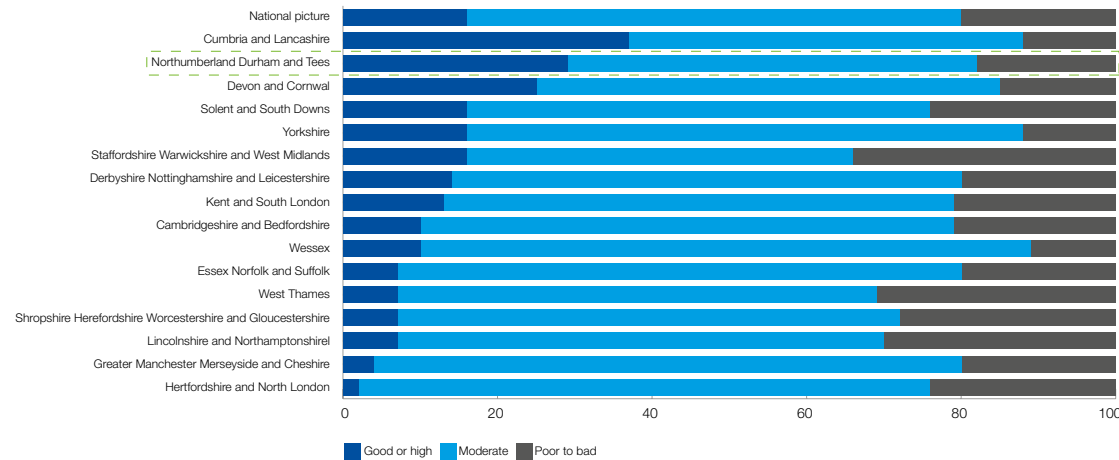
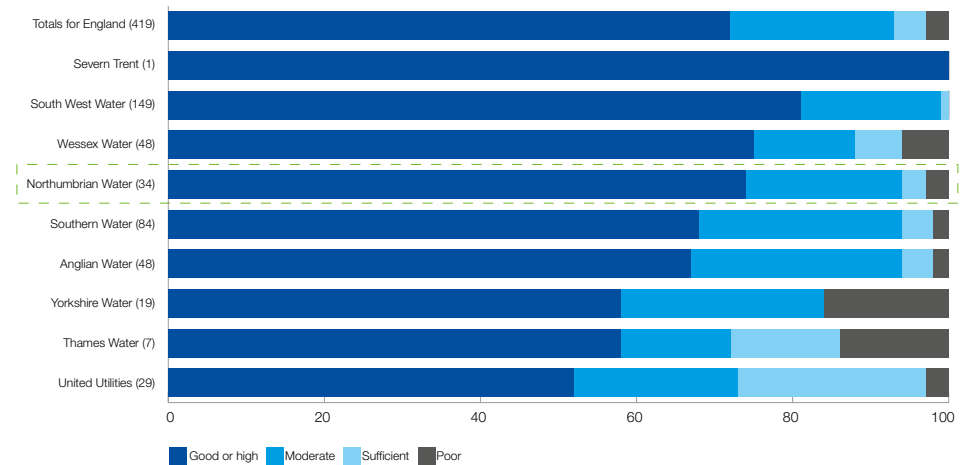


Figure 2: Bathing water classifications by company in England, 2022, number of bathing waters in brackets<sup>2</sup>



<sup>1</sup>Source: <https://environment.data.gov.uk/portalstg/home/item.html?id=bcec2775501841d7a4dacef57e291b61>

<sup>2</sup>Source: <https://environment.data.gov.uk/bwg/profiles/data.html>

The Environment Agency also closely monitors the quality of bathing water. Bathing waters can be classified as 'excellent', 'good', 'sufficient' or 'poor'.

There are 34 bathing waters in the North East, covering nearly 100 miles of coastal waters from Berwick in Northumberland to Saltburn in Teesside.

Of these, 32 are currently rated 'excellent' or 'good', and studies have concluded that the status of the remaining two is not due to Northumbrian Water's assets.

We also help improve our beaches through our Just An Hour employee volunteering scheme. Last year 173 of our employees gave a total of 571 hours to carry out litter picks at 15 beaches.

 [Click here to view our bathing waters.](#)



## Treating wastewater

To treat wastewater at our sites, we combine physical, biological and sometimes chemical processes to deliver the highest quality final effluent, which is then returned to the environment.

While there are slight differences from site to site, the process begins by using screens to remove unflushable items such as wet wipes, sanitary products and cotton buds, which should not be in the system to start with. We then settle out any grit washed off from the highways.

Following this preliminary treatment, the waste moves into primary settlement tanks. Here, the organic solids are removed as they settle to the bottom of the tank, leaving a sludge. Now largely particle free, the process moves on to secondary treatment which uses biological processes to purify the rest of the soluble pollutant content of the sewage.

A further settlement stage usually completes the process generating some more sludge from the bacteria in the process. Depending on the location a tertiary treatment process may be required where chemicals and filtration processes are used to remove further nutrients.

At some of our coastal sites near bathing waters we also treat the cleaned-up effluent with ultraviolet light, prior to release to the environment in order to deal with any pathogens and viruses that remain.

The remaining sludge that is produced during this process is transferred to our green power stations at our sites at Bran Sands on Teesside and Howdon on Tyneside. There the sludge goes through an Advanced Anaerobic Digestion (AAD) process, which converts the sludge into a pasteurised organic matter (known as biosolids) and gas.

The biosolids, because of their fertilizer value, are sold to be spread over agricultural land and the gas is either used to generate electricity on site or injected directly into the national grid for use as green fuel using our Gas to Grid technology.

We were the first, and remain the only, water company to recycle 100% of our sewerage sludge to create green power in this way.

## International comparisons

The Environmental Performance index measures sustainability around the world across a range of categories.

These include wastewater treatment - measuring how much wastewater undergoes at least primary treatment and how much of the population is connected to the sewer system. On this measure, the UK ranks fifth in the Global West.

For sanitation and drinking water - measuring how well countries protect human health from environmental risks through unsafe drinking water and unsafe sanitation - the UK is one of only six countries to score full marks.

Figure 3: International comparisons: Wastewater Treatment EPI score<sup>3</sup>

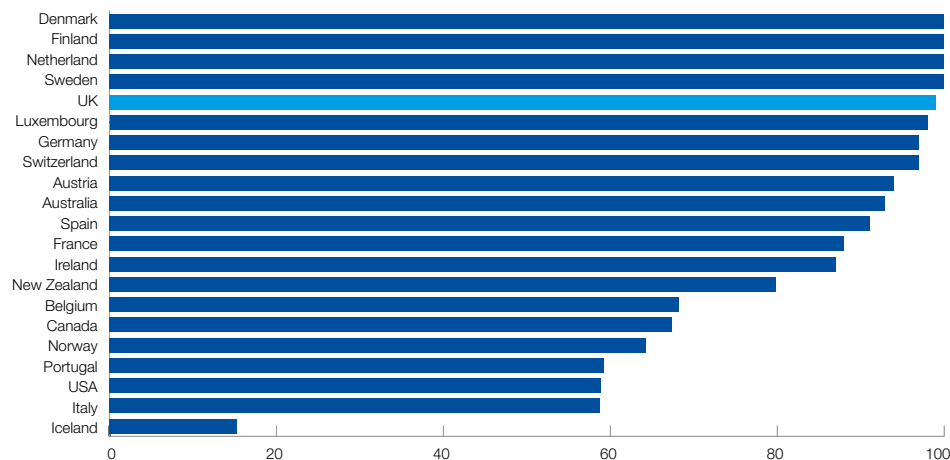
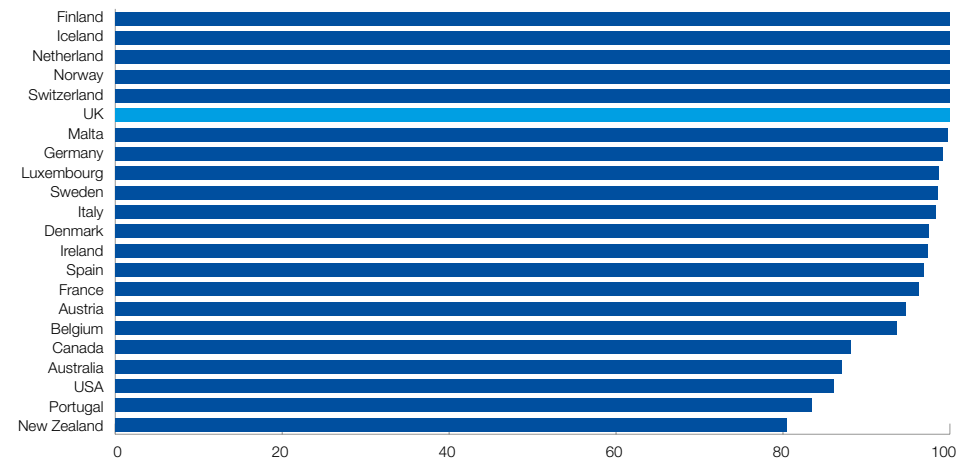


Figure 4: International comparisons: Sanitation and Drinking Water EPI score<sup>4</sup>





## Case study: Organics Ammonia Recovery

In March 2023 we began a new project at our Howdon Sewage Treatment Works to use heat to strip ammonia from wastewater. This will be the first time in the world that a water company has ever recovered ammonia from wastewater using this technique.

The pioneering idea, being delivered in partnership with Organics Group won a £225,000 funding bid from our economic regulator, Ofwat in 2021.

A high-tech facility, purpose-built at the Organics Group factory in Thailand has been brought to Howdon, which will strip and capture the ammonia from wastewater, generating fertiliser products and green fuels that may be used in the emerging hydrogen economy in future.

Removing ammonia will also have a number of benefits for our wastewater treatment process, making it more efficient by reducing overall energy demand and helping to keep customer bills low.

By minimising emissions from the biological treatment process, it will also help towards our ambitious goal of achieving carbon net zero by 2027.

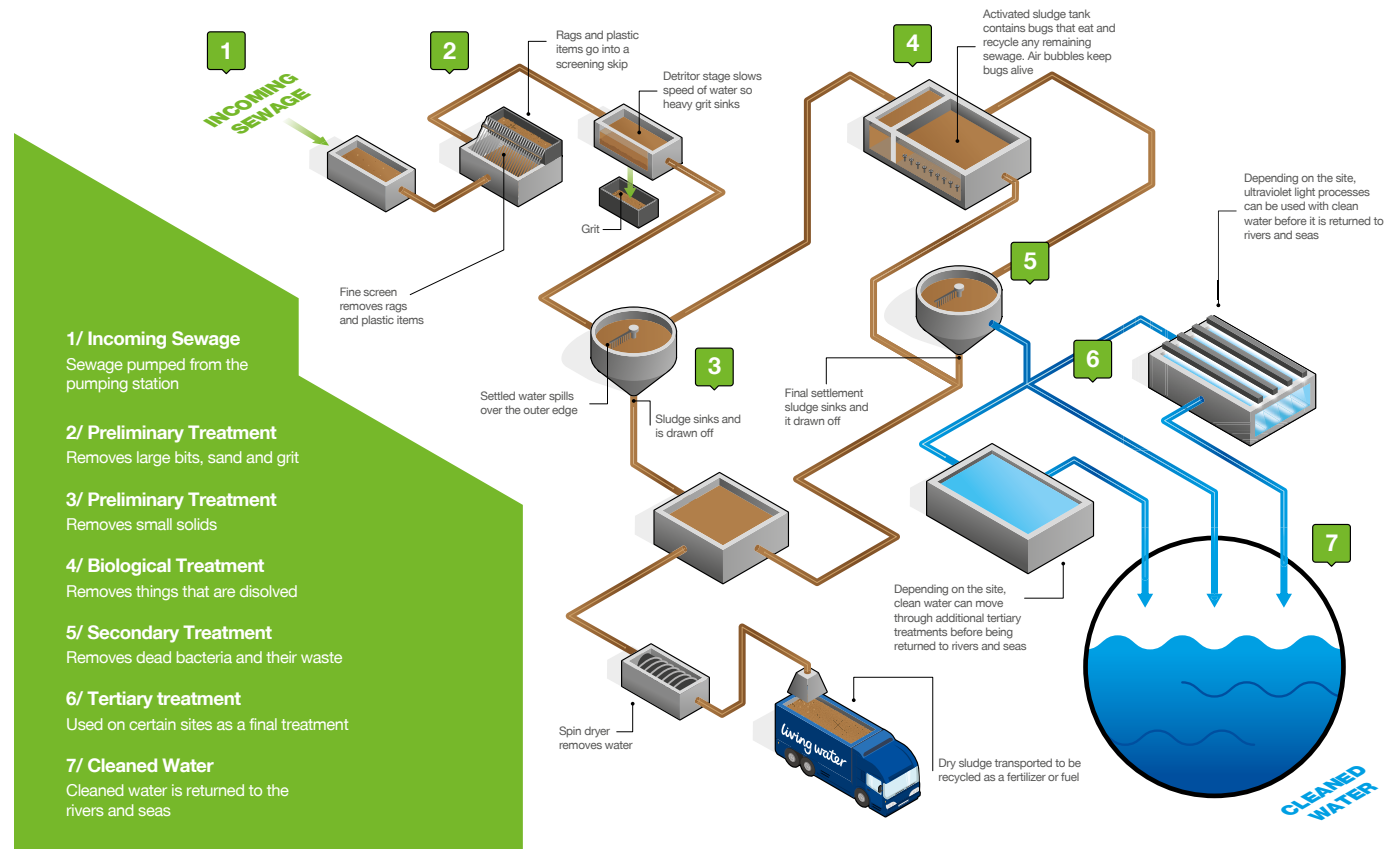
Northumbrian Water is leading the project, in partnership with Organics Group, Anglian Water, Cranfield University, Warwick University, and consulting engineer WSP.



## Our wastewater network

Our network is complex – we manage over 400 wastewater treatment works, 30,000km of sewers, more than 1,000 sewage pumping stations and more than a million manholes across North East England.

When there is a blockage or problem in the system, we will do our best to divert flows to other parts of the network where we can. However, this is not always possible and in these circumstances the risks of sewer flooding to a home or business, or even a pollution incident become higher. This is why we encourage people to Bin the Wipe, and to not let fats, oils and grease (FOG) get into the pipes.



## Case study: Bin The Wipe

Our Bin The Wipe campaign that has been helping protect homes and the environment in the North East has now been expanded across the country.

We launched Bin the Wipe in 2020 as an innovative approach to tackling the problem of wipes in sewers, the leading contributor to blockages in the sewer network. Since the launch, blockages have reduced by 52% in the areas our team has worked, with a 64% reduction in the number of home flooding incidents.

This success caught national attention and, through a co-ordinated approach led by our industry body Water UK, water companies across the country have now adopted the Bin the Wipe message.

Our Bin the Wipe team work across hot spots, areas where analysis of blockages shows a high volume of wipes in the sewers.

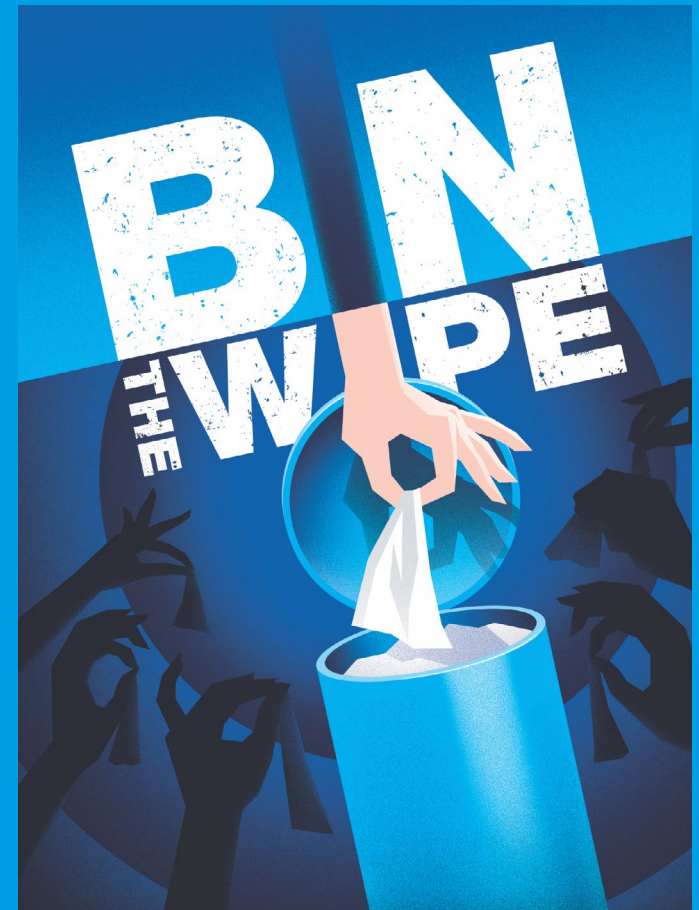
In 2022, the work across 24 hot spots saw the team engaging with customers in more than 90,000 households, adding to the communities that had already been visited with the Bin the Wipe message in 2020 and 2021.

This has contributed to reductions of more than 30% in external flooding, more than 60% in internal flooding and more than 75% in repeat flooding since 2020.

In 2022, a Parliamentary event attended by MPs from across the House, showcased Bin the Wipe, previewing the national roll-out and highlighting the importance of behavioural change on flushing.



[Click here to find out more about our Bin the Wipe campaign.](#)



## Case study: Misconnections

Water quality at Skinner Burn in Hexham, Northumberland, was improved after an intensive investigation helped identify and resolve problems at six homes. Household appliances and bathrooms at the properties were found to be incorrectly connected into the wrong drains.

We worked with the Environment Agency to take action in summer 2022 after reports of bad smells and discoloured water coming from a surface water outfall in a resident's garden.

When we investigated 35 houses in the area, six had misconnections, where a household appliance or bathroom fitting is incorrectly connected, so that, instead of discharging wastewater into the foul sewer network, it drains into the surface water network – and ultimately a local watercourse.

Within the six properties, we found five toilets, five handbasins, two baths, three dishwashers, two showers, four kitchen sinks and five washing machines all misconnected.

The team worked with property owners, helping them with support and advice, and all the misconnections have now been resolved.



[Click here to find out more about misconnections and how to check for a misconnection.](#)



## Storm overflows

Many of our sewers carry a combination of wastewater from homes and businesses, and rainwater. At times of heavy rainfall, this can mean that the pipes can reach full capacity. The risk from this is that this combination of rainwater, wastewater and other items flushed into the network can be forced back into customers' homes.

Therefore, storm overflows (SOs) act as a relief valve, releasing this heavily diluted mix – typically mostly rainwater – to the environment and protecting homes from sewer flooding.

The Government published its Storm Overflows Discharge Reduction Plan (SODRP) in August 2022, following consultation, and we are working to identify the best approach to meet its requirements.

We are investing more than £80 million towards reducing our reliance on and use of storm overflows between 2020 and 2025. In 2022 we saw reductions of around 20% in spills per overflow and 40% in the average duration of spills compared to 2021.

Further improvements included a greater proportion of overflows that didn't spill, or spilled fewer than 20 times, as well as greater visibility through monitoring. While this is, in part, the result of the weather and a year with fewer intense storms, it also reflects our investment and focus in this area.

 [Click here to view a short animation that explains how storm overflows work.](#)



## Flow to full treatment

Flow to full treatment (or FFT) is a measure of the maximum flow a wastewater treatment works is designed to treat.

In November 2021, we, along with all other wastewater companies, were contacted by the Environment Agency (EA) and Ofwat about measures to ensure permitted FFT requirements are being achieved at our Wastewater Treatment Works.

We recognise the issue's importance to our stakeholders and customers and the gravity of the investigation.

We have fully complied with the requirements to provide the information Ofwat and the EA have requested throughout their investigations.

Across the 189 locations where we have these permits, we identified circumstances where we may not have always achieved the required FFT

levels at four smaller sites – three of which were linked to bathing waters rated as 'Excellent'.

We have reacted swiftly to address this, investing in new equipment and improved processes to remove the risk that these four sites were not fully compliant. Performance at these has since been verified by an independent third party and the same independent review has taken place across most of our sites.

We have also reviewed and updated our processes and management arrangements and committed to further investment.

Ofwat told us in summer 2022 that they were 'broadly satisfied' with our action plans and response and 'welcomed our transparency' on the issue.

Following our latest meeting with Ofwat on this matter in February 2023, we understand that Ofwat is now collating its conclusions and corresponding report on this investigation.

In the meantime, we continue to monitor and scrutinise our compliance very carefully as part of our normal practice.

To be open and transparent about this issue, we have been providing update reports in the public domain every three months since the investigation was launched.



[Click here to read the detailed update report.](#)

## Reducing pollutions

Pollution incidents can occur as a result of water and wastewater operations, and can come from our pipe networks and built assets. Water incidents can occur for example from burst water mains, or as discharges from WTWs.

Wastewater incidents can occur from sewage treatment works, sewage pumping stations and sewers, including as a result of misconnected pipes from people's homes.

Incidents are categorised as: Category 1 (major, serious, persistent and/or extensive impact); Category 2 (significant impact); Category 3 (minor or minimal impact); or Category 4 (no impact).

Our Pollution Incident Reduction Plan (PIRP) sets out our plan for reducing pollutions to help us meet our ambitious goal to have zero pollutions as a result of our assets and operations.

This continues a significant downward trajectory over the last decade - reducing serious pollutions from 11 in 2011 to 1 in 2021, and less serious pollutions from 189 in 2012 to 68 in 2021. Our performance commitments agreed with our economic regulator Ofwat are 69 for 2022, 67 for 2023 and 58 for 2024.

We expect data for 2022 to show us to be industry leading with zero serious pollutions during the year.

We developed our pollution plan by undertaking detailed analysis of the root cause of incidents and identifying additional control measures and interventions. Our plan includes proven activities and interventions which we know have delivered results in the past, and innovative and transformative programmes designed to maintain and improve our performance further as we become more efficient, resilient and effective.



[Click here to view our Pollution Incident Reduction Plan.](#)

## Climate change

We recognise that climate change is having a significant impact on our local weather systems – with long periods of dry weather and also flooding and severe storms becoming more common. In areas experiencing more intense rainfall, the need for relief valves in the system such as storm overflows may actually become more apparent, not less.

Therefore, when we are looking at reducing or eliminating the use of storm overflows, we must be aware that the investment needed in extra capacity or removal of surface water from the system will need to be greater than the amount needed today in order to meet future requirements.





# Our pledges

**Pledge 1:**  
**We will work with the Environment Agency, Natural England, The Rivers Trust and Catchment Partnerships to identify, and have plans in place to eliminate, all impediments to our rivers achieving good ecological status caused by our operations**

## **What does this mean?**

We will develop and implement a long-term plan to remove negative environmental impacts of our assets.

This will include delivering what is asked of us under the Storm Overflows Discharge Reduction Plan, Water Framework Directive and Habitats Directive.

We recognise the importance of working with partners to achieve our shared aims.

## **What have we done so far?**

Over the past year, we have invested £45m in a range of schemes to improve ecological status of our rivers.

This includes a project to construct around 6km of new sewer pipes and two new pumping stations to improve water quality in Blackdene Burn, County Durham.

This will pump sewage from two of our current treatment works at Plawsworth and Pity Me to Brasside Sewage Treatment Works, for improved treatment and better water quality in Blackdene Burn.

A further project involves construction of a new pumping station at Pitlington in County Durham, installation of 3.5km of new pipe to Sherburn, and upgrades to Sherburn Sewage Treatment Works.

This will result in improvements to water quality in the Coalford and Sherburn Becks, as well as watercourses downstream.

We have also proposed an innovative approach to investment in the Skerne catchment to deliver ecological status improvements alongside wider benefits, through delivering catchment improvements rather than focusing on upgrades to sewage treatment works alone.

We continue to deliver our Pollution Incident Reduction Plan, and carry out surveys of misconnections around our network.

### What will happen next?

We will publish our Drainage and Wastewater Management Plan in May, which will analyse and set out how we plan to address environmental impacts over the next 40 years. This will feed into our next business plan, which we will submit to our regulator Ofwat in October, identifying the steps we will take between 2025-30 to deliver this.



[Click here to view our draft Drainage and Wastewater Management Plan.](#)



## Case study: Skerne catchment

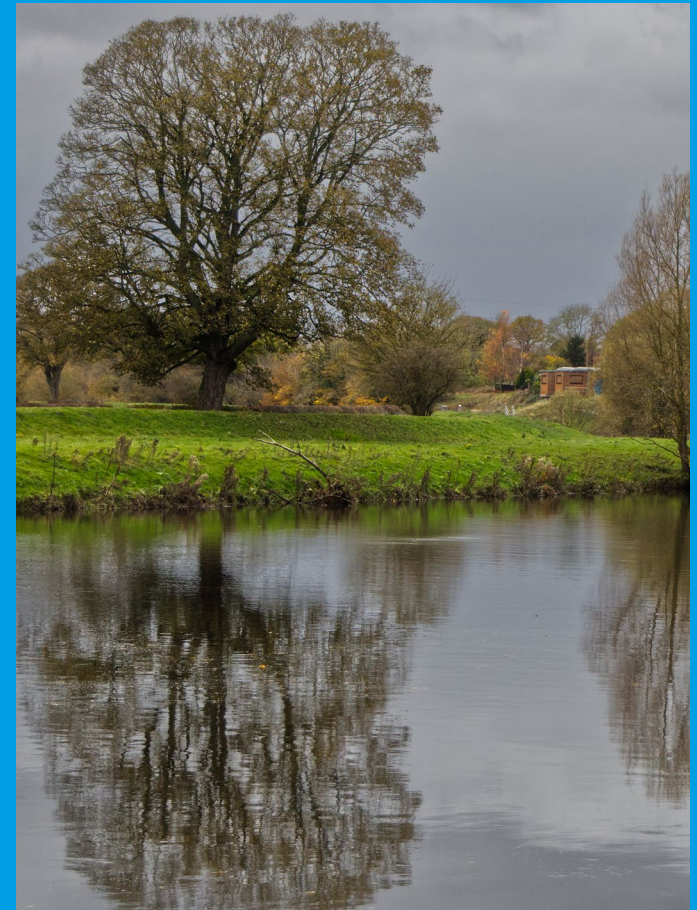
We believe there is an opportunity to develop a new approach to investment in the catchment to deliver ecological status improvements alongside wider benefits, potentially accessing co-funding or green finance.

We have been undertaking feasibility work in the Skerne, exploring the potential for catchment and nature-based solutions as alternatives to traditional end-of-pipe treatment.

This approach would demonstrate how we can work in partnership towards shared outcomes, investing to deliver multiple benefits for the environment and our customers – improved water quality, better wildlife and biodiversity, natural flood management, carbon sequestration and higher quality access to water and nature for local communities to support health and wellbeing.

Moving towards green sustainable solutions as part of our enhanced treatment approach is also essential to support our drive towards carbon net zero. For example working with farmers to reduce nutrients, or creating treatment wetlands, means we do not need to rely entirely on carbon intensive hard engineering end-of-pipe treatment.

Working together with Discover Brightwater, the Tees Catchment Partnership and the Tees Valley Nature Partnership, this approach would bring a wide number of partners together to consider integrated opportunities and develop a shared approach to addressing the catchment challenges.



**Pledge 2:**  
**We will invest in monitoring to provide 100% near real time data on storm overflows by 2023**

**What does this mean?**

All of our Storm Overflows will be fitted with monitoring to detect any spills to the environment.

Data from these monitors, showing when spills take place, will be made available in near real time – within about an hour of a spill occurring. We will make this information available to our customers online before the end of 2023.

**What have we done so far?**

We have invested £1.9m to install monitors at 99% of our Storm Overflows so far. These have been tested and are able to provide the information on when spills occur that we are aiming to make available to our customers.

We have met regularly with Defra and the Environment Agency to understand their expectations, including the requirements of the Environment Act by which we are required to make data available by 2025.

We have taken part in workshops with Defra, the Environment Agency and other water companies to develop best practice in this area. Our technical team have also met with IT experts to begin development of the platform.

**What will happen next?**

We will complete installation of monitors this year, and develop an online platform to make this information visible to our customers this year. We will do this in a flexible way, so that we can update it to fit with detailed guidance on the Environment Act requirements when that is published.

We plan to discuss our approach to this with stakeholders to understand what information they would find helpful so we can include this in our plan where possible.

**Pledge 3:**  
**We will introduce final effluent, in-river upstream and downstream monitoring to get a greater understanding of environmental impacts of treated water by 2030**

**What does this mean?**

We will install real time monitors at all sewage treatment works where we have to achieve numerical targets relating to the quality of the effluent due to our permits from the Environment Agency. This will monitor the environmental impact of continuous discharges from our sewage treatment works.

**What have we done so far?**

Our submission for our Water Industry National Environment Plan (WINEP) programme from 2025-30 includes deploying more than 2,000 environmental monitoring sensors at our sewage treatment works, requiring around £42m investment.

We are now waiting for the Environment Agency to respond to our plan to confirm we will deliver these.

**What will happen next?**

We expect to deliver these monitors over the course of our next business plan period, from 2025-30. In advance of that, we will learn from work we are doing to install monitors at 22 high priority storm overflow sites. This will allow us to understand potential challenges such as access, security, communication issues and maintenance, in order that we can develop the most robust plan to meet this pledge from 2025 onwards.

## **Pledge 4: We will implement Water Quality monitoring at the highest priority Storm Overflow locations by 2025**

### **What does this mean?**

We will implement monitoring at priority locations.

We have identified these by assessing a combination of data – including where rivers have ‘Poor’ or ‘Bad’ status under the Water Framework Directive, where our storm overflows are spilling more than 10 times, and where there are other factors, such as an environmental impact under the Storm Overflow Assessment Framework, where our assets are a reason for not achieving good status (RNAG), or where there is low dilution.

### **What have we done so far?**

We have identified 22 sites based on the priority modelling, and estimated that because of the way they are clustered, we will need to deploy 27 monitors in order to cover these effectively.

We are now working with potential suppliers to select the monitors we need, which will mostly be a mix of kiosks, and smaller ‘suitcase’ arrangements. We have forecast in total that this will require up to £1.6m of investment.

However, we have also started discussions with a supplier of a more innovative drone technology which may be suitable for use in some locations.

### **What will happen next?**

We plan to install eight monitors in 2023 and a further 19 in 2024. This will enable full year data to be analysed from 2025 onwards.

## Case study: Drone monitoring

We're beginning an industry-leading study to explore how the use of drones and AI data analytics can support our region's cleaner rivers.

Working with cloud data experts, Makutu, this study will help us to understand how drones or UAVs (Unmanned Aerial Vehicles) can be used to sample and collect water quality data from key coastal and inland locations.

The programme will also see the water quality results made available to the public in near real-time and in an easy to visualise traffic-light format.

Currently, collecting water quality data from hundreds of coastal and inland locations can be challenging.

Our traditional sampling methods involve the construction of a physical waterside sampling site, or deploying someone to manually undertake the sampling.

The study will look at how UAVs can carry out this remote monitoring at a number of key sites, swiftly and at scale, and the additional benefits they might bring, over and above traditional sampling methods.



**Pledge 5:**  
**We will reduce spills from storm overflows to an average of 20 per year by 2025**

**What does this mean?**

We will reduce the average number of spills from each of our Storm Overflows, from a baseline of 25.3 in 2021.

This is calculated from our annual Event Duration Monitoring report to the Environment Agency and is as summarised in their report. Our interim targets are to have below 23 spills in 2023 and below 21.5 in 2024.

**What have we done so far?**

In 2022, our average spills reduced to 20.3 per overflow. There was also a 40% reduction in the average duration of spills, and an increase in the number of overflows that didn't spill, or spilled fewer than 20 times. However, while this was in part due to our action, it also reflected weather patterns with fewer intense storms in the year, so we recognise there is further work to do to hit this target sustainably.

We have developed a targeted action plan to tackle spills, on top of existing investment to deliver improvements through our Water Industry National Environment Plan (WINEP) programme and schemes to accommodate population growth.

**What will happen next?**

We will implement the action plan we have developed. This includes surveying our sewer pipes around storm overflows to identify any blockages (such as tree roots) and fixing them where problems are found. It also involves a proactive programme of maintenance and recalibration of flow monitors, to make sure the right levels of flow are going through our network.



**Pledge 6:**  
**We will work closely with The Rivers Trust through our strategic partnership and North East Catchments Hub to focus on river needs for investment through catchment and nature-based solutions, and to identify at least 2 inland bathing water sites where applications for designation can be made at the earliest opportunity. We are proud that already 95% of the NE population lives within an hour's drive from a beach with Good or Excellent bathing waters.**

#### **What does this mean?**

The North East Catchments Hub (NECH) was launched in April 2022 through a strategic partnership with The Rivers Trust. We will work through that to identify opportunities for catchment and nature-based solutions that will improve river water quality, and for inland bathing water sites.

#### **What have we done so far?**

We have invested around £300,000 so far in NECH, which has brought catchment resources and expertise into the region to support development of our business plan for 2025-30. The NECH has been working closely with Northumbrian Water teams, other catchment partnerships and environmental groups to identify opportunities for catchment and nature-based solutions. Five workshops were held in summer 2022, with follow-on conversations with partners and development of an online mapping portal to collate ideas. Eight schemes were then developed and have been put forward for inclusion in our business plan.

A review of inland bathing water opportunities was also undertaken following partner engagement. We supported an application from the Clean Tyne Group for an inland bathing water at Wylam, Northumberland, but this was not approved by Defra.

#### **What will happen next?**

If these schemes were to be approved, the NECH would be expanded so it could deliver on these catchment solutions and prepare to broaden its support for investigations and improvements across all North East catchments.

## Case study: Catchment and nature-based solutions

We took an innovative approach to catchment solutions in our Water Industry National Environment Plan (WINEP) submission for 2025-30 through our strategic partnership with The Rivers Trust.

Through our North East Catchments Hub (NECH), we have connected with catchment partners representing communities across the North East, ensuring the solutions developed are endorsed by stakeholders and will deliver real benefits for customers if approved for delivery from 2025.

Eight catchment and nature-based solutions (C&NBS) schemes have been developed as preferred options. These would help us make improvements under both the Habitats Directive and Water Framework Directive for phosphorus. This approach – rather than focusing on major investment at treatment works alone – would mean greater affordability and value for money for our customers.

By investing in natural capital, instead of 22 end-of-pipe schemes at Sewage Treatment Works, this approach would bring estimated cost savings of £51.7m, helping keep customer bills down. They would also come with lower embodied and operational carbon to minimise climate impacts, along with substantial water quality benefits and wider environmental outcomes.

Endorsing this work, Rivers Trust CEO Mark Lloyd described the approach as industry-leading, and said:

“ We believe the scale of NW’s ambition, and its collaborative C&NBS programme, will have far reaching impacts for the water industry and beyond.



**Pledge 7:**  
**We will work with partners to achieve 100% of coastal bathing waters at Good or Excellent by 2030**

**What does this mean?**

We will target our operational work, additional investment and partnership work to achieve Good or Excellent bathing water quality, as assessed by the Environment Agency, at all 34 of the coastal bathing water sites in the North East. At present 32 are rated Good or Excellent, but the two that do not – Cullercoats and Marsden – are not thought to be due to our assets or operations.

**What have we done so far?**

We have developed our strategy for bathing water quality up to 2025. This sets out £47.5m of investment aimed to ensure no deterioration to bathing water quality and investigate issues to understand how quality can be improved, including at Cullercoats and Marsden.

We have completed all 12 investigations we agreed to carry out between 2020-25, and we are continuing to work with the Environment Agency and local authorities to investigate how quality can be improved at Cullercoats and Marsden. At Cullercoats, contaminated groundwater is likely to be that primary cause and we have been working with North Tyneside Council to divert water from a local authority culvert into our network, to see if that has a positive effect. At Marsden, we have cleaned a storm tank, though we do not believe that has affected the bathing water and continue to investigate the source.

**What will happen next?**

We will continue partnership working, particularly at Marsden and Cullercoats.

In April 2023, Ofwat agreed we can make an early start on an investment of about £50m to reduce spills from storm overflows at Tweedmouth and Spittal by 2030. We will also finalise our investment plans related to bathing water quality for 2025-30.

## Case study: Cullercoats

Cullercoats Bay, in North Tyneside, has been classified as 'Poor' by the Environment Agency in its bathing water assessment.

However, investigations we carried out in partnership with North Tyneside Council and the Environment Agency since 2017 have shown no evidence of our assets being a primary cause for the deterioration in bathing water quality.

Contaminated groundwater is considered likely to be the primary cause.

In 2022 we carried out work in partnership with North Tyneside Council to install a new drainage pipe to take groundwater from a disused culvert into our sewer network.

The aim is to provide a solution that will prevent a known source of contaminated groundwater having an effect on bathing water quality.

We have also engaged extensively with local community and environmental groups to keep them informed of this work.



**Click here for more information on our partnership working in Cullercoats.**



**Pledge 8:  
We will work in partnership to improve 500km of bluespaces (such as river banks and accessible water environments) for the public to enjoy in our regions by 2030**

**What does this mean?**

We have developed a new approach towards improving the water environment and a new investment scheme for 2020-25. This will allow us to go 'above and beyond' our business-as-usual activities and regulatory requirements to work with others to deliver improvements to 'bluespaces' – areas of the water environment that are accessible for our customers. We have an ambition to improve 250km by 2025 and are aiming to double that by 2030.

**What have we done so far?**

Work has started on 128km on bluespaces improvement, of which we expect 104 km of improvements to have been completed by May 2023. A further 88km of improvements have been identified and are planned to begin in the next two years.

To date we have provided more than £180,000 funding to projects through the bluespaces programme.

**What will happen next?**

Further development work will take place to identify additional projects covering the extra 34km required to hit our target of 250km by 2025. We have submitted a programme of work to achieve our 2030 target as part of our WINEP programme for 2020-25 but are also exploring other ways of funding and completing this work, potentially from our core funding or from service incentives including for biodiversity.

We will consult on this approach with our customers and we will also need approval from the Environment Agency and Ofwat to progress.


## Case study: Wilder Coast

The Wilder Coast project is being led by Tees Valley Wildlife Trust to support coastal and marine wildlife. Through bluespaces, we invested £18,000, supporting improvements to 9km of accessible water environment.

A Wilder Coast project officer has been employed, and customers have been engaged through activities including a public engagement event for our Bin The Wipe campaign, as well as beach cleans and educational events.

Wetland enhancements have created more habitat for ducks, toads and wading birds, while habitat enhancements to a silted reed swamp were delivered. The project has also delivered improvements to allow visitors to walk directly alongside the open water habitat.



 [Click here to find out about the Wilder Coast project.](#)

## Case study: Catch My Drift

Catch My Drift is a project being delivered at East Chevington Nature Reserve on the Northumberland coast. The three-year project aims to improve habitat quality, conduct ecological surveys, improve public access and organise community events at the reserve. Through our bluespaces scheme, we have contributed £10,000 to the project supporting improvements to 4.8km of water environment.

Overall the project has delivered the creation of a 12-hectare wildflower meadow, an innovative 'reed island', planting of bluebell and wild garlic bulbs, and establishing new woodland shrub species. Improvements have also been made to three bird hides and access routes. There have been 21 events for visitors and local communities, including wildlife walks, family bird box making events, a school visit and local group talks.



[Click here to find out about Catch My Drift.](#)



**Pledge 9:  
We will double the number of our Water Rangers – our citizen scientist volunteers who are trained to help us monitor environmental conditions around rivers and take action to address wider river issues such as littering, fly tipping or signs of pollution**

**What does this mean?**

Our long-standing Water Rangers initiative consists of trained customer volunteers who act as our ‘eyes and ears’ on the ground in the community to raise awareness of any issues spotted on regular patrols along our waterways. Our Water Rangers carry out more than 2,000 patrols each year along 55 routes, covering 73km of waterways. We are aiming to have 134 Water Rangers in place by 2025.

**What have we done so far?**

We have delivered Water Ranger training to a series of volunteer groups in coastal areas to help them identify and alert us to pollution risks.

We have carried out a review of our data and accessible areas along water courses to identify new routes we wish to prioritise as we expand the scheme.

We are also supporting an innovation project to develop a low-cost mobile water quality sensor that will monitor the characteristics of water bodies and the problems that can arise within them. We aim to make these available to Water Rangers to use citizen science to help fill the gaps where expensive sensing equipment can’t be deployed.

**What will happen next?**

We will confirm the new routes we plan to implement and recruit new volunteers to join our Water Rangers scheme in the next year. We will also complete prototyping and piloting of the sensors that are being developed and train Water Rangers on how they can be used.



## Case study: Tees Valley community volunteers

A group of committed community activities from Saltburn Countryside Volunteers, Friends of the Lower Path and Seascapes joined us to be trained on our Water Rangers scheme in October 2022. These groups are really passionate about protecting the environment in Tees Valley, especially beaches and nearby waterways.

The groups found the training informative and engaging. The training involved a site tour around our Bran Sands Sewage Treatment Works. They now have greater understanding of how our wastewater network operates and the challenges we aim to overcome – including through our Bin The Wipe campaign, which they agreed to support.



[!\[\]\(c3d993ca47bfe2a953c700506ce31fa0\_img.jpg\) Click here to find out our Water Rangers scheme.](#)

# Next steps

## Long term Delivery Strategy

We are currently developing our long-term strategy for the 2025-50 period. This will set out a series of ambitious goals for the improvements that we want to see for our rivers and coasts over that time, including in relation to reducing spills to the environment, increasing biodiversity and achieving carbon net zero.

The strategy will set out the new investment we need to make to deliver these improvements, as well as the impact this could have on bills and how we would seek to make them affordable for all our customers. It will also examine how things might change under different future scenarios, taking into account uncertainties like climate change, growth and other factors.

Finally, it will set out the key choices we must make in the future to make sure that we deliver the long-term improvements customers and stakeholders want to see in the most efficient and effective way.

## Drainage and Wastewater Management Plan

Our Drainage and Wastewater Management Plan (DWMP) helps us to prepare for changes to the environment in our region. Our plan looks more than 25 years into the future and sets out what we will need to do to keep our wastewater systems fit for today and the future.

We published our draft DWMP in June 2022, which set out four different options for how we could deliver our wastewater services into the future while complying with the Government's Storm Overflows Discharge Reduction Plan.

This was followed by a customer consultation exercise, and we have continued to hold discussions with stakeholders and partners to identify opportunities to deliver improvements around our region.

Our final DWMP will be published by the end of May 2023, and this will set some of the context for our business plan for 2025-30.

 [Click here to view our draft Drainage and Wastewater Management Plan.](#)

## Water Resources Management Plan

Our draft Water Resources Management Plans (WRMPs), covering both our Northumbrian and Essex & Suffolk operating areas, were published in 2022.

These set out how we intend to maintain the balance between supply and demand for water between 2025 and 2050.

Our plans need to make sure we maintain a secure and sustainable supply of water, focus on efficiently delivering the outcomes that our customers want, while reflecting the value that society places on the environment.

We have always monitored the impacts of taking water from rivers and groundwater and taken timely action to make sure the environment is not damaged as a result.

In preparation for these plans, we completed a comprehensive series of abstraction sustainability investigations.

We have agreed with the Environment Agency that where the amount of water our abstraction licences permits us to abstract each year is not sustainable, we will reduce our licences and our plans are made on this basis.

Following consultation on these plans, our updated draft will be published in September.



[Click here to view our draft Water Resources Management Plans.](#)

## Business Plan

Every five years, Ofwat carries out a price review for all water and wastewater companies. We are required to produce a Business Plan that sets out all the things we want to deliver for our customers, such as reductions in flooding, or improvements in customer service.

We must build, test, and submit our Business Plan by October 2023. We then submit our Business Plan to Ofwat for them to review, and they agree how much revenue we can collect from customer bills, and what level of service we need to provide to our customers in return. This is known as a price review and the next one is PR24.

In December 2024 Ofwat will determine the revenue we can collect from customer bills, and the levels of service we need to provide, for 2025-30.



[Click here to for more information about our Business Plan.](#)

**NORTHUMBRIAN**  
**WATER** *living water*

**ESSEX&SUFFOLK**  
**WATER** *living water*