
A VISION FOR OUR COASTS AND RIVERS

NORTHUMBRIAN
WATER *living water*

ESSEX & SUFFOLK
WATER *living water*



INTRODUCTION

The environment at our heart

Our commitment to the water environment runs through the heart of our business.

As a water and wastewater operator, we have a significant interaction with rivers and coastal waters. We take water from our environment, then restore it back after a long journey through treatment and our customers' homes. Yet, our commitment is much greater than this - we work constantly to protect public health in abstracting, supplying and treating water, making sure we protect and enhance our environment at each step, and often going beyond our regulatory obligations.

In our business plan for 2020-25, we set the ambitious goals for our operating area to have the best rivers and beaches in the country, and to have zero pollutions as a result of our assets and operations. This is undoubtedly a challenge but one that we welcome – it is essential to [Our Purpose](#) as a business.

We are well on the way to achieving our ambitious goals, with 32 out of 34 bathing waters in our North East region classed as Excellent or Good, while our record on preventing pollution is industry leading over the last two regulatory years. We have achieved a Four Star performance, the highest possible, in the Environment Agency's latest Environmental Performance Assessment and we expect to maintain that standard in the years ahead.

We have invested significantly in a programme to improve the quality of our sewage treatment works' discharges. We also have plans for further work on nutrient removal, making sure that water industry investment in our region is an enabler for further ecological status improvements.

We launched our '[Emission Possible](#)' plan in July 2021, outlining how we will achieve Net Zero for carbon by 2027, ahead of both the sector's 2030 goal and the Government's wider goals.



We were the first, and remain the only, water company in the UK to use 100% of the sludge from its sewage treatment to create green power through Advanced Anaerobic Digestion.

We were the first, and remain the only, water company in the UK to use 100% of the sludge from its sewage treatment to create green power through Advanced Anaerobic Digestion (AAD). This is done at our two largest treatment works, Howdon and Bran Sands, which have also contributed greatly to improved river water quality. Our ambition doesn't stop there. We recognise that even with our strong record, and with long-term investment in our coasts and rivers, more needs to be done. We also know that the challenges, opportunities and solutions of the future will not necessarily be found in our own operations, and so working in partnership is essential. That is why we are working with other partners in the sector to deliver Water UK's 21st Century Rivers plan, which is calling for a new deal for rivers in England.

With options for early interventions, investment in new tools and technology, and allowing local communities to play a part to improve their water courses, we'll play a major role to make sure the rivers of the future will meet our customers' aspirations.

This report offers a vision towards 2025 on how we will play our part in protecting and bringing about improvements for our rivers and coasts.

I am also pleased to include a new set of pledges that we commit to delivering for our rivers and coasts. These pledges, (endorsed by the Rivers Trust) are clear and stretching. They aim to meet the expectations of the public and our customers and enable our region to benefit from the best rivers and beaches in the country.



Heidi
Heidi Mottram CBE

Taking on the challenge from our customers, stakeholders and regulators

The Covid-19 pandemic produced many challenges for our communities, but also refreshed people's connection with the natural environment – with a special passion reignited for the water environment and the bluespaces health and wellbeing benefits these offer.

We very much welcome the cultural shift in public priorities and renewed interest our customers have in the environment around them.

Having a greater number of ambassadors who share our desire to see the environment in our regions (and beyond) thrive and the increased public discourse on environmental matters can only lead to greater education and awareness of the role that we all play in protecting and enhancing our local environment. And that leads to positive action and change.

We've been actively conscious of the role that we play in this context at Northumbrian Water Group (NWG) for many years. This has led to some great outcomes for our environment delivered by millions of pounds of investment and strong partnership working. You can see many examples of this throughout this report, included so you can see what has worked in the past and what is possible in the future.



A special passion [has been] reignited for the water environment and the bluespaces health and wellbeing benefits these offer.

For the near future to 2025, we have extensive plans on how we will continue our efforts to protect and enhance our rivers and beaches. We have included information on them in this report and, as a helpful summary, published a set of pledges setting out the areas where we will focus our efforts.

These pledges aim to drive action to address the specific challenges we face about the quality of water in our rivers and at the beaches in our regions. Our pledges relate to investments that NWG will make so we fully understand any impact on the quality of the water in our rivers and at our beaches that our operations may cause, as well as pledges relating to the actions and investments that we will need to undertake in order to improve

We recognise that there are others who can have an impact, often a greater impact than NWG, on the quality of water in our rivers and at our beaches. And with this in mind, several of our pledges relate to how we will lead and support partnership activity to improve our river and bathing water quality where this is needed.

We are confident in our pledges and in our plan because of our strong track record in delivering our complex and extensive investment programmes and in working collaboratively with partners to innovate together to develop solutions to challenges. We are further supported by the open and transparent culture we have nurtured at NWG, our innovative approaches and our greatly valued partnerships with external organisations. All of these factors put us in a strong position to meet these challenges and to make the most of the opportunities the renewed focus on the water environment brings.

Taking on the challenge from our customers, stakeholders and regulators (cont'd)

Our plans will support us to act immediately where we can, work in partnership to draw in the support of others where they can have a greater impact than we can, and seek to make innovative step changes towards positive progress wherever possible. We must be future facing too, laying down plans now for how things should be done over the long-term to get the best outcomes for our environment in an affordable way.

We know that our customers, stakeholders and regulators expect us to be champions of the water environment and we talk to each of these groups on an ongoing basis to understand their perspectives and expectations, to help them to understand our operations and activities, and to work together to resolve any challenges and take advantages of any opportunities to further improve our operations.

We have received welcome contributions from customers and partners in shaping our plans and, as you will see from the report, they are already active participants, already working with us to make rivers more accessible, more alive with nature and as near to their natural state as possible.

Similarly, we are actively engaged with stakeholders, like the Environmental Audit Committee and organisations like Surfers Against Sewage, who are rightly demanding more from every contributor to the water environment.

Alongside this our regulators are closely looking at our approach to discharges and compliance, further demonstrating the increasing challenge ahead.



This plan demonstrates our efforts to date for our rivers and coasts, and shows how we will rise to that challenge in the years ahead.

There is a huge amount of information in the public domain on river and bathing water quality.

This report aims to bring the information relating to NWG into one place, to support a better understanding of the issues around river and bathing water quality in our regions and the role and responsibilities of NWG in relation to these issues. It provides useful information about how our operations are designed to work, how our internal governance oversees these operations, and how our river and bathing water is regulated. It includes examples of successful solutions already in place and plans for future activities.

I hope it proves a useful and informative read and, as always, we would welcome any feedback you have.



Richard Warneford,
Wastewater Director

Our operating areas

We provide water and wastewater services to our customers in the North East of England, trading as Northumbrian Water, and water services only to our customers in the south east of England, trading as Essex & Suffolk Water.

We supply water and wastewater services to 2.7 million people in the major population centres of Tyneside, Wearside and Teesside as well as the large rural areas of Northumberland and County Durham. We provide wastewater services only in Hartlepool.

We supply water services to 1.6 million people in Essex and 300,000 in Suffolk. Our Essex area is part rural and part urban and includes the main population centres of Chelmsford, Southend and the London Boroughs of Barking and Dagenham and Havering and Redbridge.

Our Suffolk area is mainly rural with the largest towns being Great Yarmouth and Lowestoft.

We operate and maintain:

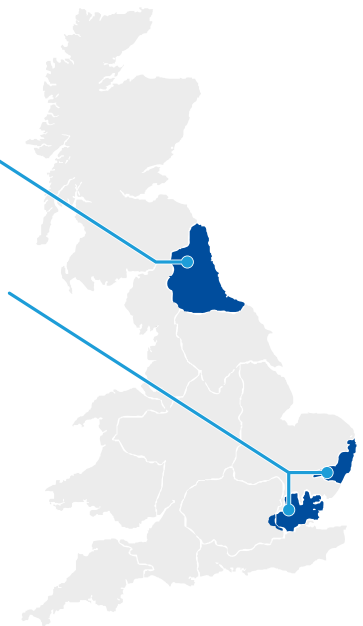
- 53 water treatment works;
- 394 water pumping stations;
- 341 water service reservoirs;
- 26,200km of water mains;
- 410 sewage treatment works;
- 1,007 sewage pumping stations; and
- 30,106km of sewers.

Every day we supply 1.1 billion litres of water.

Whether you are a Northumbrian Water or Essex & Suffolk Water customer, or part of our community, we remain passionate about our coasts and river, as well as the quality of water in the natural environment, committed to having the best rivers and beaches in the country.

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Coasts and rivers in the North East

In our Northumbrian Water area we are responsible for the entire water cycle, which means we work in clean water and wastewater. We abstract water from rivers and groundwater, as well as storing large amounts in reservoirs to manage our regions water resources, treat it to a high standard and supply it to our customers. They will then return to it to us via the wastewater network, alongside extra flows from drainage and surface water, which are then treated to be returned to our coasts and rivers.

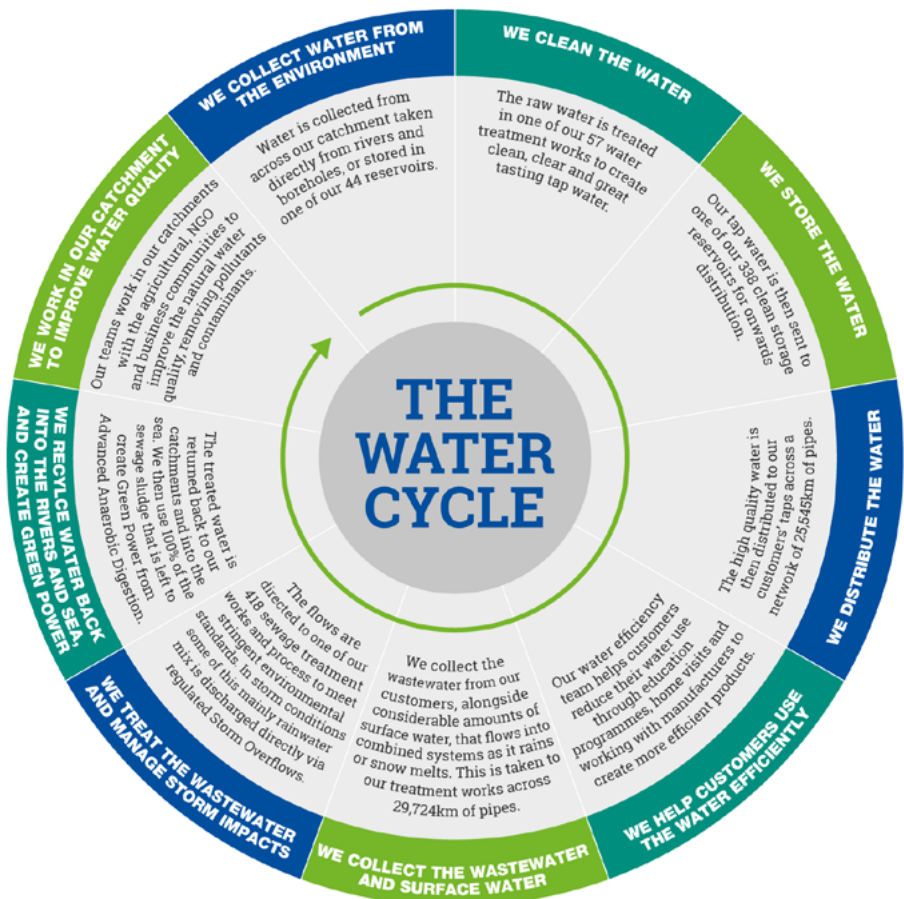
We work in our catchments to improve our region's water quality for abstraction for clean water and for improving water quality after discharges. This also means we work hard to make sure our bathing waters are of the highest standards.

Coasts and rivers in the South East

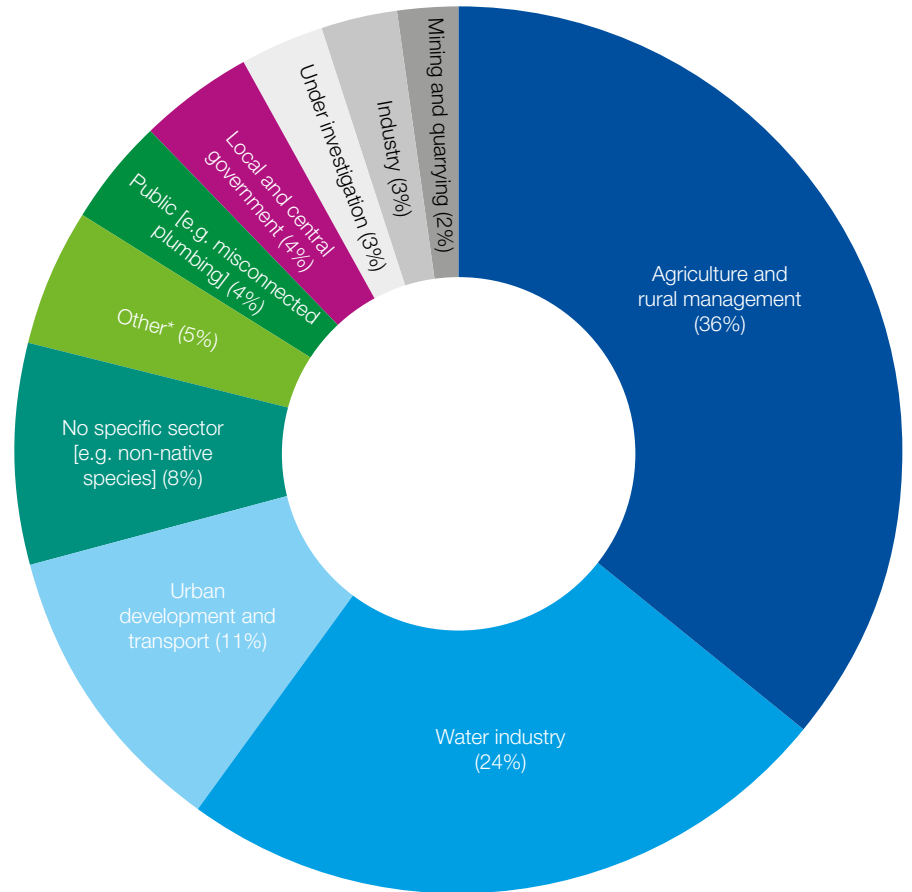
In our Essex & Suffolk Water area we are the clean water supplier only, meaning we are only involved in the abstraction and water resources elements of the water cycle.

That means that while we actively work in our catchments to help promote and improve water quality, our operations have a very different impact on our coasts and rivers, and we have no direct responsibility for the south east bathing waters.

The water cycle



Rivers in England: Reasons for Not Achieving Good Ecological Status by Sector and Activity



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

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THE FUTURE

The future

This report is focused on our activities until 2025 to give customers and stakeholders a clear view of our approach, investment and delivery in the years ahead.

We recognise that the public passion for our rivers and coasts is growing, and we want to offer reassurance that we are committed to meeting their expectations.

We are committed to nine ambitious pledges that we believe will be effective for our unique water environment and make a real difference to our communities.

We are proud of the level of environmental investment we committed to in the current five year investment period, which reflects our customers' priorities as we understood them pre-covid, but we understand that times and expectations have changed. Our challenge now is to demonstrate how we can do even more to invest to protect and enhance our rivers.

You can find our nine ambitious pledges on the next pages.



We recognise that the public passion for our rivers and coasts is growing, and we want to offer reassurance that we are committed to meeting their expectations.



Our pledges

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.

2

We will invest in monitoring to provide 100% near Realtime Data on all Storm Overflows by 2023.

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.

Our pledges (cont'd)

4

We will implement Water Quality monitoring at the highest priority Storm Overflow locations by 2025.

5

We will reduce spills from storm overflows to an average of 20 per year by 2025.

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.

Our pledges (cont'd)

7

We will work with partners to achieve 100% of coastal bathing waters at Good or Excellent by 2030.

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.

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.

Our Coasts and Rivers Plan: An Overview

	2020/21	2021/22	2022/23	2023/24	2024/25	to 2030	Investment
Investment in our Assets to Protect Water Quality							
Deliver additional sewage storage capacity (l/s)	-	-	50.38	86.7	258	-	£31,000,000
Deliver additional storm overflow capacity (m ³)	-	-	18	57	201	-	£1,500,000
Investment to meet tighter discharge consents for phosphorus and ammonia (£)	£2,000,000	£6,000,000	£26,000,000	£53,000,000	£15,000,000	-	£103,000,000
Addressing Storm Overflows							
Deliver investigations under the Storm Overflow Assessment Framework (no. of sites)	-	50	47	30	-	-	£2,000,000
Deliver original planned investment to improve storm overflows	→					-	£7,000,000
Additional activity to deliver our pledge to reduce spills	→					-	under development
Delivering our Pollution Incident Reduction Plan							
Support legislation to ban wet wipes that are not 'fine to flush'	→					-	-
Working with Water UK to expand Bin the Wipe to national level	→					-	-
Double number of Water Rangers (no. of volunteers)	67	67	→			134	-
Continue to manage misconnections	→					-	-
Maintain swift operational response to early warnings and alarms	→					-	-
Protecting Coastal Bathing Waters							
Deliver WINEP bathing water investigations at 11 bathing waters	→					-	£1,350,000
Fulfil WINEP commitments to protect bathing waters at 2 sites	→					-	-
Maintain Beach Aware web-service - real time updates on 78 coastal SOs, and seek to extend to any newly designated inland waters	→					-	-
Additional activity to deliver out pledges in land and coastal bathing waters	→					-	under development

Key:

- Investment identified in original AMP7 business plan
- Additional investment

Our Coasts and Rivers Plan: An Overview (cont'd)

	2020/21	2021/22	2022/23	2023/24	2024/25	to 2030	Investment
Improving Monitoring, Data and Reporting							
Make sure EDM spill monitors in place on all storm overflows						-	-
Maintain publication of annual EDM spill data						-	-
Provide access to near real time data from above EDM spill monitors via data portal						-	-
Deliver front end FFT monitors originally planned for AMP7 (UMON4)						-	£5,500,000
Additional FFT monitors at 19 sites						-	under development
Additional spill monitoring into storm tanks (UMON3)						-	£2,000,000
Ongoing investment in sewer level monitoring	£300,000	£300,000	£300,000	£300,000	£300,000	-	£1,500,000
Improve internal compliance reporting			V1	V2		-	-
Developing proposals to improve upstream and downstream monitoring						-	under development
Maintaining Compliant Operations							
Addressing 4 potentially non-compliant FFT sites						-	under development
Fulfilling permit requirements at 3 storm overflows	-	2	-	-	1	-	£9,100,000
Delivering bluespaces							
Deliver original ambition for blue spaces projects (km cumulative)	10	20	30	40	50	-	
Plus enhanced programme (km cumulative)	20.2	45.8	102.3	150.3	198.3	251.7	
Total (km cumulative)	30.2	65.8	132.3	190.3	248.3	500	£1,024,000 (to 2025)

Key:

- Investment identified in original AMP7 business plan
- Additional investment

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BACKGROUND

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 also do not want to waste any element of this abstraction and so we invest heavily in efficient treatment systems and our distribution network. We 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 representing less than a quarter (24%).

However, the combined contribution of agriculture, highways, mines and local authorities represents more than half of the reasons behind good ecological status not being achieved.



The combined contribution of agriculture, highways, mines and local authorities represents more than half of the reasons behind good ecological status not being achieved.

Unlike for treated water flows, 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.

This is accompanied by unwelcome items being put into the system, like wet wipes, which can cause blockages.

These relief valves come in different forms, like storm tanks (giant concrete constructions near treatment works that hold excess flows beyond treatment capacity) and storm overflows, which in certain permitted circumstances, discharge into watercourses directly.

This will happen when flows are very high, so this will typically be mostly rainwater or snow melt that has come into the system, but will also include a small element of wastewater.

We monitor these discharges so that they only happen when absolutely 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.

Background: Abstraction

What water do you take from rivers?

We abstract water from rivers across our supply areas to help meet the needs of our customers for clean, clear and great tasting tap water. The amount we take will vary quite dramatically 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 series of 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.



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

Where can I find out more about river levels?

The Environment Agency has a Hydrology Data Explorer which offers near real time data about the flows in our rivers from monitoring stations across the UK.

[You can find that data here.](#)



Background: Water quality

How is river and coast water quality measured?

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.

What do we know about our rivers and bathing waters?

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.

The Environment Agency's monitoring, which looks at the reasons for this, shows that phosphorus (a nutrient) was the most common reason for rivers not achieving good status.

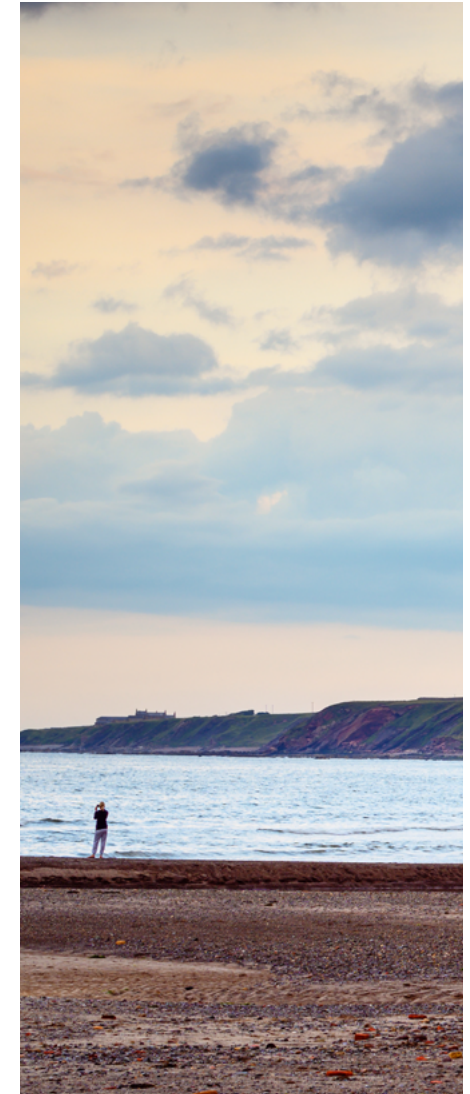
When we consider the factors behind rivers not achieving good ecological status, the largest contributor is agriculture (36%), then water companies (24%), then the urban environment such as highways and drains (11%).



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

Around 53 of the 235 waterbodies in our region which fail to meet good ecological status do so due to public actions discharging wastewater into clean water systems – whether its having a misconnected drain or toilet that is directly going into a river, or using a river to dispose of waste products, such as paints.

This data shows that we are not the only or even most significant cause of rivers not achieving good ecological status. We therefore cannot solve the issues alone. Even when we have implemented our plans on improving river water quality, as we are only one contributor and not even the largest in scale, others will also need to take action to make our rivers as good as they can be.



Background:

Treating wastewater

How do you treat wastewater?

Treating wastewater at our sites sees us 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 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 process are used to remove further nutrients. At some of our coastal sites near bathing waters we also subject the cleaned-up effluent to ultraviolet light, prior to release to the environment in order to deal with any pathogens and virus that remain.



[Click here to see our sewage treatment process diagram.](#)

The remaining sludge that is produced during this process is transferred to two industrial sites; 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, using our Gas to Grid technology, is either used to power generate electricity on site or injected directly into the national grid for use as green fuel.

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

How does the wastewater system work?

Our system is complex - we manage over 30,000km of sewers, over 1,000 sewage pumping stations and more than a million manholes across our region.

At a high level, there are effectively six steps in the wastewater treatment process (which you can see in the animated film on the left) when the system is working at normal levels of flows.

Background: Storm overflows

What happens when there is a blockage or problem in the system?

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 are higher. This is why we encourage people to Bin the Wipe, and to not let fats, oils and grease (FOG) get into the pipes.

What are 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 – mostly rainwater – to the environment and protecting homes from sewer flooding.



[Click here to watch our storm overflow animation.](#)

How do you monitor storm overflows?

We have monitors installed in 99% of these overflows and will achieve 100% coverage in 2022. Monitoring allows us to see when discharges happen, and also to correlate that with other factors, such as weather, to ensure they are operating as they should. When discharges happen outside of heavy rainfall or snowmelt, we can investigate, as it is normally the result of blockages caused by wipes, or fats, oils and grease.

You can find out more about their use and performance [here](#).



Background: Flow to Full Treatment

What is 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.

How do you work out a treatment work's FFT?

When wastewater treatment works are built, they are designed to meet a 'flow' which is the volume of water going through the works.

The Environment Agency, our environmental regulator, requires water companies to design wastewater treatment works 'to treat peak dry weather flow and additional flows from light rainfall'.

This involves a calculation of the dry weather flow (DWF), which helps us understand the minimum volume the plant will need to treat during a period without rainfall.

The DWF is then used as a base to help calculate the FFT level that meets the regulatory requirements. This means every treatment works has a unique FFT value. In some cases, this value is included in a permit from the Environment Agency, with which a water company must comply. Across our 410 wastewater treatment works there are 185 treatment works which are permitted with a FFT requirement.



[Click here to see our FFT diagram.](#)

What happens when FFT is exceeded?

While the precise circumstances can be different at individual treatment works, a system is normally designed to treat a volume of flow of around three times the maximum dry weather flow (DWF). If this flow is exceeded, for example by a storm event, snow melt or flooding draining, then flows in excess of the FFT level are diverted.

Excess flow can be diverted to:

- large tanks where the flow is stored until the storm subsides. When the flow into the works reduces after the storm event has ceased and treatment capacity becomes available, the contents of the storm tanks are returned to the inlet to the works and pass through the treatment process as normal.

- a storm overflow on the works, which is usually set to spill over directly to a watercourse when the flow exceeds around six times the DWF.

This means that, even if sites are not able to meet FFT for any reason, this is unlikely to create any harmful spills to the environment - in many cases the flows are diverted to storm tanks and then passed back through the treatment process.

Background: Flow to Full Treatment Investigations

(cont'd)

How do you monitor whether you are achieving FFT?

When treatment works are built, they are designed and engineered to a certain capacity in order to achieve a specific FFT level.

Employees operating these sites will monitor their performance and take corrective action to maintain them, ensuring that they continue to operate effectively. Performance compliance at the site is also checked externally by our regulators through periodic site visits and assessments.

As part of the industry's Water Industry National Environment Programme (WINEP) work between 2020-25, a large programme of investment is underway to improve this monitoring at sites and install MCERTS (the EA's Monitoring Certification Scheme) approved equipment.

A significant challenge is that there is currently no approved methodology or industry standard approach to measuring FFT. This means that different conclusions could be drawn about the performance of a site using the same information.

Monitors currently installed can either be at the 'front-end' or 'back-end' of the treatment works. Information from front-end monitors will normally produce a direct comparison to FFT permit requirements. They monitor the flows coming into the 'front' of a treatment works at a set time, before elements are removed or filtered out in the treatment process. 'Back-end' monitors instead look at the volumes leaving the site post-treatment.



We are investing heavily in flow measurement schemes up until 2025.

Every site has its own specific process, equipment and procedures and will treat a varying volume on different days; all of this leads to a length of time for water to pass through the treatment process and it is very difficult to accurately extrapolate from a back-end monitor what flows were coming into the works at a set point in time.

What are you doing to improve monitoring of FFT?

We are investing heavily in flow measurement schemes up until 2025. This investment will lead to much greater coverage of MCERTS front-end monitoring being in place and will also enable the completion of investigations into whether we can install the same monitoring to additional sites for completion between 2025 and 2030.

We are working to accelerate this programme, as well as expanding it to an even greater proportion of our sites, in light of the investigation by the EA and Ofwat, more information on which can be found in the Governance section.

4

**REDUCING
POLLUTIONS**

Reducing pollutions

At Northumbrian Water, we believe all pollution events represent a failure. We have an ambitious goal to have zero pollutions as a result of our assets and operations.

While no system will ever be perfect, alongside a network where we are not in full control of the volume, or even items, added to our flows, we are committed to doing everything we can do to reduce the number of pollution events that impact our rivers and coasts.

We have developed a culture focused on all aspects of pollution risk. This approach has led a transformation in our pollution performance, particularly from 2017 onwards, resulting in industry-leading performance as a frontier company, supporting our 4* Environmental Performance Assessment (EPA) rating.

Ensuring that we protect and enhance the environment in everything we do is embedded in our company culture. We will continue to have a zero-tolerance approach to pollution and are committed to working with others in partnership to deliver this plan.



[Click here to see our pollution incident data since 2015.](#)



[Click here to see the root causes of our pollution incidents.](#)

Key Stats



What are pollution incidents?

Pollution incidents can occur as a result of both water and wastewater operations, and can come from our pipe networks and built assets. Water incidents can occur for example from the supply network, from burst water mains, or as discharges from WTWs. Wastewater incidents can occur from sewage treatment works, sewage pumping stations and sewers, including from polluted surface water outfalls (PSWOs) 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). Once identified, incidents are managed and recorded on the National Incident Reporting Scheme, and our list is owned jointly by us and the EA.

Reducing pollutions: Our Pollution Incident Reduction Plan

The 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.

In developing our plan, we considered the expectations of government, our regulators, customers, environmental NGOs and our Customer Challenge Group (CCG), The Water Forum.

The plan sets out how we will maintain our industry-leading pollution performance and continue to reduce the number of pollution incidents from our wastewater and water operations.

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 business-as-usual 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.

Our focus is on continuous performance improvement across our water and wastewater networks and assets, including 25,000km of water main and 55 water treatment works (WTWs), and 30,000km of sewers, 1,250 combined sewer overflows (CSOs), over 1,000 sewage pumping stations (SPSs) and 410 sewage treatment works (STWs).



[Click here to read the full plan.](#)

The water improvements identified here also apply to our water assets in our Essex and Suffolk Water area.

Our Board and Executive Leadership Team (ELT) are committed to the delivery of this PIRP alongside existing monitoring and governance arrangements, including reporting on the delivery of our Pollution Management Programme (PMP).

These activities contribute towards our vision of becoming the national leader in the provision of sustainable water and wastewater services.



Reducing pollutions: Water Rangers

A first within the UK Water Industry running since 2014, Water Rangers is a volunteer-led programme of citizen scientists.

The Water Rangers are a group of empowered individuals from a wide range of communities coming together to help protect the region's waterways that are more prone to pollution.

Our volunteers help us spot and deal with pollution threats at the earliest possible opportunity, often helping to avoid potential incidents from happening in the first place.

Water Rangers also report on issues that are not the responsibility of Northumbrian Water such as fly tipping, fallen trees, abandoned shopping trolleys, defects in footpaths and missing life buoys. We act quickly on any issues that might relate to our operations and we facilitate passing on the information relating to other issues to the relevant responsible authorities to deal with.

Our volunteers regularly patrol a total of 74km of watercourses, equivalent to walking from Durham to Amble in Northumberland, and report their findings after their patrols so that any potential pollutions can be dealt with quickly.



Click here to see why Nick, our Newcastle-based Water Ranger, feels the scheme is important for his family and for generations to come.



Reducing pollutions: Bin the Wipe

Everyone can do their bit to keep the watercourses and bathing waters in our region healthy and clean.

More than 60% of the blockages found in Northumbrian Water's sewer networks contain wet wipes.

Our Bin the Wipe campaign aims to protect homes and the environment from sewer flooding caused by these blockages.

The aim is to educate customers about the problems caused by wet wipes, which do not break down in water, in the way that toilet paper does. Flushed wipes can catch or settle in sewers and cause blockages.

Using data from sewer clearances, the campaign targets 'hot spots' where the flushing of wipes is highest.

Customers in these areas receive an initial letter, which explains the issues that wipes cause and that a special Bin the Wipe team of Sewerage Maintenance Operatives (SMOs) will be working in their area.

The letter also explains how people can help, simply by making sure they and their families do not flush wipes down the toilet.

The team monitors the local sewer network and uses bespoke tools to track the flushing of wipes. They can narrow down the locations from which they are flushed, often pinpointing individual properties.

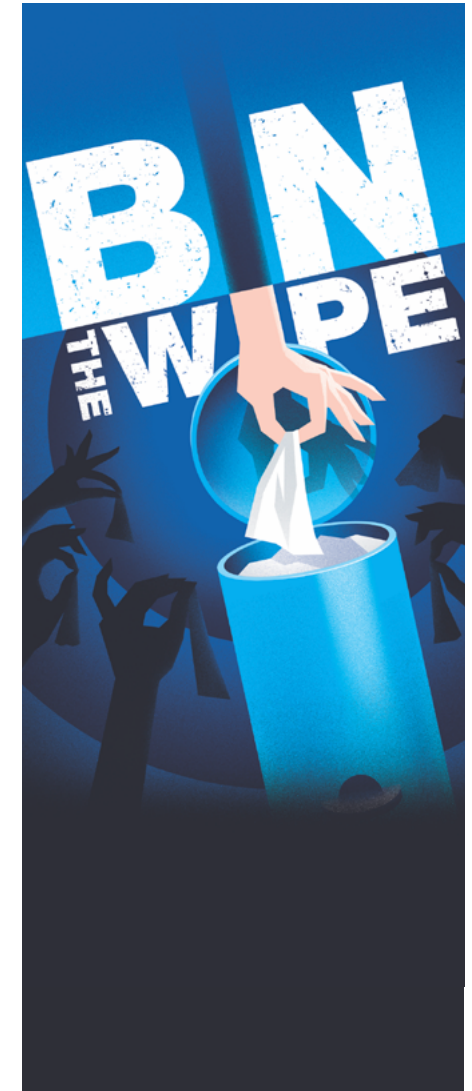
Under the Water Industry Act 1991, it is illegal to put anything into the sewer network that can impede the flow of the waste it was designed to carry – toilet paper, pee and poo.



[Click here to see watch our Bin the Wipe advert that was screened on ITV and in cinemas across the North East.](#)

In areas where wipes continue to be found in the sewer network, customers are kept up to date with further letters. These remind people of the problem and explain the actions Northumbrian Water can take if customers continue to flush wipes. The actions we can take includes recharging customers for the cost of clearing the blockages they are causing, or even prosecution.

Areas visited by the campaign have seen reductions in the number of wipes found in sewers upwards of 50%. This successful outcome has led us to invest further to grow this initiative and the Bin the Wipe activity doubling.



Reducing pollutions: Long term strategy

Industry leading targets for 2050

We are setting new aspirational targets for our approach to rivers and coasts in our long-term vision for 2050.

Water companies work in five-year 'asset management periods' (AMP) regulatory periods and these are set in the context of a long-term, usually 25 year, vision of what might happen to variables such as the weather, size of the population and economic development.

It is difficult to imagine 25 years into the future, but our long-term vision draws heavily on many data sources and extensive research in order to try to predict what our water and wastewater service needs might be in over the long-term so that we can start to plan for that now.

The first step in developing our regulatory business plan for a new AMP is to revisit our long-term vision to check if the updated data or research changes or plans or targets for the future. We are currently completing our review of our long-term vision and will later this year publish a new strategy that aims to meet the needs and expectations of our customers, regulators and stakeholders over the next 25 years.



We are setting new aspirational targets for our approach to rivers and coasts in our long term vision for 2050.

Affordability

The major challenge ahead of us is that a step-change in how our sewer system is designed to operate is not a low-cost option. For example, ambitions expressed by the public to greatly reduce, or even eliminate, spills from storm overflows will take significant investment, especially alongside increased intense rainfall due to climate change. We need to get agreement from our customers, regulators and investors on how extra investment will be funded.

That means we must be careful in working at a pace that is affordable to our customers and fair to our communities while seeking the highest environmental performance. Our focus on seeking innovative and nature-based solutions, should help to reduce the need for large scale investment in built assets, thereby potentially also reducing the cost to our customers and the environment.

As an example, the Government's Storm Overflows Evidence Project assessed options that could deliver a significant reduction in discharges from storm overflows at a cost of between £50 to £300 per year, per household, depending on how quickly they are implemented and in what style. This demonstrates that the planning of options and approaches to these decisions have important consequences for how environmental improvements are financed, and particularly any impact they may have on bills for customers.

Reducing pollutions: Long term strategy

Nature-based solutions

There are also important environment considerations to any new investments that we make; we do not want to implement changes to how our assets operate in order to reduce pollutions only to cause an environmental problem elsewhere.

For example, by increasing carbon emissions in our day-to-day operations, by taking out green spaces and natural habitats for large scale new construction, or from the carbon emissions caused by pouring large amounts of concrete.

Therefore, our preference is to implement nature-based solutions. This is not without its own challenges, and nature-based solutions can be more costly and slower to implement, as well as having a larger probability for uncertainty and risk.

This means that it can be more difficult to build business cases in order to secure investment and we welcome the support of our regulators in helping to create more favourable conditions to enable more nature-based solutions.

How we plan, investigate and deploy these solutions is a major part of our developing long-term strategy.



Our preference is to implement nature-based solutions.



5

**INVESTMENT
AND
ACTIVITIES**

Investments and activities

At Northumbrian Water our purpose means that we focus our investment and activities to provide the greatest possible environmental benefit.

This means long-term commitment to projects, schemes, communities and partnerships.

In the period 2020-25, we will be directly investing over £400 million into activities that will enhance the quality of water in our rivers and coasts. Alongside this direct investment, through working in partnership and leveraging funding, this sum will exceed over £500 million. This investment is designed to improve our processes, reduce carbon and create resilience in the system for future severe weather events.

However, financial investment is only part of our story.

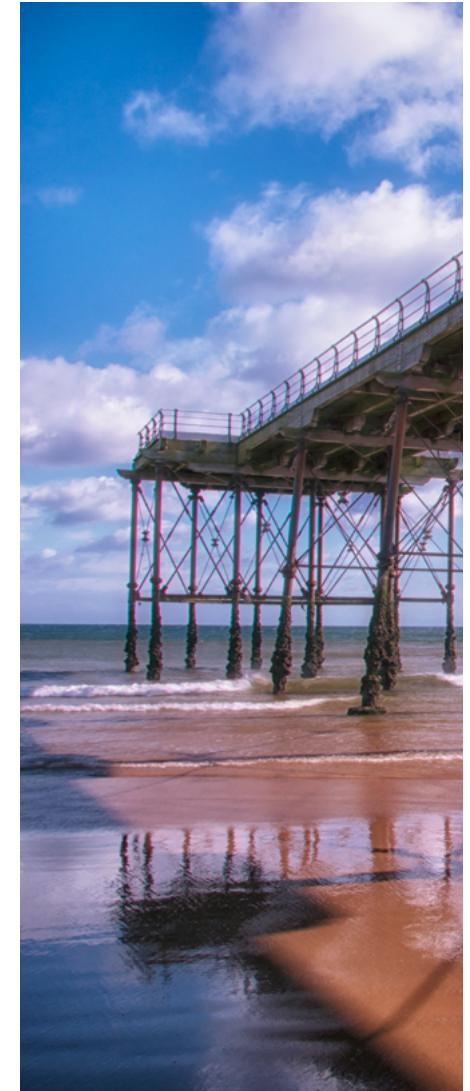
Through our holistic, partnership-led approach to improving the water environment, we are delivering hundreds of kilometres of improvements to our rivers and coasts. As a large and trusted company, we are able to use our convening power to rally the resources and efforts of organisations with similar aims, leveraging in millions of pounds of additional funding for environmental benefit.

This approach also means we are putting investment where it is most effective; learning from others about where the need is most and seeking nature-based solutions to address problems at source - before they enter our networks or watercourses, rather than working on 'end of pipe' solutions that fix a problem that has already occurred.



In the period between 2020 to 2025, we will be directly investing over £500 million into activities that will enhance the quality of water in our rivers and coasts.

Working in genuine partnership avoids a silo mentality that can drive organisations to focus only on the bit of the issue that they can see - making it harder, often more expensive and more environmentally damaging ('end of pipe' solutions often involve the pouring of concrete and increased carbon emissions) than taking a joined up and holistic approach to problem-solving.



Investments and activities (cont'd)

Delivered activity

Investing in our operations and improving our processes to progressively reduce our impact on river health

- We are the industry leaders on reducing pollution incidents, having the lowest amount of pollution incidents of any water company in the Environment Agency's most recent Environmental Performance Assessment.
- We have reduced the number of serious pollution events substantially, our average numbers of pollutions from storm overflows (category 1-3 pollutions) have more than halved since 2016.

Being open about what we are doing and our performance, while improving the availability of information

- We publish our annual Event Duration Monitoring data that relates to storm overflows on our website.
- We have kept people informed on work surrounding Environmental Permit Compliance with an information page on our website.
- Our Beach Aware web-service is live all-year-round, giving near real time updates on when 78 individual SOs spill.
- Our senior leaders' bonuses are made up of stretching targets with our environmental performance directly affecting outcomes. This specifically includes measures such as pollution incidents, leakage and customer experience. This has been recognised as best practise by Ofwat.
- We have a Water Environment Governance Group with external specialist membership which holds us to account on our performance.

Supporting biodiversity, sustainability and enhancing the water environment through programmes, campaigning and customer engagement

- Our Bin the Wipe campaign has led to an 18% decrease in blockages caused by wipes in the North East, and 49% in areas where we ran a hotspot campaign – helping to reduce the risk of discharges into a river.
- The Ripple Effect, our award-winning water efficiency education programme, engages with school communities to get involved in our carefully developed education programme. It encourages everyone to learn more about water and make small changes to protect our water supply and resources.
- Our new ambition for a programme of water environment improvements, which focuses on bluespaces, locations where people can enjoy areas around water via public access, has been developed – we asked customers and environmental experts to suggest places that could benefit from access and recreational facilities, biodiversity, and water quality enhancements, and worked in partnership to deliver improvements to over 30km of water environments in the first year alone.

Engaging the public and partners in protecting, improving and enjoying our coasts and rivers

- We have a team of 67 volunteer Water Rangers who monitor 56 routes more vulnerable to pollution threats across the region.
- In 2018, we helped launch a statement of principles with Blueprint for Water that set out the opportunity for real partnership across water companies and environmental groups.
- We are proud that already 95% of the North East population lives within an hour's drive from a beach with Good or Excellent bathing waters.
- At our Innovation Festival 2021, we had sprints focused on improving our rivers, such as 'Collaboration for a sustainable nation looking at more effective use of Drainage and Wastewater Management Plans'.
- Our Branch Out funds have enabled more than £10 million of investment into the water environment from leveraged funding, with one project receiving a Royal Seal of approval in 2021.

Investments and activities (cont'd)

Action underway

Investing in our operations and improving our processes to progressively reduce our impact on river health

- In our Water Industry National Environment Programme (WINEP) and Water Framework Directive programmes we have more than 25 schemes, which will improve the status of more than 200km of our rivers.
- By the end of April 2022, all our storm overflows will have Event Duration Monitors in place.

Being open about what we are doing and our performance, while improving the availability of information

- We publish our annual Event Duration Monitoring data that relates to Storm Overflows on our website.
- We are working towards extending our Beach Aware status to other designated inland areas, where there are current activities such as canoeing or recreational swimming.
- We will invest in monitoring to provide 100% near Realtime Data on all Storm Overflows by 2023.

Supporting biodiversity, sustainability and enhancing the water environment through programmes, campaigning and customer engagement

- We are working with fellow water companies to take our award-winning Bin the Wipe campaign national, to create even higher levels of engagement – and protect even more homes and areas of the environment from sewer flooding.
- Our Water Environment scheme, Bluespaces, is continuing its partnership approach focusing on wide improvements to areas of water that customers can access. Over £500,000 is available to support partners to deliver water environment improvements up to 2025.
- We expect to have achieved another 66.5km of river improvements in 2022/23.

Engaging the public and partners in protecting, improving and enjoying our coasts and rivers

- Our 2022 Innovation Festival will feature a range of sprints and workstreams focusing on improving our rivers.
- Our Branch Out fund for 2022 will shortly be issuing funding of up to £25,000 for a range of groups working to improve the water environment.

Investments and activities (cont'd)

Future investments and work

Investing in our operations and improving our processes to progressively reduce our impact on river health

- We will reduce spills from storm overflows to an average of 20 per year by 2025.
- 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.
- Our WINEP programme consists of £61.6 million investment to investigate, improve and reduce spills from SOs, including increasing capacity at our treatment works.
- Building from an innovation idea from our employees, we will be completing a wetlands feasibility study to assess the potential for integrated constructed wetland treatment for phosphorous removal, and propose a plan for a trial site to allow us to test the effectiveness of this nature-based solution.

Being open about what we are doing and our performance, while improving the availability of information

- We will introduce final effluent, in-river upstream and downstream monitoring to get a greater understanding of environmental impacts of treated water by 2030.
- We will implement Water Quality monitoring at the highest priority Storm Overflow locations by 2025.

Supporting biodiversity, sustainability and enhancing the water environment through programmes, campaigning and customer engagement

- Our teams are working to support legislation to ban wet wipes that contain plastic and lobby for a ban on all wet wipes that are not 'Fine to Flush'.
- We have launched with The Rivers Trust a ground-breaking partnership to create a North East Catchment Planning Hub that is bringing resources and expertise into the region to address our environmental ambitions.
- 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.

Engaging the public and partners in protecting, improving and enjoying our coasts and rivers

- 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.
- 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 will work with partners to achieve 100% of coastal bathing waters at Good or Excellent by 2030.

Facts and figures:

Investment in improving water quality for our rivers and coasts

Our planned investment for 2021-2025

Wastewater Treatment Works

	2020/21	2021/22	2022/23	2023/24	2024/25
Wastewater Treatment Works Infrastructure	£36,719,711	£46,883,908	£70,932,718	£131,181,570	£83,186,859
Sludge and Bioresources	£1,689,706	£1,254,719	£4,969,898	£12,527,116	£14,712,118
Monitoring Systems	£627,673	£2,655,209	£2,674,966	£1,752,002	£1,096,500
Total	£39,037,090	£50,793,837	£78,577,582	£145,460,688	£98,995,477

Our planned investment for 2021-2025

Network and Storm Overflows

	2020/21	2021/22	2022/23	2023/24	2024/25
Event Duration Monitoring Installation	£595,620	£679,340	£789,100	£300,000	£300,000
Inspections and Investigations	£2,259,945	£3,366,168	£3,734,728	£2,255,400	£2,054,750
Infrastructure Investment	£36,769,571	£37,595,391	£39,977,657	£30,453,084	£28,970,190
Total	£39,625,136	£41,640,899	£44,501,485	£33,008,483	£31,324,940

Facts and figures:

Investment in improving water quality for our rivers and coasts (cont'd)

Investment over the last five years

Wastewater Treatment Works 2015 - 2020

	2015/16	2016/17	2017/18	2018/19	2019/20
Wastewater Treatment Works Infrastructure	£31,028,081	£27,921,263	£38,380,705	£39,542,540	£35,850,145
Sludge and Bioresources	£2,562,346	£650,231	£2,243,114	£6,297,872	£11,612,065
Monitoring Systems	-	£2,100	£131,540	£285,238	£865,239
Total	£33,590,427	£28,573,595	£40,755,360	£46,125,650	£48,327,449

Investment over the last five years

Network and Storm Overflows 2015 - 2020

	2015/16	2016/17	2017/18	2018/19	2019/20
Event Duration Monitoring Installation	£1,194,215	£695,142	£743,510	£332,451	£671,779
Inspections and Investigations	£7,158,942	£4,451,615	£3,709,633	£2,975,814	£3,845,448
Infrastructure Investment	£50,010,531	£44,536,923	£41,230,599	£39,457,747	£36,169,438
Total	£58,363,688	£49,683,679	£45,683,742	£42,766,012	£40,686,665

Our legacy

WINEP

The WINEP, formerly known as the National Environment Programme (NEP), is a national investment programme for all water only and water and wastewater companies. It includes investigations, monitoring, options appraisals and schemes, to drive improvements, prevent deterioration and protect the water environment.

These commitments form part of our regulatory business plan for the current AMP and are made up of a set of regulatory obligations which must be delivered.

The WINEP is a key part of the overall programme of measures to meet the Environment Agency's Water Industry Strategic Environmental Requirements (WISER) approach.

The WISER approach includes objectives to meet Water Framework Directive (WFD) 'Good' status in our rivers by 2027 and prevent deterioration in status, together with other international regulatory features including the Urban Wastewater Treatment (UWWT) and Habitats Directives.

At Northumbrian Water Group, we recognise our role in meeting water quality objectives for rivers and coastal waters, and we aim to ensure that our customers' money is spent on well justified schemes that will deliver real improvements to water quality and ecology and represent good value.

To achieve this, we worked very closely with our local and national EA River Basin Management Service (RBMS) Representatives to agree the obligations included in the PR19 WINEP and to ensure all the requirements identified in the WISER document are covered.



You can find out more about the drainage and wastewater management work we are doing in your part of the region [here](#).

Planning ahead

Our Drainage and Wastewater Management Plans (DWMP) provide a basis for long-term planning of drainage and wastewater services.

They demonstrate how we will protect public health, support economic growth, support resilient communities, and protect and enhance the environment.

We will analyse sewer performance across our region and highlight where future work will be needed. The focus will be on three key areas: flooding, environmental and sewage treatment.

We use computer models of the drainage network across our region. We look at how the network behaves now, and then introduce proposed developments (as well as climate change data) into the model, to see what the impact on our drainage network operations would be.

We then put plans in place to invest in changes and upgrades to our assets so that we are well prepared for the future.

Our legacy (cont'd)

Leading the sector with the innovative North East Catchments Hub

We have teamed up with The Rivers Trust to form the North East Catchments Hub, a new approach to drive work that will inform investment to benefit water and the environment in the region.

This exciting new partnership brings together local, regional and national expertise in a regional hub to develop improvements for water quality and the wider environment around the North East.

As well as playing an important part in the creation of our business plan for 2025-30, the hub – an industry first – will create three new full-time job roles within three of the region's Rivers Trusts (Tyne, Wear, and Tees) plus an extra part-time managerial role.

Catchments are all the areas that drain into streams, rivers and lakes. The North East Catchment Hub brings the Catchments Based Approach for water management to a regional level within the North East, facilitating cross-catchment working and knowledge sharing with the support of the Catchment Partnerships.

It will form a focal point for our planning and partnership working to improve the environment through catchment and nature-based solutions.

Working in partnership through the hub will help to combine expertise and best practice and create opportunities to unlock additional funding and consider alternative, sustainable ways to invest for environmental benefit.

 [Read more](#)

Enabling Citizen Science

We are proud to partner with universities in our region and beyond to further help them to act as citizen scientists and help us better understand our rivers and coasts.

Newcastle University

As part of the Newcastle University Business In Action initiative, we are working with Masters students to look at how we can add social and natural capital when tackling climate change and challenges such as flooding.

 [Read more](#)



Lancaster University

We are working with Lancaster University to lead a multi-agency study to find new, low carbon ways to improve river water quality across the North East and North Yorkshire.

A total of 30 watercourses flowing into the rivers Wear and Tees are included in the exploration of how catchment and nature-based methods of wastewater treatment can help improve the ecological status of the rivers.

 [Read more](#)

Water Rangers

Our Water Ranger programme involves training volunteers to help spot and deal with pollution threats so that any potential incidents on watercourses are avoided.

Our legacy (cont'd)

Northumbria Integrated Drainage Partnership

The Northumbria Integrated Drainage Partnership (NIDP) is an innovative approach developed from the Tyneside Sustainable Sewerage Study.

It brings 13 Lead Local Flood Authorities across the North East together with the Environment Agency and Northumbrian Water to reduce flood risk and promote sustainable drainage.

NIDP partners work together to prioritise and jointly fund integrated flood risk studies and joint delivery schemes to tackle flooding from sewers, rivers and surface water affecting communities across the North East.

Since 2012, over 20 drainage areas have been studied, leading to delivery of more than ten schemes, including the multi-award-winning Tyneside projects at Brunton Park, Monkton and Fellgate.

Partners have already jointly invested over £9 million to reduce flood risk to around 1,000 homes, with more projects currently in construction or in the planning and design stages.

By managing risk from all sources and across all partners, the NIDP approach can deliver far greater benefits than simply flood reduction – habitat creation and water quality improvements are regular additional aspects to the schemes delivered to date.

One of the advantages of the NIDP is that projects that are not viable as single-stakeholder projects can be developed jointly by partners to reduce flood risk for customers.

This can also allow partners to make substantial cost savings which can be invested to reduce flood risk elsewhere.



[Read more](#)

Our bluespaces scheme and improving the water environment

In 2020 we made a commitment to go above and beyond our regulatory requirements when it comes to bluespaces – rivers, streams, wetlands, beaches and coastlines – that are accessible through rights of way and public access.

We are now planning to deliver 250km of water environment improvements across its North East, Essex, Suffolk and Norfolk catchments in our operating and source areas by 2025.

The new bluespaces funding scheme will support projects to help achieve this, which are developed and delivered with partnerships, working to a catchment-based approach model.

It has already delivered over 30km of water environment improvements in Year 1, across four schemes, and is on track for a further 35.6km in Year 2, through a further 11 projects.

Planning for the third year involves more than 60km across 20 projects.



[Read more](#)



Our legacy (cont'd)

SeaScapes – a national first

The SeaScapes Project brings together local, regional and national partners to benefit the coastal heritage of the area between the rivers Tyne and Tees – and we are a part of it.

Fully titled 'Tyne to Tees, Shores and Seas – SeaScapes Partnership', it is the UK's first marine Landscape Partnership scheme.

As well as being one of the partners dedicated to protecting and celebrating this unique and often overlooked piece of coastline, our bluespaces team also hosts a new role created to support improvements.

We host the partnership's Beach Care Officer, Louise Harrington, who leads on driving customer engagement and volunteering activity.

This not only makes the role possible, but it also more closely connects us with others who can help play a role in enhancing the region's coastline.

 [Visit the SeaScapes website](#)



Removing phosphorus as part of our WINEP

As part of our work through the Water Industry National Environment Programme (WINEP), we are improving water quality at 27 locations through the removal of phosphorous.

While phosphorous is an essential nutrient for plants and animals, too much can have a negative effect.

The majority of our P-removal work through WINEP involves upgrades to sewage treatment works (STWs), with process alterations to remove the phosphorous. This is taking place at 22 sites across the North East.

 [Read more](#)

LIFE WADER

We're making a difference to river water quality in Northumberland as part in a multi-million pound project.

The LIFE Water and Disturbance Environmental Restoration (WADER) project aims to improve the ecological condition of more than 49,000 hectares of habitat and water quality for the species that depend on them.

Focused on the River Tweed catchment, Tweed Estuary and Northumberland Coast, the Natural England-led project sees our team working to help reduce nitrates entering the water from agriculture.

 [Read more](#)

Our legacy (cont'd)

Peat Restoration

Water quality in the River Tees and its Upper Teesdale tributaries have been benefiting from more than £500,000 of investment in peat restoration.

Our Catchment team has been working with partners to tackle a rise in water colour driven by historic land management to improve productivity in the 1950s to 1980s.

This involved drainage channels called 'grips' being dug in the uplands on blanket bog. This has led to changes in the hydrology of many blanket bogs and the peat that forms them.

Peat which has been developed over thousands of years forms these blanket bogs, and the water derived from many of these bog habitats feeds into our upland reservoirs, particularly in the Tees catchment.

Fully functioning blanket bog acts as a filter prior to water entering our uplands reservoirs. However, damaged blanket bogs do not provide this service as effectively and instead release organic matter, increasing the water colour which also makes water treatment more difficult, leading to increased treatment and energy costs at water treatment works.

Our work has involved 'grip blocking', which involves blocking the drainage channels with dams along affected areas.



[Read more](#)

Catchment Advisors that work with our agricultural community

We recognise that as a water company alone we cannot solve all of the issues that impact our rivers and coasts, but can support partners and stakeholders in their activities to have a real impact on water quality.

A vital part of this approach is found in our Catchment Advisors that allow Essex & Suffolk Water and Northumbrian Water to engage effectively with the agricultural community and relevant stakeholders, who are responsible for managing the land and water within our catchment areas. We work collaboratively with them, on a voluntary basis, and with other partners to protect the quality and availability of water.

Our approach to this partnership with our catchment partners is long term, where we were one of the first companies to employ Catchment Advisors back in 2004, with the Lound Lakes Conservation and Catchment Advisor in Suffolk. As we have seen the benefits of this approach to our river and ground water quality, so the team has grown, we now employ eight Catchment Advisors, managed by a Catchment Team Leader.

Our Catchment Advisors work in partnership with others to achieve common goals, including local partnerships formed under Defra's Catchment Based Approach (CaBA) on relevant projects, Rivers Trusts, Wildlife Trusts, Catchment Sensitive Farming and the Campaign for the Farmed Environment.



[Read more](#)

Our legacy (cont'd)

Protecting aquatic life with eel passes

Protecting the aquatic life that lives in the North East's watercourses isn't just about the impact we can have upon water quality.

Migratory eels and fish can sometimes find their journey upstream hazardous around the intakes for water treatment works, where water is extracted from rivers. There, it is treated and put into supply for customers.

So, we are carrying out a programme of work to instal eel and fish passes and screens, which stop them from being sucked into the engineering. These either stop the eels and fish from entering the inlets completely or form a safe passage back to the river.

Already, screens have been installed on the River Wear at Lumley and Wellhope Burn, the Coquet at Warkworth, the Tees at Blackwell and Broken Scar, on the Tyne at Riding Mill, and the Pont at Hallington.

Passes have been put in place at Warkworth and Riding Mill. Further installations are planned for the River Tyne at Ovingham and Barrasford. The work complements the installation of screens at sites in our Essex & Suffolk Water operating areas.



SuPR Loofah



One of our latest innovation projects aimed at improving water quality has achieved funding from the Ofwat Breakthrough Catalyst Stream Challenge.

The project is known as SuPR Loofah (Sustainable Phosphorus Recovery) and this initiative involves the recovery of phosphorus from wastewater.

It uses an innovative micro-algae coated on loofah material and held in place by a sustainable polymer coating.

Once the 'SuPR Loofah' is full of phosphorus it will be removed, replaced and the phosphorus recovered, preventing environmental damage.

Cramlington SO trial



We are working with innovators at Eka-Sense (ES) to collaboratively conduct a trial to capture environmental data from a storm overflow in Cramlington, Northumberland.

The trial aims to determine the technical feasibility of data capture from the live sewer and assess the viability of using the data within our operational teams to inform decision making around sewer maintenance and reactive visits.

The scope of the trial is to focus on the type, quality and benefits of the data using different data capture tools/techniques.

A two-phase trial, it will initially focus on the physical capture of the data from the sewer and the development of the monitors, the purpose being to ensure the capability of monitors are documented.



[Read more](#)

Our legacy (cont'd)

Working with farmers to use biobeds to improve river water quality

Pesticide contamination from farmyards can contribute a significant proportion of the pesticides found in watercourses, water that is often abstracted further down and treated to supply drinking water.

The installation of a bunded filling area and biobed or biofilter in the farmyard can prevent pesticide losses due to sprayer filling and washdown operations reaching the local watercourses, as pesticide washings are contained and breakdown naturally through the biomix. To examine the practicalities of construction, use and water quality benefits of this infrastructure on working farms, we invested in three demonstration biobeds and one biofilter in our southern operating area in the surface water catchments from which they abstract water: the Chelmer & Blackwater, Bure, Waveney and Stour catchments respectively.



[Read more](#)

The investment in these items had a twofold purpose:

- to construct the biobeds and biofilter in such a way as to allow for sampling of the influent and effluent, to contribute to research on their effectiveness; and
- to allow for farmer engagement events to be held, in order to facilitate knowledge exchange in the catchment, and to encourage the uptake and construction of further biobeds / biofilters on farms in the catchment area.

Naturally Native

Our Branch Out fund is providing a boost for water voles that depend on the North East's rivers and streams for species revival.

Naturally Native is a partnership project led by Durham Wildlife Trust together with Northumberland and Tees Valley Wildlife Trusts, operating across the entire Tyne, Wear and Tees River Catchments.

The aim is to halt the decline and aid the recovery of native water voles in the North East.

Branch Out funding of £12,200 will support the first phase of work being carried out on the River Don, a tributary of the Tyne, and at the Hetton Burn, Rainton Burn and Moors Burn in County Durham.

Using strategies that have proved successful in Scotland and East Anglia, the project will address predation from non-native American mink, as well as habitat loss and fragmentation.



[Read more](#)



Our legacy (cont'd)

Working with the local community to enhance rivers for aquatic life

Essex & Suffolk Water partnered with the City of London Corporation and Thames21 to deliver in-channel and marginal habitat restoration and enhanced ecological connectivity within a stretch of the River Roding bordering the east of Wanstead Park.

This bluespaces scheme has seen a real improvement of 2.2km of publicly accessible water environment at the River Roding, at Wanstead Park in East London has been improved. This stretch of the river is heavily modified and this project 'hinged' small marginal trees into the river to diversifying the flow pattern, provide areas of refuge for aquatic plants and to improving fish spawning habitat.



The project worked with the local community and volunteers including the Friends of Wanstead Park to carry out work parties and volunteer sessions to open vistas of the river.

This improved access to the river from the popular attraction of Wanstead Park as well as directly contributing towards habitat improvements – improving the water environment and enabling the public to enjoy it.

A long term partnership for the Trinity Broads

Following the purchase of the majority of the Trinity Broads, broadshore and surrounding land by Essex & Suffolk Water in 1995, a partnership was formed with the Broads Authority, Environment Agency and English Nature (now Natural England). The partnership has now been extended to include Norfolk Wildlife Trust and all partners agree to work to the aims of the site management plan.

This partnership works to maintain a landscape that has natural transitions between shallow lakes, dykes, marginal reedbed, open fen and wet woodland, which supports a wealth of plants and animals. While achieving this we have also made sure to make the Trinity Broads as a place where people come to enjoy the peace and quiet, both on the water by boat and from land using viewing areas and walkways.

This has been achieved while encouraging local people to become passionate and well-informed about the Trinity Broads and facilitate their involvement through assisting with practical conservation work, events for the public and school projects.

While providing these benefits for nature and our community the partnership has also achieved consistently clear, low nutrient water in the Trinity Broads that supports diverse communities of aquatic wildlife and provides the public with a supply of high-quality drinking water.





MONITORING AND GOVERNANCE

Monitoring and governance: Storm overflows

As a company we take our responsibility for our environmental performance very seriously, with accountability at the highest level of the company.

To make sure our environmental performance remains consistent with Our Purpose, we have been completing a programme of improved monitoring, working with the Environment Agency, with a major focus on storm overflows.

Storm overflows

The monitoring of storm overflows is completed by a system known as 'Event Duration Monitoring' (EDM) which uses sensors on an overflow to tell us when it is spilling.

We installed our first monitor back in 2007 and now have 98.5% coverage across our storm overflows.



To make sure our environmental performance remains consistent with Our Purpose, we have been completing a programme of improved monitoring, working with the Environment Agency, with a major focus on storm overflows.

2021 storm overflow information

1,567

Permitted storm overflows

1,542

Storm overflows with EDM

25.3

Average number of spills

6.0 hours

Average duration per spill event

36,483

Total number of spill events

1.7%

Average percentage of time operating (spilling)

Storm overflows act as a relief valve, releasing a heavily diluted mix – mostly rainwater and a small amount of wastewater – to the environment when there is a situation causing high levels of flows in the wastewater network.

Such situations can be caused by heavy rainfall, snow melt or water draining from flooding.

Storm overflows play an important role in protecting homes and businesses from sewer flooding, as when the sewer system is full, the dirty water can only go back up the network into homes and businesses or escape out of the system via the storm overflows.

Monitoring and governance: Storm overflows (cont'd)

What does the monitoring tell us?

EDM sensors tell us when a spill starts and when it stops but do not give volumetric data or any nature or strength of effluent.

Right now, we have near-real time updates for our coastal overflows, which we publish on our website and share with organisations such as Surfers Against Sewage.

What are our next steps?

We will have full monitoring across all our permitted storm overflows before the end of 2022. We are also improving the function and operation of our monitors, which is explained on the right.

Alongside this, we are developing a new data portal for our river storm overflow monitors where we will add near realtime monitoring across our entire network in the future. The first version of this will be available this year.



[Click here to see how our monitors work.](#)

Do the monitors work all the time?

Monitors are supposed to operate continuously, but we have had some challenges in certain places. This is due to the location of installations and to monitors being 'blinded' by products getting in the wastewater system that should not be there.

While we have a range of different monitoring devices, most monitors are installed in line with the diagram on the link to the left. They work when a current effectively passes between the two probes, indicating a discharge.

However, when a monitor is installed incorrectly it can create false readings, generally indicating a discharge when none was present. These false readings will, in most cases, indicate a spill when one has not actually occurred. This could be leading to an overreporting of the total number of spills.

This is also a learning process regarding where it is best to install monitors, given the inconsistency in styles of storm overflow.

Alongside this, when a discharge happens that includes certain materials – like wet wipes – it has been found that these remaining 'rags' will gather on the probes of the monitor and can make them lock together – indicating a discharge when none has happened and giving us incorrect information on how the network is operating.

Where we identify these issues on a monitor, we will first initiate processes to regularly inspect and remove any debris that causes false readings.

In addition, we have an ongoing programme of works to investigate and deliver permanent solutions to these issues at points in the network.

Monitoring and governance: Storm overflows (cont'd)

How do we inspect the monitors?

We have service level agreement with a contracted partner who delivers specialist maintenance should communication with a sensor ever be lost, or inaccurate data identified. It also covers the routine maintenance of equipment:

- Ultrasonic level units.
- Level floats / probes.
- Point Blue / Sewer Level Monitoring devices.

This equipment is checked as part of the site task library (jobs list for operational employees), which includes visual checks for the correct level data and working order, any alarms triggered where applicable and cleaning when needed.

Task library checks depend on the type of asset, but most are at a minimum of every three months.

We are currently in the process of migrating our operational maintenance activities to our new asset maintenance system, called Maximo. This system will capture the routine inspections and testing as part of our process for planning and recording work at the site level.

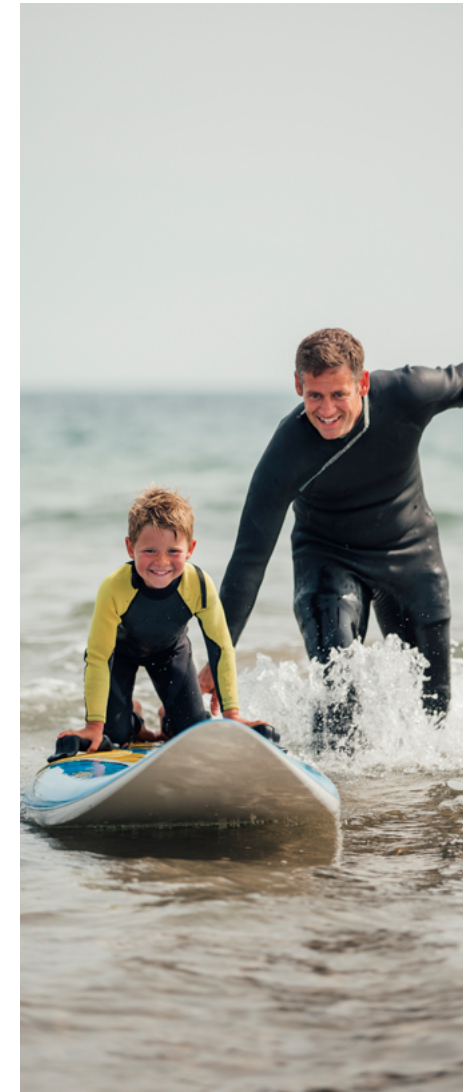


[Click here to view our realtime maps that show all 34 bathing waters in our operating area.](#)

Beach Aware

As previously mentioned, we publish near realtime information whenever our coastal overflows around our beach bathing waters spill. The publication of this information is voluntary, and allows the users of the North East's bathing waters to make informed decisions about whether to access the water when overflows are spilling on or near their beaches.

This information is easy to find on our website and we share it with organisations such as Surfers Against Sewage so that they can inform their supporters of any updates.



Monitoring and governance: Accountability across the business

Our monitoring takes many forms.

We use a Company Scorecard approach where every employee, at every level of the company, and our Board, have monthly updates on our most important areas of performance across customer, environment, competitiveness, employee and communities activities.

We analyse in detail, in multi-disciplinary teams, the individual measures on this scorecard and how performance can be maintained or improved. Each target has an owner at director and senior manager level, with individuals across the business having the relevant targets for their area built into their personal key performance indicators, which are assessed at appraisals. Responsibility for the performance of all targets sits with the Executive Leadership Team, with challenge and oversight from the Board.

On a practical basis, this means that our Executive Leadership Team of the company is consistently monitoring compliance and performance every month, with any significant issues escalated to our Board.

We monitor the principal risks and uncertainties facing the business including longer-term strategic risks. A detailed review of the Strategic Risk Register is carried out each year, which considers horizon scanning reports from external sources. The principal risks and uncertainties, and how they are mitigated, are reported in our [Annual Report & Financial Statements](#).

We also use a mature assurance framework to ensure the information and data we provide to our customers, stakeholders and regulators can be trusted. More details can be found in our [Assurance Plan](#).



[Click here to see an example of our Company Scorecard.](#)

Responsibility of our Leadership

Our environmental performance is taken very seriously, with 20% of all incentives for our most senior executives relating to stretching environmental targets. For example, any more than a single serious pollution event in a year leads to a loss of short-term and long-term incentives for our senior leaders.

Each target is set out in a clear, transparent way and the performance against the target is openly reported across the business. This means there is direct accountability and shared responsibility for environmental performance.

This clear approach to remuneration has been recognised by Ofwat in its report '[Board leadership, transparency and governance – Report on how companies are meeting the principles](#)' in February 2021, where Northumbrian Water Group was set apart from other companies for the clear, open accountability its approach offers.

Monitoring and governance: Accountability across the business (cont'd)

The role of our Water Forum

The Water Forum is an independent Customer Challenge Group for Northumbrian Water Group and covers our two operating areas, Northumbrian Water and Essex & Suffolk Water. They are an independent and balanced blend of industry regulators, subject experts and independent members.

Their role is not to run the company or to make decisions (that's for the Board and the Executive Leadership Team to do); it is to champion on behalf of customers and challenge the company on its performance and how they are delivering results for customers.

The Water Forum scrutinises and challenges the company's long term and regulatory business plans, as well as its annual performance.

This ensures that the company's pricing proposals reflect our customers' views and priorities and also that we are delivering on the commitments that customers agreed to pay for.

The Water Forum monitors the company's performance through updates at bi-monthly main meetings, and as part of the company's Annual Performance Report. They also review our environmental and social contribution through the Our Purpose report.

They combine these updates and reports with deep-dive sessions into areas that are important to customers, such as leakage and sewer overflows. This allows the Water Forum to challenge the company from a position of strength and knowledge.

They are also used as a sounding board on innovative projects, such as environmental partnerships – therefore, they are very often involved at the inception of the company's plans.



The Water Forum is a fiercely independent and balanced blend of industry regulators, subject experts and independent members.



Monitoring and governance: Flow to full treatment

Ofwat and Environment Agency Investigation into Environmental Permit Compliance

In November 2021, we, along with all other wastewater companies, were contacted by the Environment Agency (EA) and OFWAT in relation to measures to ensure that permitted flow to full treatment (FFT) requirements are being achieved at our wastewater treatment works.

This request was followed by further inquiries, to which we responded by openly and transparently submitting a significant volume of data to Ofwat and the Environment Agency for their review.

We have worked at a very detailed level to offer reassurance that we have a clear oversight of the environmental impacts – through appropriate monitoring – of our assets and processes. We have also conducted more recent investigations of our sites to confirm that compliance.

These investigations have shown that overall, across the 185 locations where we have these permits, our sites are compliant and operating with over 97% compliance. However, at four smaller sites we have identified circumstances where we may not have always been achieving the required levels of FFT.

- Seahouses Wastewater Treatment Works, where we have installed extra pumps in late March which should bring the works into full compliance.



Click here to see our 2013 - 2021 bathing water assessments and pollution events.

- Stokesley Wastewater Treatment Works, where it appears grit and silt have penetrated part of our system reducing the available flow. We have already seen improvements from significant cleaning works but are completing further investigations to bring this into full compliance by June 2022.
- Togston Wastewater Treatment Works, where we are assessing the effectiveness of recently installed new pumps along with checking for any further hydraulic restrictions on site. We aim to complete both these actions by the end of June 2022.

- Newbiggin Wastewater Treatment Works, which has a unique system on its pumped inlet flows. Analysis indicates that it is inconsistent in being fully compliant. We are now working to see if, by the optimisation of site settings and controls, we will be able to move the site to consistent and full compliance and are supplementing this with a hydraulic study of the site, all to be completed by June 2022.

We are very disappointed to have identified potential non-compliance with the FFT permit requirements at these sites. The table that can be found by clicking at the centre of the page outlines how the impacted supply areas have had no significant pollution events since 2013 and where appropriate bathing waters have been assessed at least as Good, with all now Excellent.

Monitoring and governance: Flow to full treatment (cont'd)

We have some investigations that are still ongoing to provide further reassurance, for example where weather conditions have meant we are not fully able to test some of our treatment works at peak capacity or where we are still analysing results.

As part of this process, we are looking closely at our performance, monitoring systems and standard operating procedures.

We are committed to constantly improving our environmental performance and so we will continue to update and improve these procedures, with several areas identified where operational improvement may be possible.

We have developed a clear action plan to address the four sites that were not in full compliance and any issues that have arisen from the investigation..

This includes positive opportunities identified to improve performance even when sites are in compliance and accelerated investment in areas such as monitoring. The link at the centre of the page will give the latest update on the progress of these action plans.

In line with our continued commitment to leading environmental performance, we will work with our regulators, our customers and our stakeholders to swiftly resolve any issues that may arise from this process.



**Click here to see
our action list
and the latest
updates here.**

What are the Environment Agency and Ofwat concerned about?

Our regulators are seeking specific information as part of a cross-industry investigation to check our compliance with a specific aspect of our environmental permit conditions relating to discharges and our related statutory and licence duties.

We provided extensive information to the EA and Ofwat in November and December last year, with a further formal submission regarding the Section 203 notice in April 2022.

The water industry, EA and Ofwat have been working closely together to tackle the challenges presented by discharges from the sewer network. This has been largely through developing the Water Industry Natural Environment Programme (WINEP) and the resulting investment that was allocated from 2020-25 as part of the current business plan period. For this investment we committed to install new monitoring equipment, as agreed with Ofwat and the EA, and have been following a clear plan to address any issues arising so that we continuously improve on assuring our environmental performance.

Monitoring and governance: Flow to full treatment (cont'd)

What has Ofwat said since the investigation began?

In early March 2022, Ofwat issued a formal notice (known as a Section 203 notice) that required us to provide further information with a deadline for submission in early April. This notice is a formal investigatory step and indicates that Ofwat will be carefully considering the information in the light of our legal obligations. It does not necessarily imply that any enforcement action will follow, but it is a more formal process.

We recognise the importance of the issue to our stakeholders and customers and the gravity of the investigation. We have fully complied with the requirements to provide information, taking the opportunity to demonstrate to Ofwat that we take our responsibilities very seriously.

Keeping you informed

We are directly engaging with stakeholders impacted where we are planning investment to ensure compliance with a permit at a wastewater treatment works. We will update customers more widely on these sites and the required investment and changes when this process is complete.

If are interested in these issues and would like to receive updates please contact us at **externalcommunications@nwl.co.uk**.



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





CHALLENGES AND OPPORTUNITIES

Challenges and opportunities

When it comes to our rivers and coasts, we are prepared to take on the challenges ahead in order to achieve the outstanding water environment we seek.

Some of the challenges we face are historical, some reflect areas beyond our direct influence, and others revolve around the most effective ways to invest for the future.

But, there are also many opportunities – such as opportunities in strong partnerships, direct intervention, changing behaviour and policy change. All of these opportunities could make a significant positive impact on our environment.

This section gives an overview of the challenges our coasts and rivers are facing and the opportunities that we need to take advantage of.



The quality of water in our rivers has improved dramatically over the last 30 years.

Aiming high

The quality of water in our rivers has improved dramatically over the last 30 years, with life returning to rivers such as the Tyne, and the public being able to access the water environment in new ways.

At the same time, our expectations have also moved on, and rightly so.

When we look at what a good river should be, we need to look at how it should be in its natural state, and sadly for many rivers, take into account decades of harm caused following the Industrial Revolution.

We share the public's desire for our rivers to thrive, as they should in their natural state, and that is the standard we aim to meet. Albeit together we face the challenge of undoing several hundred years of development.

In this context, there are many challenges, some for water companies, some for other sectors and some for the public.

Considering these challenges and the opportunities that exist to work in partnership is central to Northumbrian Water Group's work for our rivers and coasts.

Challenges and opportunities (cont'd)

Climate Change

We all recognise that climate change is having a significant impact on our local weather systems – with long periods of dry weather in some areas, yet flooding and severe storms becoming more common in others. In the areas experiencing more intense rainfall, such as the North East, 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.

A combined system in a historical context

In the North East of England, in most of our communities, we have a combined sewage system that consists of hundreds of thousands of kilometres of sewers, often dating back to being built by the Victorians.

This means that rainwater, road runoff and wastewater from homes and businesses are taken in the same pipe for treatment at a sewage treatment works.

This historic system has many challenges for wastewater management – with no control over the volumes that flow to our treatment works. Often meaning that rainwater, unnecessarily, goes through the same expensive, carbon intensive treatment process as sewage.



We all recognise that climate change is having a significant impact on our local weather systems.

It is also why storm overflows were created – without their introduction, and use in specific situations, homes are at risk of sewer flooding.

When we are looking at how we can limit the need for storm overflows we must consider what we can do to improve the system and stop unnecessary flows of rainwater from entering the network as much as possible.

Case study: Rainwise

Rainwise was a proactive and reactive initiative to reduce flood risk and influence customer behavioural change, aimed at increasing the resilience of our communities, reducing flooding through alleviating the pressure on our network.

The programme increases resilience by proactively and reactively reducing flood risk to customers who may not have previously flooded, but who we know may be in danger in the future.



[Read more](#)



Challenges and opportunities (cont'd)

Sustainable Drainage Systems

Sustainable drainage systems (SuDS) work by providing an alternative to the direct channelling of surface water into the wastewater network, instead moving this water to nearby watercourses such as rivers or lakes.

They are designed to mirror natural drainage regimes; aiming to aim to reduce surface water flooding and improve water quality, while also enhancing the access, amenity and biodiversity of the nearby water environment. This is achieved by lowering flow rates, increasing water storage capacity and reducing the transport of pollution to the water environment.

The need for nature-based solutions such as SuDS is likely to increase to meet environmental challenges such as climate change and population growth. Provision for SuDS and the national standards required for their design, construction, maintenance and operation is included in the Flood and Water Management Act 2010, however the UK Government, unlike the Scottish and Welsh Governments, has not yet mandated them as a requirement.



The need for nature-based solutions such as SuDS is likely to increase to meet environmental challenges such as climate change and population growth.

Case study: Killingworth and Longbenton

We worked in partnership with North Tyneside Council and the Environment Agency to reduce the risk of flooding to more than 3,500 homes in the Killingworth and Longbenton area of North Tyneside, while also reducing the flows of surface water into our combined network.

The £6 million scheme, which was completed in 2019, uses natural solutions, such as grassed storage areas, as well as traditional infrastructure, to control the amount of surface water entering the sewer network and reducing flood risk. Instead of flooding back to the sewerage system, overflows from the lake will spill into natural grassed areas that run alongside it and drain back to a local watercourse.

As part of this project, we worked with specialist contractors Biomatrix Water, to design and install three floating 'eco-systems' or islands on Killingworth lake, totalling 300 square metres.

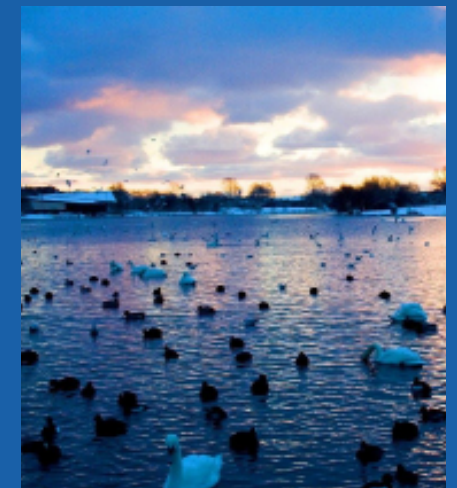
It's the first time that we have used floating eco-systems as part of a flood reduction project.



[Read more](#)



[Click here to watch a short video](#)



Challenges and opportunities (cont'd)

Misconnections

Another challenge facing both river and coastal water quality, is misconnections – when a wastewater system, usually unintentionally, is connected either to surface water drainage or to an incorrect system.

This means that wastewater from homes may be flowing into a network that is designed to discharge rainwater, or water that has drained from land gets into water flows that eventually end up in rivers or bathing waters.

To indicate the scale of this problem – some ten per cent of the reasons behind rivers in the North East not achieving good ecological status is down to misconnections alone!

We have invested further in our Misconnections team in this period, working from the catchment up to find the sources of pollution. This targeted approach will continue beyond 2025, with a commitment to eliminating the impact of misconnections on our rivers.



[Click here to find out more about our work in catchments to protect drinking water.](#)

Tackling wider sources of river quality detriment and working with agriculture partners in our catchments

Recognising that agriculture is the most serious source of rivers not achieving good ecological status, means we must work in partnership to achieve outcomes that benefit our rivers.

We already work effectively with farmers, land managers, other stakeholders and partners to protect and improve our river water quality in our regions.

We have catchment advisors across our areas who, as part of their role, take samples from across our catchments across the year to better understand what issues are affecting our river catchments. This data then facilitates targeted advice to the community on improvements in their processes and operations.

We build on this by partnering with Universities, citizen scientists and other stakeholders to share this data so we can obtain a holistic view of a catchment and better understand the most effective interventions to make.

We are also delivering our Capital Grant Scheme called Field to Tap across both our NW and ESW operating regions. This allows land managers to apply for capital grants for items that will reduce diffuse pollution from their land and help improve water quality in the rivers and reservoirs from which we abstract.

Challenges and opportunities (cont'd)



Affordability of schemes

The other significant challenge we face to improve our coasts and rivers, is unsurprisingly affordability. The Victorian schemes of sewers and the combined legacy they have left would be incredibly expensive to separate – at a cost of some £24 billion for Northumbrian Water customers alone – the equivalent of £1,000 (280% increase) per year on a typical bill. A more moderate plan of reducing storm overflows under the Defra Discharge Reduction Plan consultation would still add £24 (7%) per year.

The level of this cost depends on the timescales we attribute to the investment - a slower transition to removing some of the impacts on the water quality of our rivers and coasts would be more affordable. This means we must balance decisions against our customers' willingness and ability to pay – we want water to be affordable for all and good value. Clearly there are not simple solutions to these challenges.



The other significant challenge faced to improve our coasts and rivers, is unsurprisingly affordability.

Policy Opportunities

There are also real opportunities for Government to play a positive role in tackling this problem with some simple policy changes. The most effective way to reduce the use of storm overflows and the amount of treated effluent from our works is to reduce the flow of surface water and wastewater coming into the system. There are two simple opportunities that we are encouraging Government to consider.

Water Efficiency – Building Standards and Labelling

If the Government changed building standards so that new build properties are designed to be highly water efficient – at say a level of 100 litres per person per day – it could reduce flows from these households by almost a third of current levels. If retrofitting was also encouraged to this level, then that impact would be hugely significant.

Another way Government could help is by introducing a water efficiency label, which indicates how much water products use and lets consumers make better informed choices. Put together with the regulations above, this could provide capacity and space in the network.

SuDS and Automatic Right to Connect

As we mentioned earlier in this report, the UK Government has chosen not to activate Schedule 3 of the Flood and Water Management Act 2010. Enacting this would directly encourage Sustainable Drainage Systems (SuDS) by removing the automatic right to connect to the public sewer network. It is unfortunate that it is only in England that Schedule 3 has not been enacted, making us an unnecessary outlier. Enacting Schedule 3 would also be a welcome stimulus to the regulatory system to help support proactive partnerships in reducing the risk of flooding and drainage problems.

Challenges and opportunities (cont'd)

Environmental Audit Committee Report on *Water quality in rivers*

In January the Environmental Audit Committee published their report into Water quality in rivers, following almost a year-long investigation.

We are considering all the recommendations and assessing how they may benefit our regions and operations. We are developing an understanding of how the recommendations fit with our current approaches and plans for AMP7, alongside where new requirements may need to be considered, and building into our plans for the next AMP.

What did the report say about Northumbrian Water?

Northumbrian Water welcomed the report's clear acknowledgement of our good performance on driving down pollution. The report noted support for our CEO, Heidi Mottram, for the approach she outlined at the hearing that, 'Every pollution, as far as we are concerned, is an absolute disaster and we will continue to push those numbers down'.



[Click here to find out more about the Storm Overflows Taskforce.](#)



[You can read the full Water quality in rivers report here.](#)



[You can view Heidi's appearance at the committee here.](#)

Storm Overflows Taskforce

The Storm Overflows Taskforce is a joint group established by the Department for Environment, Food and Rural Affairs in August 2020.

Its objective is to recommend actions to achieve the long-term aim of eliminating harm from storm overflows in England.

At a central level it is represented by Government, regulators, industry and NGOs, with various subgroups that focus on key strands.

Northumbrian Water is represented on all of the subgroups playing a role in developing policy that will make a real difference for our rivers.

The Taskforce has helped develop policies and approaches that Defra is currently consulting on regarding storm overflows.

We expect a report from Defra in September 2022 that will outline their plans to eliminate harm from storm overflows in England.

8

**WORKING
WITH OTHER
COMPANIES
AND
ORGANISATIONS**

Working with other companies and organisations

Throughout this plan we have highlighted the many ways we work in partnership and collaborate with others to achieve the best outcomes for our rivers and coasts.

This section offers a refresh of some of those key collaborations and an overview from our partners of what it is like to work with Northumbrian Water.

21st Century Rivers: From Recovery to Renewal

We are pleased to have brought together, as part of Water UK, a long-term plan that calls for a new deal for our rivers. It brings together the work being delivered by water companies, alongside new measures that would take a holistic approach to rivers with a new National Plan. This plan would enable greater investment, make nature the priority in decision making and empower local communities to make the best decisions for their rivers.

By approaching this challenge at a national level we can make sure that every river is celebrated and improved, sharing our successes and learning from others. To make this happen there are ten key actions which we are encouraging Government and partners to take on board which are outlined on the right.



[Click here to find out more about the 21st Century Rivers plan.](#)

Ten actions for change

**A new approach:
A national plan for rivers**

**A new approach:
Protection in law**

**A new approach:
Local empowerment**

**A new approach:
Accountability**

**Supported by new tools:
Next-generation
monitoring**

**Supported by new tools:
Support for people**

**Supported by new tools:
Prioritising nature**

**Delivering early changes:
Abstraction**

**Delivering early changes:
Storm overflows**

**Delivering early changes:
Bathing rivers**

Working with other companies and organisations (cont'd)

An industry first

We formed the North East Catchments Hub, teaming up with The Rivers Trust, for a new approach to drive work that will inform investment to benefit water and the environment in our region.

This exciting new partnership brings together local, regional and national expertise in a regional hub to develop improvements for water quality and the wider environment around the North East.

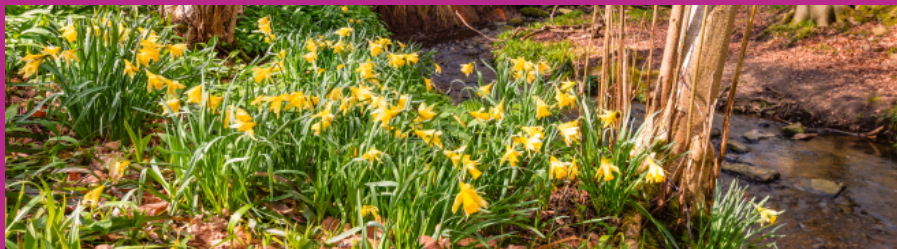
The partnership will create opportunities to invest effectively and significantly enhance the things we can do in this area, looking to deliver even more with partners through the Catchment Based Approach, supported by The Rivers Trust.

The partnership is future facing – tackling challenges now but also bringing together the evidence in the creation of our business plan for 2025-30 and our long-term vision. The hub – an industry first – will create three new full-time job roles within three of the region's rivers Trusts (Tyne, Wear, and Tees) plus an extra part-time managerial role, investing back in our regions as well.

The North East Catchment Hub brings the Catchment Based Approach for water management to a regional level within the North East, facilitating cross-catchment working and knowledge sharing with the support of the Catchment Partnerships.



[Read more](#)



Regional partnership working to tackle flooding

The Northumbria Integrated Drainage Partnership (NIDP) is an innovative approach developed from the Tyneside Sustainable Sewerage Study. It brings 13 Lead Local Flood Authorities across the North East together with the EA and ourselves to reduce flood risk and promote sustainable drainage.

NIDP partners work together to prioritise and jointly fund integrated flood risk studies and joint delivery schemes to tackle flooding from sewers, rivers and surface water affecting communities across the North East.

Since 2012, over 20 drainage areas have been studied, leading to delivery of more than 10 schemes, including the multi-award-winning Tyneside projects at Brunton Park, Monkton and Fellgate.

Partners have already jointly invested over £9 million to reduce flood risk to around 1,000 homes, with more projects currently in construction or in the planning and design stages

By managing risk from all sources and across all partners, the NIDP approach can deliver far greater benefits than simply flood reduction – habitat creation and water quality improvements are regular additional aspects to the schemes delivered to date. One of the advantages of the NIDP is that projects that are not viable as single-stakeholder projects can be developed jointly by partners to reduce flood risk for customers. This can also allow partners to make substantial cost savings which can be invested to reduce flood risk elsewhere. For example, the Killingworth and Longbenton scheme is estimated to have saved more than £10 million compared to a 'traditional' underground storage and sewer upsizing scheme.



[Read more](#)

Working with other companies and organisations (cont'd)

Our Innovation Festival

Increasing tourism, reducing plastic pollution and climate change were among some of the topics covered during Northumbrian Water's Innovation Festival 2021.

The water company used the fifth iteration of its world-famous event to give back to North East-based businesses and charities, including Newcastle Gateshead Initiative (NGI), Foundation of Light and Seascapes.

During NGI's event, teams focused on how the River Tyne can be made into the region's greatest tourism asset – to create memorable visitor experiences.

Groundwork NE and Cumbria's daily dash saw innovators looking at nature-based solutions and how these can be used to improve water quality and increase biodiversity in the River Tyne.

During their event, the Foundation of Light focused on how to encourage young people to play their part in tackling climate change – and getting them to help generate a sustainable planet for the future.

And finally, Seascapes challenged their innovators to take part in more manual tasks, such as beach cleans and morning dips, as they address the issue of ocean plastic pollution and look at solutions for cleaner bathing waters.

We are set to further take on the challenge of improving our coasts and rivers at this year's festival.



Click here to find out more and register for the festival here

Blueprint for Water: Shared Principles

Northumbrian Water's Heidi Mottram led for the water sector in launching a statement of shared principles with 24 key environmental NGOs that make up the Blueprint for Water group.

The shared principles included a greater collaboration on policy and projects; promoting greater awareness of the links between water management and the natural environment; working together to achieve and build upon water framework directive obligations; sharing key data sets; and joint efforts to enhance and improve the resilience of water-based ecosystems.

By working together and fostering a collaborative relationship, water companies and environmental organisations are working to help protect and restore our aquatic environment.

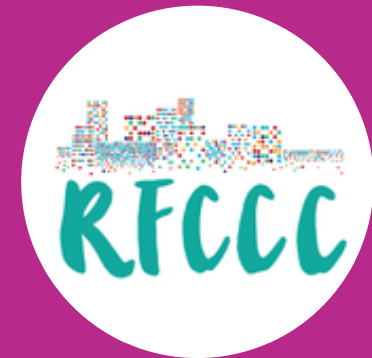
This is not simply altruism - using natural processes and having a healthy, functioning ecosystem can deliver cost effective solutions to providing plentiful, clean water and wastewater systems – while making sure customers get value for money.



Read more



Working with other companies and organisations (cont'd)



What our partners say about working with Northumbrian Water

The Rivers Trust

Amina Aboobakar, Commercial Director at The Rivers Trust, added:

“We are delighted to be working in partnership with Northumbrian Water and catchment stakeholders across the region through the NE Catchments Planning Hub. This is an exciting, industry leading partnership that will facilitate co-ordinated and long-term catchment planning at a regional scale.

“Our dedicated team, based in local catchment partnerships, will co-develop catchment and nature-based solutions with stakeholders across the water and land use sectors, delivering holistic benefits for society and environment and supporting healthy resilient catchments that can be enjoyed by North East communities.”



[Click here to find out more about The Rivers Trust](#)

SeaScapes

Karen Daglish, SeaScapes Delivery Manager, said:

“Thanks to partners including Northumbrian Water, and passionate, local volunteers, we are able to take action to tackle our ocean crisis.

“Every individual, family or group taking part in our beach clean events, surveys and litter picks plays a part in a bigger shift in mindsets as we protect and restore our ocean.”



[Click here to find out more about SeaScapes](#)



Northumbrian Water's continued commitment to this partnership work has helped to deliver real environmental benefits in this area.

**- Chris Woodley-Stewart,
North Pennines AONB Partnerships**

Tyne Rivers Trust

Dr Ceri Gibson, CEO at Tyne Rivers Trust, said:

“Catchment Partnerships are an established and effective mechanism for identifying and delivering holistic improvements for rivers and land management. Everyone involved appreciates that working together to collect and share critical information will reap greater benefits. We are pleased to apply our local expertise and lived knowledge in working with natural processes to support Northumbrian Water in identifying and developing the most appropriate nature-based solutions throughout the region.”



[Click here to find out more about The Tyne Rivers Trust](#)

North Pennines AONB Partnership

Chris Woodley-Stewart, Director of the North Pennines AONB Partnership, said:

“Northumbrian Water has been a strong and supportive partner of our peatland work for over a decade, and together with the other organisations involved, we're bringing expertise and additional investment into this important area.

“Restoring peatlands provides things that society values, including helping to mitigate the impact of flooding, improving the quality of water and maintaining a habitat that stores carbon and supports wildlife. In the case of water quality, Northumbrian Water's continued commitment to this partnership work has helped to deliver real environmental benefits in this area.”



[Click here to find out more about the North Pennines AONB Partnership](#)

What our partners say about working with Northumbrian Water (cont'd)

Durham Wildlife Trust

Kelly Hollings, Project Manager at Durham Wildlife Trust, said:

“Funding from Northumbrian Water’s Branch Out scheme is enabling this project to make a positive difference not only the region’s water vole population, which has been in decline for many years, but also a wide range of other native wildlife.

“Water voles are our country’s ‘bankside engineers’, whose burrowing creates niche habitats that provide opportunities for invertebrates to breed, which, in turn, can benefit fish, amphibians, small mammals.

“We are already working with landowners to survey water vole populations and monitor that of their number-one predator – American mink. We have also delivered online training to 58 volunteers, who will help us to survey the water voles, and this is being followed up with practical training.

“It’s been a great start to the project, and we are excited about its potential.”

[Click here to find out more about the Durham Wildlife Trust](#)



Funding from Northumbrian Water’s Branch Out scheme is enabling this project to make a positive difference.

- Kelly Hollings,
Durham Wildlife Trust



[Supporting our community on World Oceans Day](#)

[Killingworth and Longbenton](#)

[Branch Out](#)

[Responsible Business Awards](#)

[Scouts who use water](#)

[Eel passes](#)



**WHAT CAN
YOU DO?**

What can you do?

We can all make small everyday changes to help reduce the risk of pollution to streams, rivers and bathing waters.

Protecting public health and our environment is at the core of our business. We constantly maintain and upgrade our water and sewer networks to reduce the likelihood of flooding and pollution, and carry out rigorous testing and monitoring to make sure both our drinking water and our discharges from sewers are clean and safe.

How we use water and what we do with our wastewater and drains, can have a big impact on our community and our environment around us.

Checking your pipes are connected right

Although in general it's unintentional, hundreds of thousands of toilets, sinks, washing machines and dishwashers are incorrectly connected into drains that are intended to receive clean rainwater.

This can happen when a new house is built or more commonly when changes or alterations are being made to properties. Not only can this result in pollutions to streams and rivers, if pipes which collect rainwater from roofs, roads and drives are wrongly connected to the foul sewerage system, the water can overwhelm the sewer network and contribute to flooding of homes and the environment.

 [Click here to find out how you can help](#)



We can all make small everyday changes to help reduce the risk of pollution to streams, rivers and bathing waters.

Managing rainwater


A growing population, heavier rainfall, more houses being built, and more lawns being paved over to alleviate residential parking, are putting ever increasing pressure on our sewer network. This means during intense rain, more water is getting into our sewer network than it has been designed to cope with and the system can become overwhelmed. This can result in flooding and pollution.

 [Click here to find out how you can help](#)

Using water efficiently

With a growing population, exercising more and a pandemic, we're all using more water.

Using less water, and using water more effectively, means the volume of water going through our sewage network will be reduced. Using less water will not only help alleviate increased pressure on the sewer pipes but will also help save money on your water and energy costs.

 [Click here to find out how you can help](#)

Being our eyes and ears

We have a group of volunteer Water Rangers who support the work we do in the environment while out walking designated routes and report back to us on the condition of the water courses they walk along.

 [Click here to find out how you can help](#)

Being a good neighbour

The more people getting involved in protecting our environment, the bigger the impact and the greater the world, our community and our lives will be.

 [Click here to find out how you can help](#)

Preventing blocked pipes

When sewage can't flow down the sewer pipes because of a blockage, it must go somewhere else. This could be your street, garden or even back into your home through the toilet, or drains in your bath, sink and shower, flooding your bathroom and home.

 [Click here to find out how you can help](#)

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**WHERE
CAN I
FIND OUT
MORE?**

Where can I find out more?

Here are some useful places where you can find out more about our work and about some of our partners:

Improving Our Rivers Health

Visit our dedicated rivers page to find out more about our work to make sure that our rivers are in the best environmental health they can be.

Environmental Compliance

We take our environmental responsibility seriously, and we are continually working to support and protect the natural environment.

Event Duration Monitoring

We are open and transparent about the times our storm overflows are in use and we publish this data on our website.

ConnectRight

ConnectRight is a partnership of organisations who are working to reduce water pollution from drains and sewers. Follow the checklist to make sure your property is connected right.

WaterSafe

WaterSafe is a free online search facility funded by the water industry to help customers find competent and qualified plumbers.

Community Portal

You can keep up to date with all our investment work and give your input into how the work is going in your community.

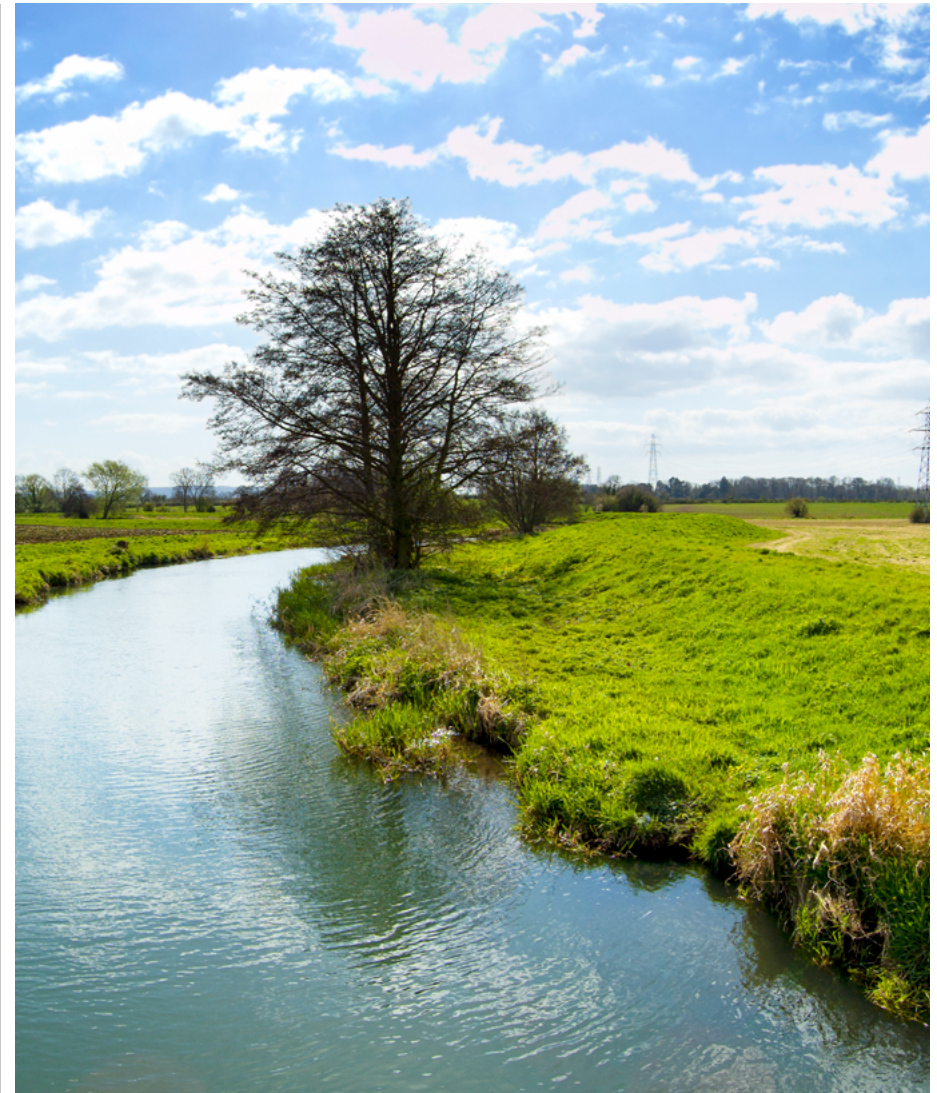
Environment Agency (EA)

Creating better places for people and wildlife. You can report any environmental concerns you might have.

Glossary of terms



We work to make sure that our rivers are in the best environmental health they can be.



NORTHUMBRIAN
WATER *living water*

ESSEX&SUFFOLK
WATER *living water*