



Tankering of water and water wise messaging during the heatwave high demand event in July 2021.

Strategic areas of focus

Improve at source

Enough water for all

Tasty, clean and safe

Drive down leakage

Always on

Sustainable development goals



Principal threats/opportunities



Page 84 Read more about principal threats and opportunities.

Strategic performance indicators

Water	Unit of measurement	Target 2021/22	Actual 2021/22	Pass/Fail	Target 2022/23
Water quality compliance*	%	99.83	99.88	Pass	99.83
Leakage	MI/d (Million litres/day)	157	156	Pass	156
Reduction in supply interruptions in excess of: • 6 hours • 12 hours • 24 hours	%	0.699 0.091 0.010	1.504 0.079 0.001	Fail	0.683 0.087 0.010

*Calendar year target.

Improve at source

NI Water is one of the largest land owners in Northern Ireland. The peat bogs in our water catchments are amongst nature's superstars, providing a range of eco-system services. They provide a natural form of water purification, protect against floods, help reduce greenhouse gas emissions by removing and storing carbon and enable us to restore our biodiversity.

Source to Tap



€5m
project engaged



220
landowners

40km
of fencing

Herbicide mitigation
measures in over
3,000
acres of land

of the project, the partnership has continued to roll out the pilot Land Incentive Scheme to farmers in the River Derg cross border catchment. Project Officers have engaged with over 220 landowners and undertaken farm visits, making recommendations for measures that benefit both the farm business and the environment, and this has identified over 1,700 issues affecting water quality. Remediation measures installed on farms to protect and improve water quality include the provision of 56km of riparian fencing to prevent livestock entering watercourses and eroding riverbanks. Where fencing has now been installed, we have grant aided 69 farms with alternative drinking water sources including 19 pasture pumps, 17 solar powered pumps for water troughs and 33 farms utilising mains fed water drinkers, to ensure livestock can avail of fresh water in a sustainable way. We have also improved 35 farm tracks and funded 20 clean/dirty water separation projects for farmyards. Each of these measures helps to reduce sediment run-off into rivers and drains.

We have encouraged farmers to replace field-wide spraying of the herbicide MCPA with targeted methods of rush topping (cutting) and weed-wiping to control rush growth. We have proactively paid farmers to avail of these herbicide mitigation measures in over 2,400 acres of land across the River Derg catchment, to protect and improve water quality by reducing the concentrations of MCPA in the raw water.



Fencing to prevent livestock entering watercourses and eroding riverbanks.

Since 2017 we have been working in partnership with Irish Water, The Rivers Trust, Ulster University, Agri Food and Bioscience Institute (AFBI), and East Border Region on an EU INTERREG VA funded project with a total investment of €4.9m. The Source to Tap project aims to improve the Erne and Derg cross border river catchments that are a shared source of our drinking water. As part



Find out more at
<https://www.sourcetotap.eu/>

Sustainable catchment management is about improving the quality of the raw water using nature-based solutions prior to treatment. In doing so, we can save resources and extend the life of our assets.

Upland reservoirs adjacent to commercial conifer plantations are at risk of colour and turbidity fluctuations following felling. As part of the INTERREG VA funded Source to Tap project we trialled and monitored measures to reduce sediment run-off at sites where harvesting had taken place. Another element of the Source to Tap project was peatland restoration work at Tullychurry Forest, County Fermanagh. It trialled the novel cell bunding technique by creating low bund walls from fresh oxidized peat, forming watertight cells to re-wet the area. By slowly recreating the anaerobic waterlogged environment, bog conditions return and Sphagnum mosses can recolonise. We directly transferred these techniques to a 27ha area around Lough Bradan, County Tyrone. The Tullychurry and Lough Bradan

forest to bog restoration projects have received a Green Apple Award 2021 in the climate change category and featured in a BBC Digital news item. NI Water also featured in a documentary at COP26 for the work that we are doing on climate change and biodiversity at the Garron Plateau, County Antrim.



NI Water's catchment management officer at the peatbog restoration project adjacent to Lough Bradan, County Tyrone.



NI Water staff marking the Green Apple award at Tullychurry forest, County Fermanagh.

The Education element of the Source to Tap project aims to raise awareness about the connection between our rivers and lakes and the water that comes out of our taps. Over 1,900 children have received at least one unit of our education programme and now know more about the importance of protecting our precious drinking water resources.

As well as this Source to Tap has delivered rush control events and a webinar to farmers to increase their awareness of the risks of the herbicide MCPA to water quality.

As part of the citizen science element of the Source to Tap project, over 40 volunteers across the Erne and Derg river catchments have been trained in the Riverfly monitoring technique. This enables them to go out into a local river armed with the correct equipment and to monitor it for Riverfly life on a regular basis. By doing so they can act as guardians of their local water environment to detect changes in the water quality, which may be signs of pollution and, to report them. This training has also provided them with new skills, confidence and the opportunity to be citizen scientists.



Educating our water whizz-kids on the Source to Tap project.



Partnering with members of the public across the Erne and Derg river catchments.



Partnering with farmers to reduce water quality risks from the MCPA herbicide.



Find out more at <https://www.sourcetotap.eu/>

Valuing our peatlands

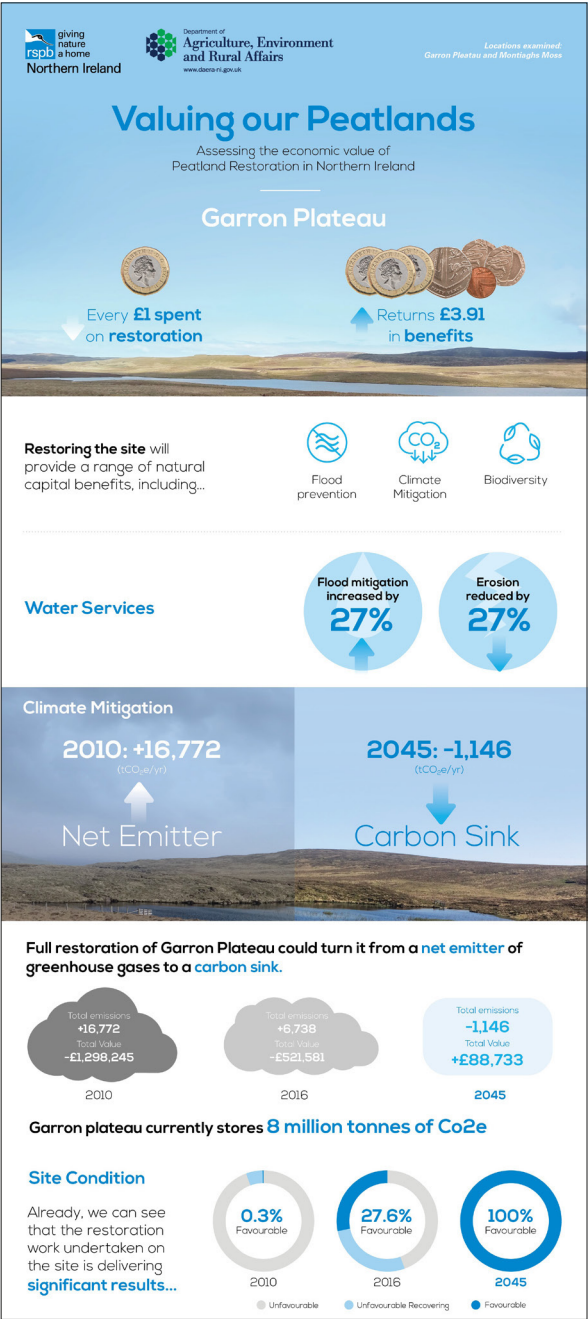
Peatlands store more carbon than all other vegetation types in the world combined. They can improve our water quality, provide natural flood management and support an array of species and provide wild places for people to enjoy. It is crucial for us to restore our natural habitats so they can play their role in the climate emergency and restoring biodiversity.

NI Water has been working closely with RSPB Northern Ireland who commissioned Natural Capital Solutions to complete a report on the Garron Project, ‘Valuing Our Peatlands’. This is a Natural capital assessment and investment appraisal of peatland restoration in Northern Ireland. At Garron Plateau, County Antrim, and Lough Bradan, County Tyrone we have worked to block drains to raise the water levels in the peat, recreating bog pools and restoring natural habitats. This gives the ideal conditions for Sphagnum mosses and vegetation to grow, which then naturally filters the water, aiming to produce high quality water with fewer chemicals needed to clean the water. This assessment of peatland habitat shows that investing in bog restoration makes economic sense, with every £1 spent on peatland restoration returning £3.91 in benefits. The blanket bog restoration is not only a win in terms of raw water quality, but restoring the site will also provide a range of natural capital benefits, including flood prevention, climate mitigation and biodiversity. The restoration of Garron Plateau turns it from a net emitter of greenhouse gases to a carbon sink.

We are continuing to work with a number of our key partners including RSPBNI and DAERA Forest Service to identify further areas appropriate for peatland restoration in our land holding. Over the next number of years, we hope to increase the areas we can call ‘bogs’ around our drinking water catchments, to improve raw water quality but also to contribute to our corporate net zero targets, contribute to the national net zero targets and increase biodiversity on our most valuable habitats.



Find out more at [Valuing our Peatlands \(rspb.org.uk\)](https://www.rspb.org.uk)



The Infrastructure Minister launched the NI Water's Schools Peatlands Poster competition along with pupils from St Mary's Queen of Peace PS, Glenravel and NI Water's Environmental Outreach and Learning Officer at the Garron Plateau, County Antrim.

Enough water for all

Our changing climate is bringing more frequent and severe weather events such as heavy rainfall, heatwaves and extreme cold. These events can affect the quality and quantity of our water sources, placing pressure on our water treatment works.

High demand incident

On 22 July 2021 NI experienced its highest ever temperature (31.3°C).

July 2021 saw Northern Ireland basking in tropical weather conditions with record temperatures above 30°C. The demand for treated water peaked at almost 750 million litres per day on top of already elevated levels of demand seen since the COVID-19 lockdown.

To help manage the high demand a Category 1 Major Incident Regime was put in place to run and control the incident.

It was a huge operation with a massive concerted effort to reduce the impact on customers. From 16 July 2021, when the high demand incident began, over 36 tankers carried 1,800 loads of treated water to reservoirs which were struggling to cope with customer demand.

In total we moved a staggering 38.5 million litres of water, by tanker, across Northern Ireland to keep customers in supply. The high demand incident was further complicated towards the end of July when a major burst close to Dunore water treatment works resulted in a temporary loss of water supply and intermittent supply to properties in Antrim and surrounding areas. It was a difficult repair and Dunore water treatment works had to be closed down for a period with the loss of vital water production.



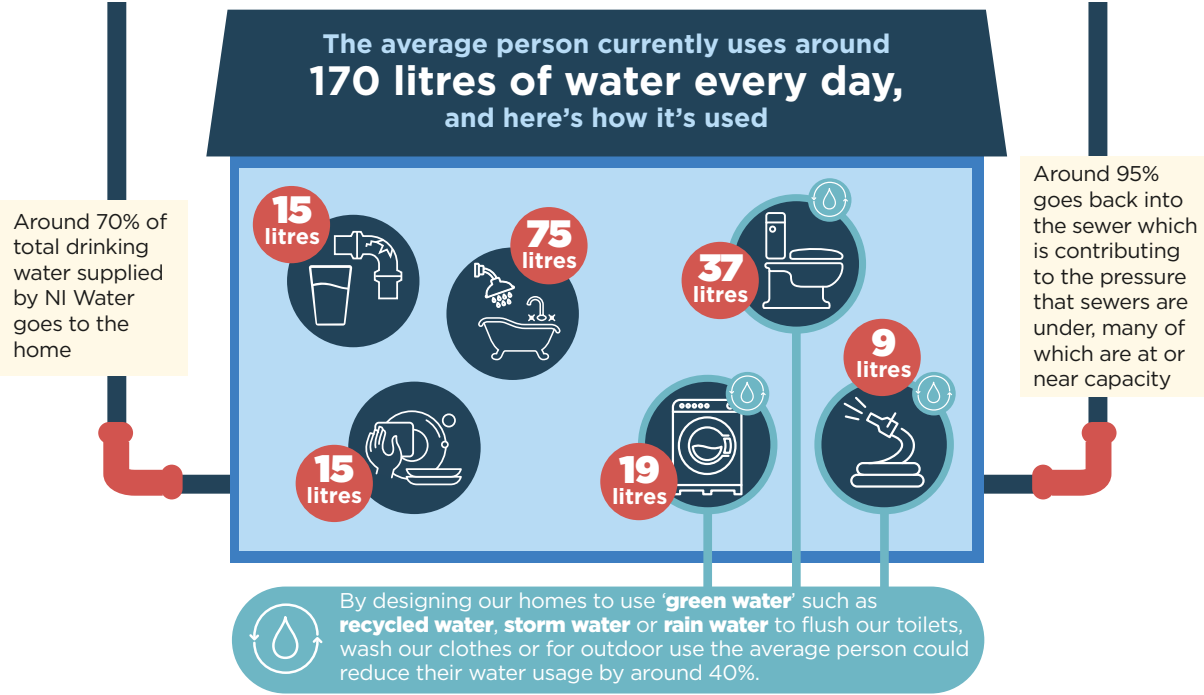
This was one of the largest movements of water across the network by tanker that NI Water has ever carried out.

Using less drinking water

By better designing our homes we could reduce the total demand for drinking water by around 25%. Further reductions in demand can be achieved by installing more water efficient appliances in the home and changing our behaviours e.g. shorter showers. By using less we can lower our

carbon footprint, improve biodiversity, reduce leakage, increase resilience and ease pressures on our sewerage infrastructure.

Find out more at www.niwater.com/water-saving/



Pumping £12m into water resilience for Strabane, Omagh and Fermanagh

A major £12m investment in Derg water treatment works got underway in 2021/22. The original works was built in 2002 and serves Strabane and Omagh as well as supplying water into the Fermanagh area. The upgrade will improve the water quality within the Derg network and provide additional

security of the water supply to the Castlederg and Strabane supply area and further afield, benefiting around 40,000 people. The investment will also protect the natural environment by improving the herbicide and organics removal.

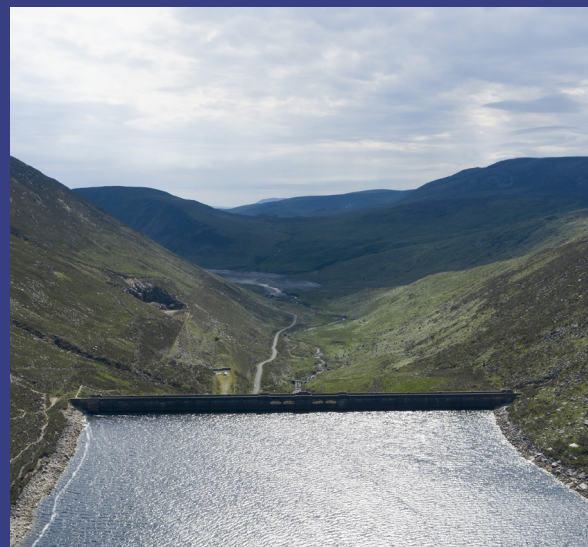


Construction of Derg water treatment works, Strabane, County Tyrone.

https://www.youtube.com/watch?v=To9tWnl_vII

Reservoir safety

A £6m programme of reservoir improvements commenced across Northern Ireland to refurbish and enhance the safety of the impounding reservoir portfolio. Our impounding reservoir portfolio plays a critical role in the storage of untreated water for future supply to our treatment works. This will ensure that our reservoirs comply with the highest standards and meet the requirements of the Reservoirs Act (NI) 2015, when commenced. This major programme of work commenced at Seagahan reservoir in County Armagh and Silent Valley reservoir in County Down. Work will continue until 2024/25 and will involve completing improvements at over 30 major reservoirs throughout Northern Ireland.



Ben Crom reservoir, County Down.

Tasty, clean and safe

Delivery of great tasting, clean and safe drinking water is central to what we do. It underpins the public health and economy of Northern Ireland. The fresh water we use to produce our high quality drinking water is predominantly taken from Lough Neagh, local rivers and a range of upland sources.

World class on tap

The water we supply for domestic use or food production must comply with the standards in the Northern Ireland Water Quality Regulations, which incorporate European Union standards and more stringent UK national standards. The standards are strict and generally include wide safety margins. They cover: bacteria; chemicals such as nitrates and pesticides; metals such as lead; and how water looks and tastes. To make sure that your water supply is clean and safe, we take samples for testing. Sampling and analysis is carried out 365 days per year to ensure that our drinking water is tasty, clean and safe. Our sampling programme covers raw waters, water at various treatment stages, treated water going into supply from out treatment works, drinking water in the distribution system and at the customer tap. Samples are analysed by our scientists based in laboratories at Belfast and Altnagelvin. Overall drinking

water quality compliance in 2021 was 99.88%, above the target of 99.83%. We publish a Drinking Water Quality Report each year, which is available on our website.

COVID-19 had an impact on regulatory sampling with zone sampling at customer taps suspended, in line with social distancing guidelines. To ensure that we continued to monitor water quality within the distribution system regulatory zone samples were taken at designated fixed points, service reservoirs (which store treated water) and at a number of fixed point customer addresses. Customer tap influenced parameters (such as lead, copper and nickel) were not sampled at service reservoir sample points. The suspension of sampling at customer taps samples was agreed with the DWI. Customer tap sampling recommenced in June 2021 at non-domestic properties and samples were scheduled to include the customer tap influenced parameters. Customer tap sampling recommenced at domestic properties in September 2021. In late December 2021 due to increased COVID-19 cases and public health concern sampling at customer properties was suspended again. This was agreed in advance with the DWI. Customer tap sampling recommenced in February 2022.

NI Water awards major £7m sampling contract to RPS

NI Water has awarded a contract for the sampling and transportation of water and wastewater samples to Belfast based company RPS Environmental Management Ltd. This contract is worth almost £7m over a five-year period.

The three-year contract operates around the clock, 365 days a year and involves taking samples at NI Water's treatment works and various other locations throughout both the drinking water supply and sewerage networks. The samples are then transported under strictly controlled conditions to NI Water's Analytical Services laboratories, where they undergo analysis to demonstrate compliance with water and wastewater quality regulations.



NI Water Head of Drinking Water Regulation pictured with the Regional Manager at RPS.

In 2020/21 we trialled a number of pilot studies at Derg water treatment works, County Tyrone, to remove heavy metals, suspended solids (turbidity) and pesticides including using a form of volcanic crushed rock and recycled brown and green glass to filter the water. We are working towards the delivery of treatment process at Derg water treatment works, County Tyrone, for herbicide (MCPA) removal to be completed by 31 March 2022.

NI Water revealed 'rock solid' solution to high quality water

NI Water revealed a 'rock solid' solution to obtaining a sustainable water supply by tapping into Earth's most hidden asset, groundwater. A long term, resilient water supply is a top priority for the company, which is why we are using boreholes to access this sustainable water supply.

Groundwater is perfect as it is stored underneath the Earth's surface and is a largely unused water source in Northern Ireland. It is also naturally filtered through rocks so requires minimal treatment to make it drinkable. NI Water is using solar panels for abstraction and treatment of the water which will offset electricity usage and activated filter media (recycled glass) to ensure it is treated to drinking standards. Overall, this innovative solution will not only provide water in all weathers but reduces chemical use and carbon.



NI Water and supplier staff pictured at the Moneymore Borehole test site in County Derry/Londonderry.

Wat-er upgrade!



Completion of the £13m investment at Drumaroad water treatment works in County Down to benefit a quarter of Northern Ireland's population.



<https://www.youtube.com/watch?v=leu7b81X4Wc&t=9s>

Tackling lead pipes



The water leaving our water treatment works and in the distribution systems contains only trace amounts of lead. However, where lead has been used for supply pipes between the water main and the kitchen tap or in domestic plumbing, there is a risk of non-compliance at the customers' tap. So even with the removal of all lead pipes within our network there will be a risk to lead compliance from lead pipe remaining within customer properties.

We plan to replace over 11,000 lead communication pipes in PC21, with an annual target of 1,844 replacements. 1,864 proactive lead pipe replacements have been completed over 2021/22. We launched a

media campaign to highlight the risk for lead pipework in customer properties and to encourage customers to replace lead pipework. We continue to engage with stakeholders concerning the potential for the establishment of a new grant scheme, to enable private customers to access funds for replacement of their private supply pipe.



Find out more about reducing the risk of lead at: www.niwater.com/lead-pipes/



https://www.youtube.com/watch?v=9k9FI0_FcZE

Drive down leakage

Throughout the pandemic and every day of the year, NI Water's leakage teams work around the clock, locating and repairing approximately 220 leaks a week saving water, a precious resource for hygiene and hydration.

In 2021/22 we further reduced leakage to 155.6 million litres per day. This is a reduction of over 2 million litres per day compared to 2020/21. It is a credit to our leakage team, who work 24/7, using highly skilled leakage repair and detection techniques to have achieved this.

The leakage team is highly skilled and use a variety of leakage detection methods to find leaks, whether they are on water mains or within customer properties. Some of these techniques involve using a listening stick, a tried and tested way of detecting a leak. Another method of detection is by using ground microphones.

The leakage team works hard to reduce the amount of leakage on our vast network;

however, there is more that we can do and we are asking the public to help. If you see a leak on the footpath or on the road, whether it's a trickle of water or it's gushing from a burst pipe, you can help by letting us know. You can report it by visiting www.niwater.com/leak or by calling our Leakline number on 0800 028 2011, open 24 hours a day, every day. Calls are free of charge.



Detecting leaks using a ground microphone.



Networks Leakage Technician, using a listening stick to detect a leak.

Always on

Every week we repair around 350 customer related bursts that occur on our water network of 27,000 km operational distribution and trunk mains. Many of these bursts can result in interruptions to customers' supply or customers experiencing low water pressure. Our 'Every minute counts' ethos helps to focus at ways to improve our performance and explore innovative solutions. Examples include post interruption reviews to establish key learnings; utilising water tankers in response to interruption to supply events; and providing each field manager area with emergency restoration trailers in order to increase our response capability.

We experienced a major burst at a strategic trunk main in Summer 2021 close to one of our largest water treatment works at Dunore in County Down. This resulted in a temporary loss of water supply to properties in Antrim and surrounding areas. It was a complicated repair to a large diameter trunk main and the treatment works had to be shut down resulting in the loss of water production during an already challenging high demand period. The burst inevitably led to loss of supply for around 12,500 customers. The burst resulted in failing to achieve our target for customers without supply for >6 hours in 2021/22. Performance against the targets for >12 hours and >24 hours was also impacted, but recovered over 2021/22. We have completed detailed post event analysis to mitigate and inform the response to such an event in the future.

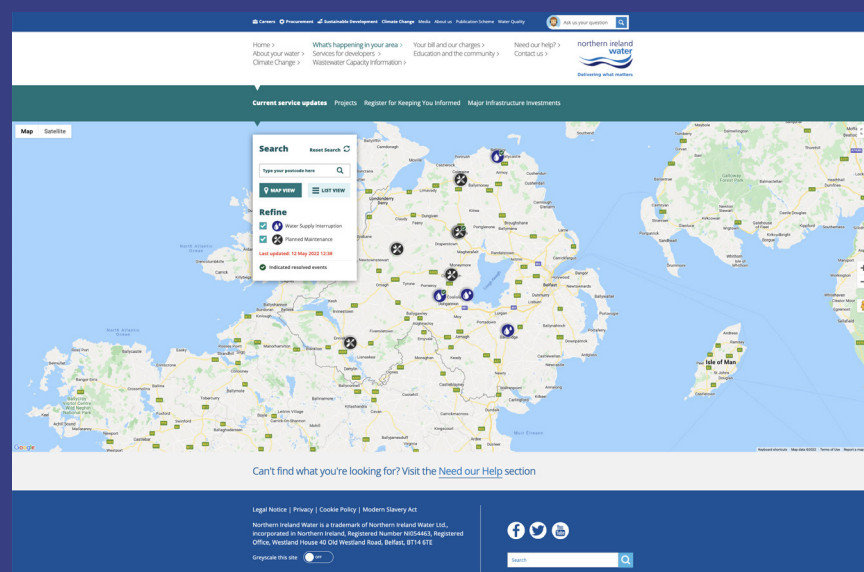


Emergency trailer for use during a supply interruption event.

Our PC21 Business Plan includes capital investment to reduce the minutes lost per property by 50%, aiming for zero lost minutes per property by 2050. The SMART network capital programme for PC21 aims to maintain a CALM network and increase visibility on all our water assets to minimise customer impact should a failure occur.



Visit <https://www.niwater.com/current-service-updates/>



Ben Crom impounding reservoir, County Down, marks its 70th year of service!