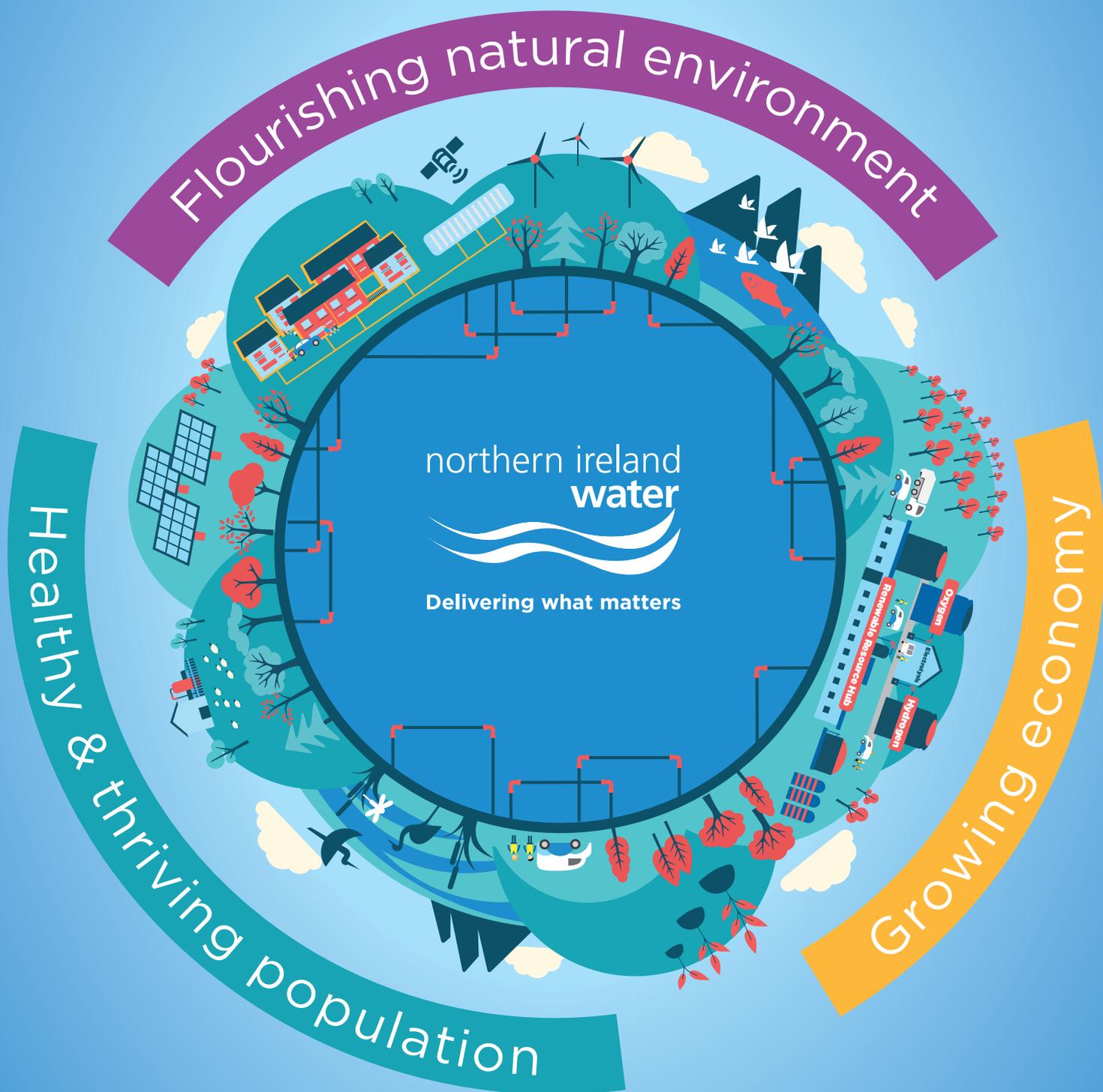


# Drinking Water Quality

Annual Report 2020



# Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2020, and I am delighted to report that we have continued to supply a very high quality of drinking water to our customers across all of Northern Ireland.



NI Water's core function is to produce high quality drinking water in a cost effective manner to meet the needs of all our customers, both existing and future. By doing this we contribute to the health and wellbeing of the community we serve and the needs of our commercial customers in a sustainable way.

Like most organisations, NI Water faced limitations to our usual ways of working following the introduction of lockdown restrictions due to the ongoing COVID-19 pandemic. This challenge was coupled in 2020 with the driest spring on record, and an increase in household demand for drinking water. We activated our major incident and business continuity plans to ensure that over 700 staff were able to switch to working from home instead of their normal places of work. Protocols were initiated for staff deemed essential to frontline operations, within our laboratories, networks, or treatment works, to ensure a safe working environment at all times. Our role in ensuring that drinking water continued to flow to hospitals, care homes and for food productions was crucial to our customers. The Government's public health advice centred on key messages such as regular hand washing and keeping hydrated, again highlighting the importance of a clean, safe, and reliable water supply.

With the agreement of the Drinking Water Inspectorate (DWI), NI Water reduced potable water sampling as part of the plan to protect staff and customers, whilst maintaining assurance that there was no risk to public health from public water supplies. This has created a shortfall in regulatory sampling at customer tap for the calendar year 2020. During the period however, NI Water maintained full sampling and analysis at its Water Treatment Works and downstream Service Reservoirs as per regulatory requirements. This along with customer tap samples taken at designated fixed points in the distribution system ensured that the quality of water supplied to our customers was effectively monitored and maintained throughout the period.

Drinking water is carefully monitored and tested for quality. This report summarises NI Water's sampling results from 1 January 2020 to 31 December 2020 to meet the requirements of the Regulations under which we operate. During this reporting period, more than 99.9% of all tests carried out on samples taken from

water treatment works, service reservoirs and customer taps complied with the regulatory standards assessed using Overall Percentage Compliance. This measure has been adopted as the standard, high level, indicator for water quality throughout the treatment and distribution processes across the UK.

Like much of the UK water industry, NI Water has continued to have issues with elevated levels of pesticides in our catchments over recent years. Our sustainable catchment management programme is a key driver of improved raw water quality, by liaison with the farming industry. One of our largest projects is the EU INTERREG VA Programme funded investment of €5m under the Source to Tap project to improve the Erne and Derg cross border river catchments.

The great tasting, clean and safe drinking water we deliver to our customers underpins public health in the ongoing pandemic, and the economy of Northern Ireland. In order to deliver the maximum level of customer service at the lowest sustainable cost, it is important that we assign expenditure in the most effective possible manner. Our PC21 Price Control Business Plan outlined the investment required to sustainably fund NI Water over the next six-year price control period, over 2021-27. The Utility Regulator's Final Determination on the plan was published in May 2021, and NI Water is minded to accept this determination.

Our capital investment programme to maintain and safeguard water quality for the reporting period is set out using the Northern Ireland super council areas in Appendix 3.

As part of our reporting requirements, this report also incorporates data to meet the requirements of the Water Supply (Water Fittings) Regulations (NI) 2009.

We continue to exceed the targets placed upon us by our regulators to comply with water quality standards, and will continue to improve the service to all our customers in the future despite working in challenging times.

**Sara Venning**  
Chief Executive Officer

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# Drinking Water Quality

## Water Quality Standards

During 2020, Drinking Water Quality in Northern Ireland was assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2017. The regulations incorporate the requirements of the European Commission's Drinking Water Directive 98/83/EC (the "Directive") relating to the quality of water intended for human consumption and, for certain parameters, more stringent UK national standards.

The Regulations set out the requirements to be met by NI Water when supplying water for domestic or food production purposes and include:-

- water quality standards for wholesomeness
- sampling locations for monitoring purposes
- minimum requirements for the number, frequency and types of water samples to be taken at sampling locations
- water sample collection and testing regimes
- maintaining records of water sample results
- the provision and publication of information

NI Water assesses water quality standards against the parameters listed in Appendix 1. The standards in the Regulations are normally expressed as "Prescribed Concentrations or Values" (PCV) and are generally specified as maximum, minimum, percentile or average concentrations for a particular substance. Standards are set to ensure that water is safe to drink and aesthetically acceptable.

The Regulations set demanding standards for the quality of drinking water but contraventions of these standards do not necessarily mean the water represents any public health risk. These contraventions are reported to the Drinking Water Inspectorate, investigated by NI Water, and prompt remedial action taken where appropriate.

NI Water has a monitoring programme in place that covers raw waters, water at various treatment stages, drinking water in distribution and at the customer tap. NI Water liaises with its customers on a wide variety of issues. Where there is an exceedance of a regulatory parameter PCV, investigations and remedial work are carried out to ensure that drinking water is regulatory compliant. Where the monitoring programme highlights a problem with the customer's plumbing, NI Water informs the customer, the local Environmental Health Officer and the Drinking Water Inspectorate.

To assist in understanding the contents of this report, a glossary of technical terms is provided (Appendix 6).

## Monitoring Drinking Water Quality

The Regulations necessitate a thorough and extensive water-sampling programme to be undertaken, to monitor water quality throughout the supply and distribution systems. The sampling locations and frequencies for the monitoring of drinking water quality are specified in the Regulations. These monitoring arrangements are audited by the Drinking Water Inspectorate (DWI). The mandatory sampling programme requires water samples to be collected regularly at water treatment works, at service reservoirs and water towers used to store treated water and at customer taps in the water supply zones. In addition to the regulatory sampling frequency requirement, NI Water also carries out operational sampling and analyses to monitor and optimise the processes and quality of our drinking water supplies.

Under the Regulations, samples to be analysed for parameters that do not change in the supply water main, may be collected from Authorised Supply Points. These samples are collected from the final distribution point of the Water Treatment Works, and are considered under the Regulations to be equivalent to samples collected from the customer tap. All samples are carefully collected, handled, and transported to ensure that they accurately represent the water quality that customers receive. NI Water uses skilled and experienced sampling staff for the collection and delivery of the regulatory samples to the laboratories. All sampling staff wear uniforms and carry identity cards when they call upon customers to take a sample.

Samples collected from customer taps are taken at random addresses in each water supply zone. A water supply zone is a designated area with a population of no more than 100,000 supplied with water from one water treatment works or blended water from several works. The number

and boundaries of water supply zones are subject to change according to operational requirements as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis, 51 water supply zones were monitored during the period of this report.

The parameters for which samples are tested include-

- microbiological, e.g. Coliform bacteria
- physical, e.g. pH (Hydrogen ion)
- chemical, e.g. Iron, Manganese, Lead and Nitrate
- aesthetic, e.g. Colour

Compliance with the drinking water standards is determined by comparing the results of laboratory analysis of water samples with the relevant Prescribed Concentrations or Values (PCV). Where monitoring indicates that a standard has not been met, appropriate immediate investigation and remedial action is undertaken to ensure that the water supply does not present any public health risk. Sampling programmes are adjusted and increased testing may be scheduled in the water supply zone for the parameter involved. NI Water will liaise at all times with the DWI and the Public Health Agency to ensure customer safety.

NI Water reports its water quality compliance levels as Overall Percentage Compliance. This assesses all regulatory consented parameters at water treatment works, service reservoirs, as well as customer tap. This is a holistic approach and is supported by the Drinking Water Inspectorate and the Utility Regulator.

## Drinking Water Quality Summary – Year on Year

Compliance assessed against the

“Water Supply (Water Quality) Regulations (Northern Ireland) 2017”

Compliance Measure	2015	2016	2017	2018	2019	2020
% Overall compliance with drinking water regulations	99.83%	99.86%	99.88%	99.90%	99.90%	99.94%
% Compliance at customer tap (including supply points)	99.75%	99.77%	99.81%	99.83%	99.84%	99.91%
% Iron compliance at customer tap	98.40%	98.66%	98.85%	98.94%	98.89%	99.56%
% Service Reservoirs with coliforms in >5% samples	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

# Protecting Our Customers

## Drinking Water and Health

The safety of drinking water is paramount to public health. It is a tribute to the skills and expertise of colleagues working for drinking water providers, regulators, health authorities, and local authorities that the safety of drinking water in Northern Ireland is something that the public is able to take for granted.

The Drinking Water and Health Liaison Group (DW&HLG) is a multi-agency group that considers public health issues associated with the drinking water supply. The Group, which is unique in the UK context, draws its membership from the main stakeholder organisations including the Department of Health, the Public Health Agency, the Drinking Water Inspectorate, the Northern Ireland Public Health Laboratory, the Environmental Health Northern Ireland, and NI Water.

The Group produced a comprehensive guidance document on “Drinking Water and Health” aimed at professionals from a variety of backgrounds who share an interest and involvement in the safety of drinking water. The purpose of this joint guidance is to set out the roles and responsibilities of the key players, to describe the wider context to the provision of safe drinking water, to detail the arrangements and protocols in place to monitor compliance with standards and to respond to an emergency or incident situation.

This guidance is a “living document” that is regularly reviewed and updated.

The guidance document can be found at:

<https://www.niwater.com/drinking-water-guidance/>

## Lead Pipework Replacement Programme

The NI Water Asset Strategy for Management of Lead sets out NI Water’s approach to the management of lead in drinking water.

The strategy details how NI Water will work to reduce the likelihood of lead failures at customers’ taps whilst working within its current remit. The overall approach will be a combination of three strands, as summarised below:-

- Removal of NI Water owned lead assets from the water distribution system
- Minimise the adsorption of lead into drinking water
- Encourage the removal of customer owned lead assets

NI Water has been carrying out lead pipe replacements for a number of years under the following programmes of work by:-

- Actively replacing lead pipes during mains replacement and when water quality testing indicates lead pipe is present
- Actively replacing lead pipes when a customer requests NI Water to replace lead pipework to their property when they have replaced lead pipe internally in their property

In the past 6 years, NI Water has replaced more than 11,000 lead service pipes and has met its target for the PC15 price control period.

This programme of replacement has been developed to ensure that NI Water prioritises and targets areas with high numbers of lead pipes and poor compliance with the lead standard.

# Source to Tap

## Drinking Water Safety Plans

A Drinking Water Safety Plan (DWSP) is the most effective way of ensuring that a water supply is safe for human consumption and that it meets the health based standards and other regulatory requirements. It is based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to customer.

The primary objectives of a DWSP in protecting human health and ensuring good water supply practice are the minimisation of contamination of source waters and effective treatment using appropriate processes. DWSPs are used to map water supply systems, identify the hazards at each stage of the system from catchment, through treatment and the distribution system, to the customer's tap, and to assess the risks that these hazards pose.

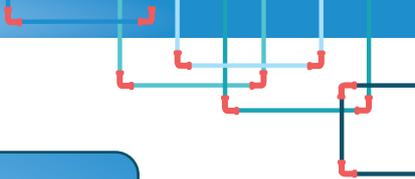
The Water Industry has adopted the DWSP approach to risk management from the raw water source, through water treatment, distribution

and to our customer's taps. NI Water has put in place systems to identify hazards, assess risks, and implement mitigation measures, which could potentially threaten each stage of the water supply process. NI Water works with the Northern Ireland Environment Agency (NIEA), the Drinking Water Inspectorate (DWI), Forestry Service, and other Non-Government Organisations to protect the raw water sources from contamination.

The outputs of these plans – “The Drinking Water Safety Plans” themselves continue to be embedded into company policies and procedures and are reviewed using a risk-based approach each year. In the long term, DWSPs will lead to improved security of supply, a reduction in regulatory failures, incidents, and customer complaints and hence increased customer confidence.

NI Water uses the DWSP risk assessments to inform the investment strategy for drinking water.





# SCaMP NI

## (Sustainable Catchment Management Programme Northern Ireland)

### SCaMP NI Overview

The aim of SCaMP NI is to improve the quality and reliability of the water received at NI Water's raw water abstraction points through sustainable catchment-based often 'green' solutions that focus on protecting and enhancing the natural environment through achieving favourable condition, habitat improvement and reducing treatment costs for NI Water. Our interventions in drinking water catchments are designed to be the first stage of a multiple barrier approach to water treatment.

Catchment management is important because by managing the activities in the catchment that influence water quality, we can really improve the quality of raw water. Turbidity, colour, and priority substances can be reduced, which lessens the amount of chemicals and energy required to remove these items and produce clean and wholesome drinking water to our customers. Reducing the pressure on treatment can also help extend the life of capital assets; it contributes to our national Water Framework directive goals and helps us meet our legal and environmental obligations as landowners.

Over the past decade, SCaMP NI has been successful at demonstrating how, by working together with stakeholders, we can manage catchments for water quality and an improved natural environment. Our Team work with many stakeholders within our source catchments to improve raw water quality at the top of the catchment, before it even reaches the water treatment works (WTWs) for treatment. With our stakeholders, we pool our resources and expertise to develop joint projects that fulfil our common land and water management goals and maximising our external finance through match funding. Our work together means careful consideration of green solutions to improve raw water quality but also to drive down operating costs in the form of savings in energy and chemical use.

The SCaMP NI Steering Group, involving representatives from a wide range of environmental stakeholders, meet regularly with the aim of ensuring that land management actions are aligned with industry best practice and the aims and objectives of all stakeholders, therefore contributing holistically to sustainable catchment management.

## Catchment Management Interventions

In order for us to understand the best sustainable catchment management interventions to carry out in our drinking water catchments, we commissioned a Catchment Management Study for each area. These studies used the approach advocated in the UK Water Industry Research (UKWIR) framework for quantifying the benefits of catchment management, to establish the basis for a programme of management that provides business benefits to NI Water. These studies provided a list of appropriate recommendations for work in our catchments, based on the existing and emerging pressures and issues in those areas. These recommendations have formed the basis of a significant work package, which our Team will be delivering in the next two years, our aim being to implement catchment management schemes that improve raw water quality, enhance water resources, improve the environment, and reduce future catchment-based risks to raw water quality and quantity. We also want to meet our legal and environmental obligations as a responsible landowner whilst adopting an approach that gives a sustainable reduced cost for treating water to a high quality.

### Riparian Planting

The SCaMP NI Team have worked with The Woodland Trust and Loughs Agency on a number of different planting projects throughout NI for the past 10 years, providing tree-guards and planting native deciduous trees in riparian areas within our drinking water catchments. A Riparian area is the space between land and a river or stream. It is important for us to protect these areas from bankside erosion, flood damage and livestock encroachment as much of the water treated for public drinking water supply comes from rivers. Any erosion happening in these areas unchecked can wash nutrients into the watercourse and have an impact on the colour and turbidity (sediment) in the raw water and can cause issues in the network.



Riparian tree planting not only protects our raw water quality but also provides a home for wildlife, shelter for spawning fish and helps reduce the effect of climate change by capturing carbon, stabilising the banks and slowing river flow.

Our partnership has so far resulted in the planting of over 150,000 trees in some of NI Water's 24 drinking water catchments from Counties Antrim to Armagh. Tree species planted together include Alder, Aspen, Sessile Oak, Downy Birch, and Willows, where species are appropriate to the surrounding environment.

### Biodiversity

In January 2020, NI Water became an official partner of the All Ireland Pollinator Plan. This means we made a commitment to do what we can to protect and enhance habitats where pollinators can thrive. We hope that through identifying areas within our landholding where wildflowers and flowering hedgerows are currently, and checking for areas that can be safely left aside to grow wild, we will increase biodiversity through providing better habitats for our important pollinators.

### Peatland Restoration

In February 2021, the SCaMP NI Team completed work on a peatland restoration project at Lough Bradan Forest, outside Omagh in County Tyrone. Lough Bradan WTW supplies water to much of the Omagh and Drumquin areas. The raw water quality in Lough Bradan is intermittently highly coloured from peat run off. There are increased costs during the water treatment process to remove this colour from the raw water.

Working in partnership with the Department of Agriculture, Environment, and Rural Affairs (DAERA) Forest Service, an area of 27 hectares around the shores of Lough Bradan has been rewetted using a technique called cell bunding; a method trialled at the nearby INTERREG VA funded Source to Tap Peat Pilot in Tullychurry on the Pettigoe Plateau.

A method of deliberate drain blocking using peat plugs was also employed in sloped areas that were unsuitable for cell bunding, to rewet the area, and thereby retain water in the underlying peat.

Cell bunding is the construction of watertight cells made from low peat walls. They retain water, encouraging the regrowth of important water-retaining mosses such as sphagnum species, and raise the water table, helping a healthy bog to function. Mosses naturally filter and retain the water and this natural filtration process can reduce the amount of chemicals needed to treat the raw water.

In total an impressive 211 cells were constructed in the flat areas with the result that since the work was completed, the water table has already visibly raised.



*Cell bunding on the banks of Lough Bradan*

Slowing the flow of water into Lough Bradan from surrounding areas has encouraged the return of a functioning bog that will filter the water flowing to the Lough for years to come, improving the raw water quality, and retaining carbon in the form of peat.

The project at Lough Bradan resulted from careful consideration and close working between NI Water and Forest Service to restore a relatively small area of forest to open peatland habitat. This will provide an improved riparian area beside the reservoir, safeguarding the storage of carbon in the peat and improving the habitat for protected species such as Hen Harriers, Merlins, and breeding waders.

Functioning peat bogs also provide multiple ecosystem services like regulation of flooding and climate and cultural benefits such as aesthetic value and recreational opportunities. At both a global and local scale, peatlands can store and sequester (absorb) carbon, with positive implications for the regulation of our climate.

The SCaMP Team hope that Lough Bradan will be the first of many similar projects to protect and improve raw water quality through reducing colour and turbidity, capturing carbon and habitat benefits and encouraging the return of functioning peatland to where it belongs. The Team hope the project will serve as a demonstration site for best practice and serve as a model for future forest to bog restoration projects in Northern Ireland and beyond.

### **Forestry**

Some NI Water catchment areas are particularly vulnerable to the effects of forestry felling and replanting activities, due to the particular soils and underlying geology. Forestry activities are carefully planned to avoid any detrimental impacts on raw water quality that is abstracted for water treatment. NI Water continue to work closely with DAERA Forest Service to minimise any detrimental effect to raw water quality or the environment.

### **Wildfire Control**

As has becoming increasingly evident after recent events, wildfires have devastating effects on habitats, flora, and fauna, but they can also result in a deterioration in raw water quality and significantly increased treatment costs. This has been a particular issue in the Mourne drinking water catchment in recent years, and has been more challenging given changing seasonal weather patterns.

NI Water are proud custodians of the beautiful area within the Mourne Wall, with the management of our land for nature, biodiversity, and priority species and habitats being extremely important to us. The Eastern Mournes within our landholding supports a number of priority vegetation communities including wet heaths and blanket bog, montane heaths and grasslands on the highest summits and plant communities associated with the cliffs and scree. The area was designated as a Special Area of Conservation (SAC) in 2007 as it is considered to have a high diversity of habitats/species of European importance. Fire damage to peat in the Eastern Mournes threatens its designated status. Wildfire decimates these habitats and sets back the work that we, and our neighbours in the Mournes, have done to help these habitats thrive.

NI Water have been working with the Northern Ireland Fire and Rescue Service (NIFRS), the Mourne Heritage Trust, and DAERA-NIEA for 9 years by the Mournes Wildfire Group (MWFG) under the Eastern Mournes Wildfire Project, in order to protect the water supply and preserve the precious Mourne landscape. An independent review of the progress of the achievements the MWFG against the objectives of the original 2013 report is currently being undertaken, with the aim of identifying key areas of work/resource allocation in the coming years.

NI Water are also currently developing a holistic Land Management Plan for the area within our landholding. We are working with Mourne Heritage Trust, DAERA, the National Trust, and local communities to manage our land long term in a better way to continue providing wholesome drinking water, while protecting the environment, meeting the needs of our grazing tenants, our visitors, upholding and improving our designated lands and preventing wildfires.

### **Dealing with Pesticides**

Herbicides are essential for weed control and land management in the agricultural sector. However, some grassland herbicides like MCPA make it into watercourses that are abstracted for drinking water in Northern Ireland, and are difficult and expensive to remove during treatment. An extra water treatment mechanism is required to remove MCPA, increasing the cost in maintaining the necessary drinking water quality standards at the treatment works.



NI Water's 'Rush Solution Without Pollution' project has been ongoing since 2017. The project involves the provision of a free weed control service to landowners within two catchments in Counties Antrim and Tyrone, where there are ongoing issues with soft rush *Juncus Effusus* invasive weeds and MCPA raw water detections. In conjunction with The Water Catchment Partnership, interested landowners were encouraged to apply, after which eligibility was assessed. A fully qualified private contractor was then deployed to carry out the weed-wiping work.

The contractor used an alternative herbicide to MCPA, applied via the weed-wiper equipment using strict best-practice techniques. This application method has been demonstrated by the College of Agriculture, Food, and Rural Enterprise (CAFRE) to be as effective as a conventional boom sprayer using MCPA, which is an indiscriminate method of weed control and can contribute to watercourse pollution. However, in a weed-wiper, less chemical is used and less wasted, therefore only target weeds are controlled, cost is lower for users, and raw water quality is protected.

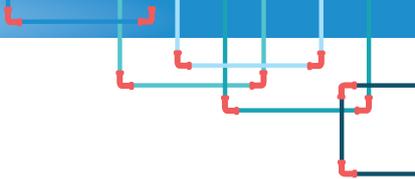
### **Invasive Species**

The SCaMP Team continue to manage the occurrence of invasive species within our landholding using current best practice measures. Much of our invasive species work has been carried out in the Silent Valley catchment area in our Mourne catchment, with invasive plants like rhododendron and cotoneaster, which are an issue in the area. NI Water's Invasive Species Policy sets out our roles and responsibilities for controlling non-native species on our land.

### **Public Recreation and Access**

NI Water welcomes members of the public to enjoy access to its land, and will endeavour to facilitate recreational activities where it is safe to do so.

Our publically available Recreation and Access Policy is maintained to provide a framework defining what access is permitted to NI Water owned lands and waters, and how access arrangements will be communicated, controlled, and governed. The accompanying Recreation and Access Guidance document is currently being reviewed to ensure the public using our sites for recreation, access and well-being have adequate facilities and remain safe when on site.



# INTERREG VA

## Source to Tap Project

In addition to this work, another element of SCaMP NI has been the Source to Tap INTERREG VA project. The Project led by NI Water is another example of partnership working to manage catchments for water quality. This project is funded under the INTERREG VA Environment Programme with match funding from DAERA in Northern Ireland and the Department of Housing, Local Government and Heritage (DHLGH) in Ireland and managed by the Special EU Programmes Body (SEUPB). The partners include Irish Water, The Rivers Trust, Ulster University, Agri Food and Bioscience Institute (AFBI), and East Border Region.

The project is piloting a number of pilots in the Erne and Derg drinking water catchments, which straddle the border and are predominantly rural in nature. Working together over nearly six years (2017 to 2022) the partners are delivering pilot studies to reduce herbicides and sediments getting into the water in the first place, and raise awareness of the importance of protecting our precious drinking water resource at source across both jurisdictions. In the upper reaches of these catchments, the landscape is dominated by bogland and forestry with more intensification of land for agricultural use in the lower reaches. Activities such as forestry and farming can cause contaminants such as sediments and herbicides to run off the land and drain into the raw water, which NI Water abstracts for drinking water. This can lead to increased costs to treat and remove them before the water can be used for drinking water supply.

Water catchments are designed to be the first stage of a multiple barrier approach to water treatment. The Source to Tap project will trial a number of different work packages, the outcomes of which will be uploaded onto a legacy website. Work within the project over the past year has focussed on the following areas:



### Source to Tap – Love Your Water

The citizen science element of the project has trained up over 30 volunteers in the Erne and Derg catchments in the Riverfly monitoring technique. Local rivers have been selected by the volunteers who will monitor the biological quality on a regular basis and assess them against a trigger level set by the regulatory agencies. This allows action to be taken at the earliest opportunity should any severe reductions in quality be detected and acts as a deterrent to incidental polluters. The volunteers will be helping to make real benefits to the environment and it is hoped this will empower them to continue to be guardians of their local rivers after the project has finished.



### Source to Tap – Education Programme

The education programme was rolled out in 2018 to lower high school and upper primary school children in the Erne and Derg catchments. The programme is supported by an activity booklet which contains five separate units including where does our water come from, how are our rivers formed, what lives in our rivers, how do rivers get polluted and how does our water get from our rivers to our taps?



As well as visiting individual schools, we have also supported other organisations such as Waterways Ireland and delivered talks to groups of schools at for example biodiversity or science week events. A total of 1,854 children have been engaged with since the start of the programme. During 2020, Covid 19 restrictions prevented us from carrying out the schools programme in person and so the education units were translated into online learning resources available for parents and teachers to use.

The education programme works to highlight the importance of our precious drinking water resources and outlines how we can all work together to help protect water quality across our shared catchments.



### Source to Tap – Farming for Water

A pilot Land Incentive Scheme for the cross border Derg catchment upstream of the water treatment works was launched at the end of July 2018 and closed at the end of 2020 for new applications. The scheme, which seeks to encourage farmers to follow water friendly practices, is 100% funded. It offers farmers incentives to install measures to benefit their farm business as well as reducing run off from sediment and herbicides to improve water quality. Project Officers carry out a farm visit in collaboration with the landowner and produce a Water Environment Management Plan, WEMP for farmers, making recommendations of where changes could be made. Measures include using contractors to do weed wiping rather than the more traditional boom sprayer approach, provision of pesticide storage units, installing clean and dirty water separation in farmyards and installing fencing to prevent livestock entering the watercourse along with alternative drinkers such as solar powered drinkers to ensure livestock still has access to water.

Automatic Monitoring Stations (AWQMS) to assess water quality were also established in 2018. The monitoring is to enable us to see how various measures we are implementing through the pilot Land Incentive Scheme affect the raw water



quality. We have a water quality sensor installed near Spamount on the River Derg and another near Killygordon on the River Finn, which measure the turbidity and colour of the river water. These measurements indicate the amount of sediment in the water, which can be caused by soil erosion. Large amounts of sediment can block filters in the water treatment works and elevated colour can be difficult to remove. We are also taking water samples automatically every 7 hours and analysing these in the laboratory for herbicides, as well as recording the rainfall higher up in the catchments and the height of the rivers at the monitoring locations.

to reduce the sediment suspended in the water by slowing the flow and allowing the sediment to settle out. All methods trialled were in addition to existing forestry best practice and were implemented in the Erne and Derg cross border drinking water catchments. The measures included the planting of a cover crop, the creation of a settlement area and the trialling of check dams using materials such as geotextile, peat, large longitudinal logs, sawn timber, and brush bundles. All measures were monitored to determine their effectiveness in attenuating sediment over a period of time using Time Integrated Sediment Samplers (TISS).



### Source to Tap – Peatlands for Water

A peatland restoration pilot was undertaken in Tullychurry forest, near Belleek in Country Fermanagh, on approximately 30ha of mature, afforested blanket bog owned by DAERA Forest Service and previously planted with Lodge Pole Pine. The site, which is sandwiched between two lobes of an area known as Pettigoe Plateau, is designated as a RAMSAR, Area of Special Scientific Interest (ASSI), Special Protection Area (SPA), and Special Area of Conservation (SAC). Following harvesting of the trees, part of the site was re-wetted using a new techniques called cell bunding.

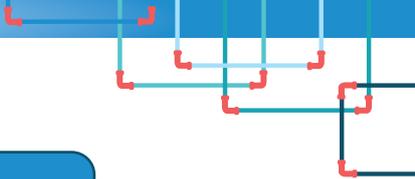
The learning from this pilot was used in restoration work around the shores at Lough Bradan next to the reservoir.



### Source to Tap – Forests for Water

Finally, a forestry pilot was undertaken on both Forest Service NI and Coillte land. Measures were installed at a total of 12 pilot sites, over a period of two years to understand how effectively they reduced sediment in drains and streams following harvesting at forestry sites. The measures aimed to either prevent sediment from entering rivers, or





# Environmental Management System (EMS) and ISO14001

**In carrying out our core business NI Water contributes to and relies upon the quality of the natural environment, and we strive to protect it by working in an environmentally responsible manner, demonstrating high standards of environmental care and operational performance. NI Water works toward a ‘Zero Harm’ ambition, which includes avoiding harm to our environment.**

NI Water is proud of its achieved maintenance of and compliance with the international standard ISO14001 for our Environmental Management System (EMS). The continual improvement and hard work of our functional staff and business areas, ensures NI Water maintains a strong environmental focus and management of compliance as evidenced through its testing our internal audit plan, and by frequent independent external auditors. Our accreditation to the ISO standard has been managed and maintained since 2003. Our CEO, Board, and Executive Committee support and approve NI Water’s Environmental Statement and continued commitment to protecting, preserving, and improving our natural environment.

NI Water’s EMS has become an integral part of our daily activities and business processes.

# Mains Rehabilitation

NI Water is a customer focused but asset based organisation. In order to deliver the maximum level of customer service at the lowest sustainable cost, it is important that NI Water assigns expenditure in the most effective possible manner.

The Water Mains Rehabilitation Programme for Northern Ireland was established in 1999 to ensure the investment in water mains infrastructure was appropriately targeted at those areas of greatest need to ensure delivery of a reliable supply of compliant quality water to the people of Northern Ireland and comply with the relevant statutory and regulatory standards.

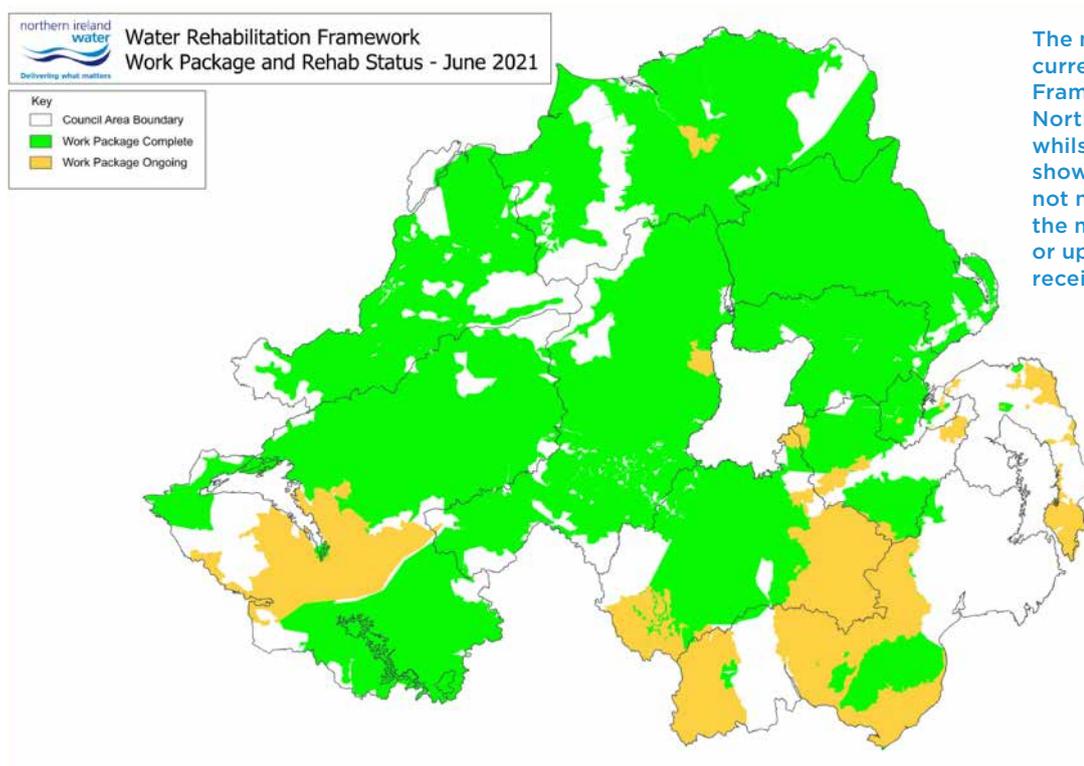
The performance and condition of the water mains were investigated and assessed through a series of Detailed Zonal Studies against standard criteria developed in conjunction with various internal stakeholders and DWI. This zonal study approach was used during the PC10 and PC13 planning periods.

In preparation for the PC15 business plan (covering 2015 – 2021), NI Water revised its approach to identifying Water mains investment needs. In consultation with external stakeholders such as the Drinking Water Inspectorate, the Utility Regulator,

and the Consumer Council Northern Ireland, NI Water developed the Water mains Infrastructure Investment Model (WIIM). Building on the basis of the previous Zonal Studies approach, which utilised the analysis of structural and water quality issues, the revised approach draws on corporate data, focusing on customer contacts and customer preferences as well as structural and WQ issues when identifying and prioritising investment needs.

The Water Mains Rehabilitation programme delivered 449km of mains in the PC13 period (2013 – 2015) and 832km during the PC15 period.

NI Water Customer targets, for drinking water compliance, are set to assist the company in improving the customer experience as well as to facilitate improvement in Regulatory compliance with lead, iron, and turbidity. The current aim, of improving both the customer experience and Regulatory compliance, in relation to these three parameters, lies with replacement / refurbishment of the drinking water distribution system. The intervention methodology will be reviewed again before PC21 with interventions to be considered such as planned area flushing and monitoring and mains conditioning.



The map shows the extent of the current Water Mains Rehabilitation Framework covering most of Northern Ireland. To assist clarity, whilst the council boundaries are shown, the individual councils are not named. Regions in white on the map are largely watercourses or upland areas that do not receive public water supply.

# Sufficiency of Supply

Approximately 863,000 domestic, agricultural, commercial, and business properties in Northern Ireland are connected to the public water supply – this equates to around 99.9% of the total population. This entailed supplying an average of about 594 million litres of high quality drinking water to customers every day during 2020. For this, NI Water utilised 38 sources that include upland Impounding Reservoirs, Boreholes, Rivers, and Loughs.

NI Water has a legislative requirement to produce a Water Resource Management Plan (WRMP) and a Drought Plan as part of its forward planning process. The Water & Sewerage Services Act (Northern Ireland) 2016 permitted NI Water to combine these two plans into the Water Resource and Supply Resilience Plan (WR&SR Plan). The WR&SR Plan sets out how NI Water intends to maintain the balance between supply and demand for water for all its customers over the long-term, and the operational and management options and activities available to respond to short-term critical events such as drought

and freeze-thaw. A key strategic aim of this plan is to improve the resilience of Northern Ireland's water supply system, and the plan is to be updated on a rolling six yearly programme.

The Water Resource and Supply Resilience Plan was published in June 2020. The Supply Demand assessment showed that under a Dry Year Annual Average scenario, all 7 zones within NI have a surplus of water throughout the planning period. This is a significant improvement in resilience from the previous plan, which identified deficits in 3 of the 5 zones. However, deficits were identified in three of the seven zones under a Dry Year Critical Period (Drought Conditions). Solutions have been developed and funded to resolve these deficits and these will be resolved in PC21.

For the period of this report, water supplies in Northern Ireland were obtained from three types of source, as shown:-

## Raw Water Sources

**Impounding Reservoirs - 45.5%**

**Rivers and Loughs - 54.4%**



**Boreholes  
0.1%**

# Drinking Water Inspectorate - Technical Audit

The Drinking Water Inspectorate (DWI), a unit within the Northern Ireland Environment Agency, has an independent responsibility to audit drinking water quality compliance against the standards set in the Regulations.

Each year DWI undertakes a technical audit of the measures taken by NI Water to comply with the Regulations. The technical audit process includes:

- The transfer, to DWI, of analytical results of samples taken throughout the year, from water treatment works, service reservoirs, and customer taps.
- A compliance assessment of this information against the regulatory standards.
- Carrying out an inspection programme, which examines the sampling, analytical, reporting, water treatment, distribution policies, and relevant procedures.

In 2020, most of the technical audit inspection programme had to be suspended due to the COVID-19 pandemic. Only one audit was completed:

An audit of the Laboratory Information Management System (LIMS)

DWI made a number of recommendations and suggestions and NI Water has followed up on these issues. DWI will report on this inspection and the quality of water supplied by NI Water in its annual report, due to be published later in the year. DWI is located at Klondyke Building, Cromac Avenue, Gasworks Business Park, Lower Ormeau Road, Belfast BT7 2JA.

## Water Quality Events

NI Water is required under the Drinking Water Regulations to notify the DWI whenever an event occurs that has the potential to impact on drinking water quality. NI Water fully investigates all events and provides the DWI with a substantive report for each. After investigation, the event may be shown not to have had a detrimental effect on water quality and is classified in the "Drinking Water Inspectorate's Report" as "Not Significant" or "Minor" as opposed to "Significant", "Serious" or "Major".

A list of all Water Quality Events that were Significant or above which occurred during 2020 is detailed in Appendix 4.

## Regulatory Enforcement

During 2020, DWI issued three Regulation 31(4) Notices on NI Water:

- Regulation 31(4) Notice 2020/001 requires NI water to install and have operational, a treatment system at Derg WTW that is effective in the removal or reduction of MCPA to achieve a final water result that meets the maximum regulatory limit of MCPA of 0.10µg/l 2020 by 31 March 2022. This was issued on 30 June 2020 following the revocation of Regulation 31(4) Notice 01/19 on the same date.
- Regulation 31(4) Notice 2020/002 requires NI water to install and have operational, a treatment system at Ballinrees WTW that is effective in the removal or reduction of MCPA to achieve a final water result that meets the maximum regulatory limit of MCPA of 0.10µg/l 2020 by 22 December 2023. This was issued on 17 December 2020 following the revocation of Regulation 31(4) Notice 03/19 on the same date.
- Regulation 31(4) Notice 2020/003 requires NI water to install and have operational, a treatment system at Ballinrees WTW that is proven to be effective in the treatment of taste and odour parameters to achieve a final water and consumer tap result that is acceptable to the consumer and there is no abnormal change by 22 December 2023. This was issued on 17 December 2020.

DWI closed one Provisional Enforcement Order PEO/18/01 during 2020:

- PEO/18/01 - to seek remedial measures relating to contraventions of the odour standard from water supplied from Castor Bay WTWs was issued on 25 June 2018. Undertakings were scheduled for completion in March 2020. The Undertakings were delayed due to the COVID-19 pandemic but were completed on 16 April 2020 and the PEO closed on 14 May 2020.

# Quality Assurance

The Regulations require water quality to be monitored using analytical systems, which can demonstrate that appropriate accuracy is achieved and maintained. NI Water attaches great importance to the integrity of the analysis and for this reason applies strict laboratory analytical quality control procedures. These systems and procedures are subject to external inspection and audit by the Drinking Water Inspectorate and an assessment of NI Water's performance is included in the Inspectorate's annual report.

NI Water has achieved the requirements of the Drinking Water Testing Specification (DWTS). This is a national scheme agreed between the Drinking Water Inspectorate and the United Kingdom Accreditation Service for quality assurance within laboratories carrying out analysis for the water industry.

In addition to this, both of NI Water's testing laboratories have attained the necessary standard of analytical excellence to the requirements of ISO 17025. UKAS auditors carry out an annual audit of the NI Water laboratories' quality system to maintain this.

NI Water laboratories provide an accredited analytical service to external customers for both drinking water quality testing and wastewater quality testing.

## Use of Technology for Increased Assurance

To assist in its ability to audit its sampling programme, NI Water has put in place an electronic system to produce an enhanced audit trail and eliminate errors in data transcription.

The system uses Android phones with a bespoke Remote Sampler app. The phone camera is used to scan the labels on the sample bottles and the built in GPS (Global Positioning System) is used to give an accurate sample audit, location fix, and time for each sample as it is collected. When the sampler returns to the laboratory, this data is downloaded with all the ancillary audit data onto NI Water's Laboratory Information Management System (LIMS) where it updates the existing sample information. This system has recently been upgraded to a cloud based system, to more fully automate the audit trail and chain of custody.

Within the laboratory environment, the majority of analytical results are transferred directly into LIMS via direct data capture from the laboratory instrumentation. This information transference minimises the possibility of transcription errors and again gives an enhanced audit trail.

# Water Quality Summary

## NI Water Sites in Service

During 2020, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	24
Service Reservoirs	287
Water Supply Zones	51
Authorised Supply Points (see glossary)	24

## Overall Water Quality Testing

During 2020, 91,581 microbiological, physical, and chemical tests were carried out for mandatory and indicator consented parameters on water samples taken from water treatment works, service reservoirs and customer taps. Of these, 91,522 tests complied with the regulatory standards giving an overall percentage compliance of 99.94%.

Location Type	No of Samples	Regulatory Parameters Analysed	Regulatory Parameters used for Compliance Assessment
Water Treatment Works	6,422	45,190	19,502
Service Reservoir	14,883	89,298	29,766
Zone ( including Authorised Supply Point)	4,805	55,699	42,313
<b>Overall</b>	<b>26,110</b>	<b>190,187</b>	<b>91,581</b>

As well as the regulatory required analyses, NI Water also carries out a large number of operational process control determinations, to ensure that its treatment processes are fully optimised.

## Microbiological Quality

Water leaving water treatment works is disinfected with chlorine to safeguard public health by destroying micro-organisms. This is the most important part of the water treatment process. NI Water has developed a disinfection policy for water treatment and individual disinfection statements for each water treatment works. This will continue to ensure that all water supplied by NI Water is adequately disinfected, and water supplied to customers is safe and pathogen free.

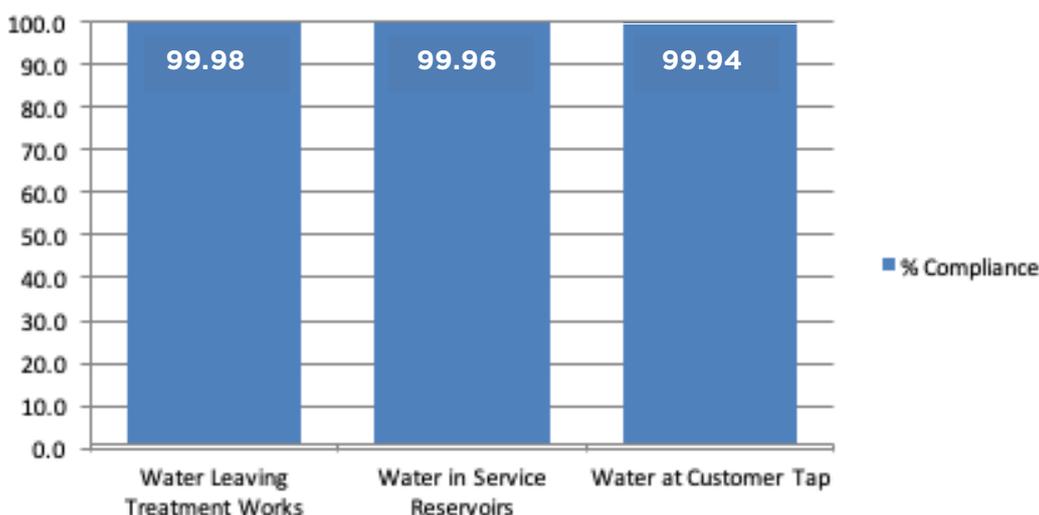
To ensure the effectiveness of the treatment and chlorination process, the wholesomeness of treated water is regularly examined to ensure the absence of coliform bacteria and faecal coliforms (*E. coli*) at water treatment works, service reservoirs and in the distribution system at customer taps. The presence of these organisms may indicate potential microbiological contamination of water supplies,

and if they are detected in drinking water, immediate action is taken to identify the source and to minimise any risk to public health.

Many instances of microbiological failure in samples taken from customer taps are due to contamination of the tap itself, in particular with mixer type kitchen taps. For this reason if a positive result is obtained, investigations are immediately carried out to identify if the positive result is due to the specific tap or the general system. If the contamination is found to be due to the tap or internal plumbing, NI Water will inform the customer in writing of the reason for the failure so that they can take appropriate action. A copy of the letter is also provided to the Public Health Agency, the local Environmental Health Officer, and the DWI.

A summary of the microbiological quality of water supplied in 2020 is given below.

### Overall Microbiological Water Quality



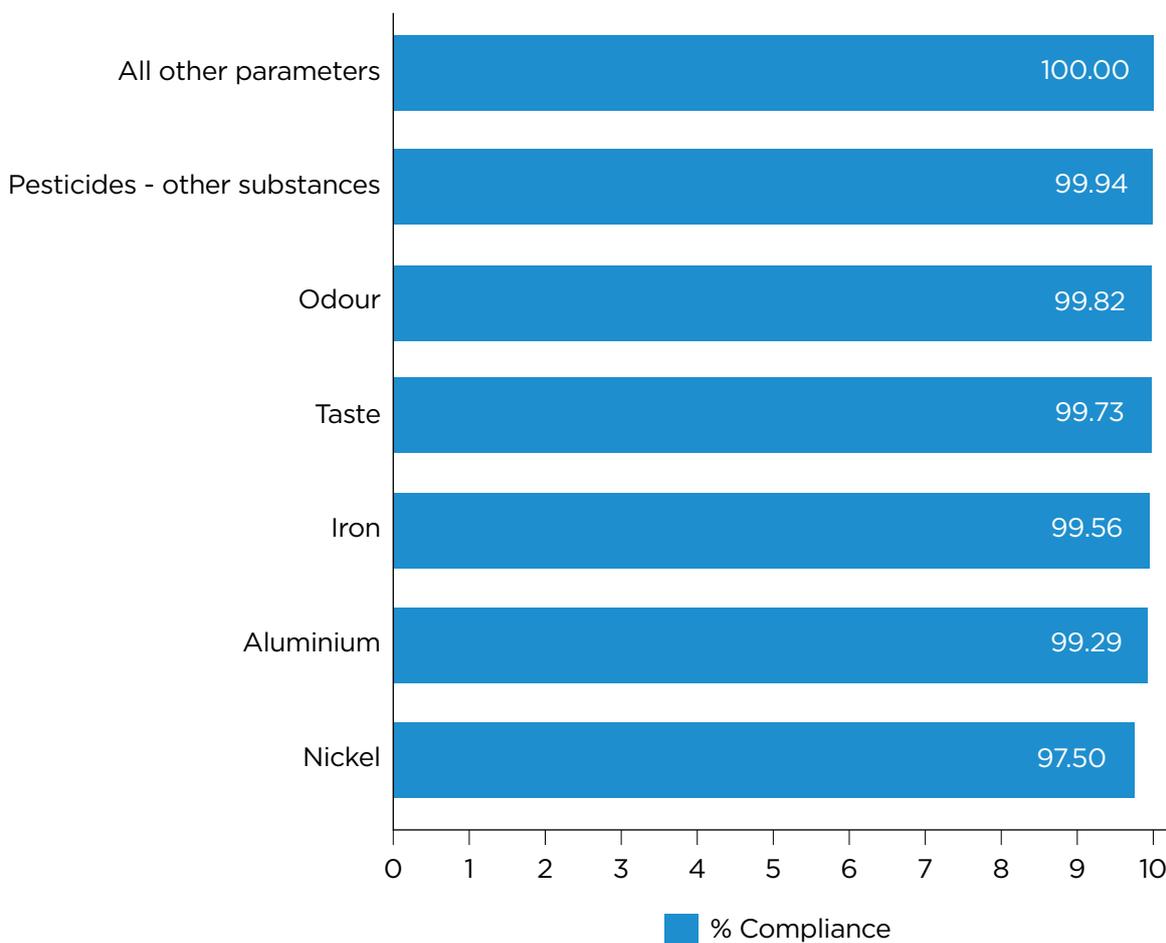
## Physical and Chemical Quality at Customer tap

Physical and chemical quality standards apply to water supplied at customer taps. The Regulations lay down the required sampling frequency for each parameter or group of parameters dependent on the resident population of the water supply zones.

- During 2020, 32,119 physical and chemical tests were assessed against their consent for water samples taken at customer taps or authorised supply points. Of these, 32,085 tests complied with the regulatory standards giving a compliance of 99.89% for physical and chemical tests.

Appendix 2 shows the extent of NI Water's compliance with the regulatory standards at both customer tap and authorised supply point. For most parameters, compliance is judged based on the results of individual samples. If a single sample exceeds the PCV, that supply is deemed not to comply with the regulatory standards, even if the cause is outside NI Water's control, e.g. defective plumbing within premises. Improved compliance will be achieved through the water treatment works investment programme and thereafter through improvements to the distribution system.

### Percentage Compliance by Chemical Parameter



## Overall Water Quality

Overall Water Quality			
	Number of Analytical Tests	Number of Tests Exceeding PCV	% Compliance with Regulatory Standards
<b>Water Leaving Treatment Works</b>			
Bacteriological Analysis	12,844	2	99.98
Indicator parameters	6,422	4	99.94
<b>Total</b>	<b>19,266</b>	<b>6</b>	<b>99.97</b>

Water in Service Reservoirs			
Bacteriological Analysis	29,766	13	99.96
<b>Total</b>	<b>29,766</b>	<b>13</b>	<b>99.96</b>

Water at Customers' Taps or Authorised Supply Points			
Bacteriological Anal. inc Coliforms	10,194	5	99.95
Zone Chemical Analysis	16,986	29	99.83
Supply Point Chemical Analysis	10,384	5	99.95
Indicator parameters	4,985	1	99.98
<b>Total</b>	<b>42,549</b>	<b>40</b>	<b>99.91</b>

<b>Total Mandatory Parameters</b>	<b>80,174</b>	<b>54</b>	<b>99.93</b>
<b>Total Indicator Parameters</b>	<b>11,407</b>	<b>5</b>	<b>99.96</b>

<b>Overall Water Quality Total</b>	<b>91,581</b>	<b>59</b>	<b>99.94</b>
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Explanatory notes of exceedances of the microbiological and chemical quality standards with less than 100% compliance are provided in the following section.

# Water Quality Issues

During 2020, the following main chemical parameters exceeded their prescribed concentration or value at some point.

## Aluminium

The standard set for aluminium is based on aesthetic considerations. A number of water supplies may contain concentrations of aluminium, which could exceed the standard from time to time because of changes in raw water quality or treatment process fluctuations. These treatment processes are regularly reviewed and upgraded where required to lower the aluminium levels to below regulatory levels.

## Iron

The iron standard has been set for aesthetic reasons as levels persistently above the standard can give rise to discoloured water and particulate matter. Where the standard for iron has not been met, this may be due to problems of corrosion of iron water mains. There is an ongoing proactive programme of flushing and cleaning of the distribution system to minimise the problem. In addition, NI Water has an ongoing Water Mains Rehabilitation Programme in which supply zones that experience water quality and other supply problems are subjected to a detailed zonal study. These detailed zonal studies include the analysis of historic water quality data (including iron), customer complaint information, and the implementation of targeted water quality sampling and analysis programmes to determine the nature and extent of the water quality problems. Appropriate solutions to the problems are then developed which include mains cleaning and renovation, and replacement of parts of the distribution system. Implementation of the solutions is undertaken either by NI Water or by its contractors.

## Lead

Water leaving treatment works and in the distribution systems contains only trace amounts of lead. However, where lead has been used for service pipes between the water main and the kitchen tap or in domestic plumbing, there may be a risk of concentrations at the customer tap exceeding the lead standard.

Many older properties still have service pipes and internal plumbing wholly or partly comprised of lead. If a sample is found to exceed the limit for lead in drinking water, the customer, the Public Health Agency, the local Environmental Health Officer, and DWI are notified. Where it is found that the exceedance is attributable to a lead service pipe NI Water will replace free of charge, any of its lead pipes supplying the property. It will be the responsibility of the property owner to replace any lead pipework on the property.

NI Water will also replace free of charge, any of its lead pipes supplying a property, if it receives a written request from a customer who has replaced the portion of lead service pipe for which the householder is responsible.

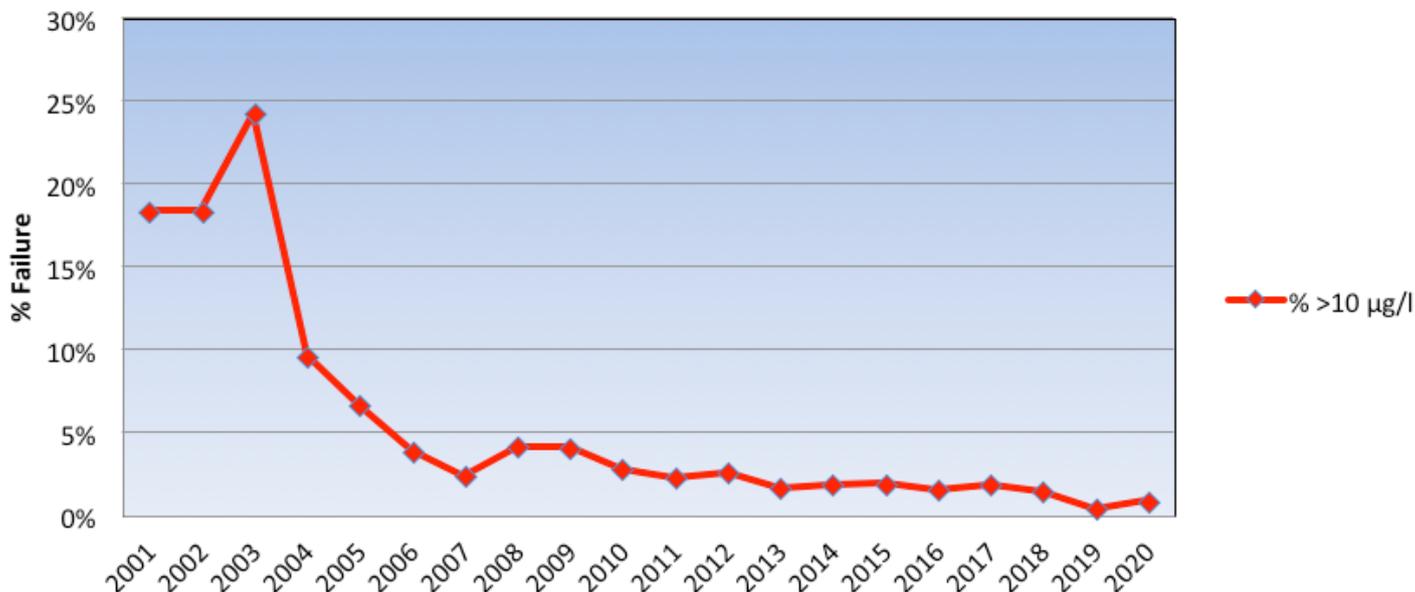
Where water mains are being rehabilitated, NI Water replaces any lead communication pipes encountered to the boundary of the property and the property owner is informed in writing.

The lead PCV (Prescribed Concentration or Value) reduced significantly from the old limit of 25µg/l to the current limit of 10µg/l at the end of 2013. All non-borewell supplies in Northern Ireland are treated with a small amount of orthophosphoric acid, which forms a protective coating over lead pipes, to minimise levels of lead in the water supply. This dosing is reviewed annually for each water treatment works and DWI informed.

The effectiveness of the dosing can be seen in the graph below, showing the optimisation of the dosing from the water treatment works to meet the new regulations.

Please note that during 2020 the number of samples analysed for lead was greatly reduced with the reductions of sampling at customer tap due to Covid.

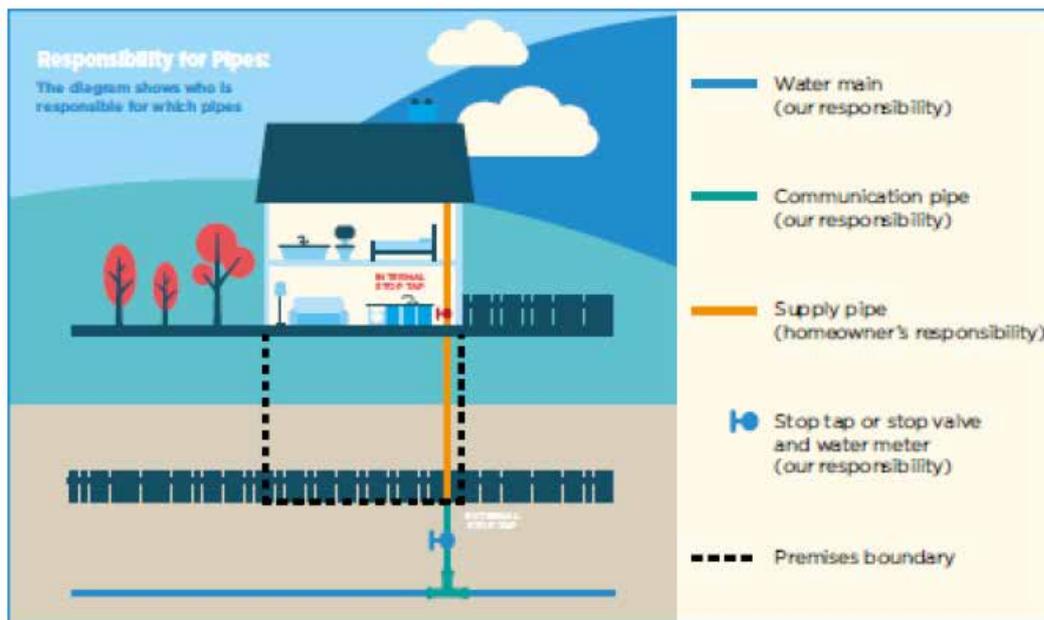
### % Lead Exceedances against the revised 10µg/l Standard



A leaflet on lead in drinking water is available from the NI Water website at

[www.niwater.com/about-your-water](http://www.niwater.com/about-your-water)

Amongst other details, this leaflet explains who is responsible for replacing each part of the lead in the domestic system.



## Manganese

Manganese occurs naturally in many water sources. Concentrations can vary seasonally or be attributed to the disturbance of accumulated deposits at the bottom of reservoirs when the water is drawn down or when water circulation occurs. The standard for manganese has been set for aesthetic reasons to prevent unpleasant tastes, staining or discoloured water.

## Nickel

Nickel exceedances are typically caused by customers' taps or fittings, and are not normally due to issues with the public water supply.

## Pesticides

Pesticides include insecticides, herbicides, fungicides, and algacides. These can find their way into watercourses from a variety of sources, mainly from use in agriculture or weed control. NI Water has an ongoing pesticide monitoring programme and analysed samples for 38 individual pesticides during 2020. NI Water liaises with other regulatory bodies in Northern Ireland such as the Northern Ireland Environment Agency (NIEA) regarding the control of pesticide usage.

The pesticide exceedances were for one of the more commonly used pesticides – MCPA.

NI Water is engaged on an ongoing series of catchment management plans as part of its overall Drinking Water Safety Plans, which include looking at pesticide usage and control. The Water Catchment Partnership mentioned previously, has been setup to address pesticide problems across Northern Ireland and raise awareness of the risks of using pesticide products close to drinking water abstraction sources.

## Total Trihalomethanes (THMs)

THMs are chlorination by-products arising from the reaction of chlorine, used for disinfection, with natural organic material present in water. The maintenance of microbiological quality by disinfection using chlorine is NI Water's main priority. NI Water's water abstractions are predominantly drawn from surface sources, which can contain these natural organic materials.

THM formation is dependent on a wide range of differing factors and so changes in THM concentrations may be a consequence of one or many factors. THM levels tend to increase with pH, temperature, contact time, residence time, length of the distribution network, and the level of "precursors" present. Precursors are the organic material that reacts with chlorine to form THM's.

NI Water has developed and put in place ongoing THM action plans to reduce the risk of THM failures.

These action plans alongside our drinking water safety plan risk assessment process are used to help identify where investment may be required to reduce the risk of THM failures. NI Water's ongoing water treatment works investment programme is designed to provide improved treatment to reduce organic matter prior to chlorination and thereby reduce THM levels.

In addition to its ongoing programmes of work, NI Water is constantly reviewing its operational procedures to reduce THM levels in the distribution system, whilst maintaining microbiological quality.

Improved compliance over all of Northern Ireland is expected as improvements to water treatment works and the distribution system continue.

## Turbidity

Particulate matter, usually the re-suspension of sediments present in the distribution system, affects the turbidity of drinking water. Systematic flushing of the local pipe work usually restores water quality.

## Summary

All exceedances of the regulatory standard are investigated following procedures agreed with the Health Authorities and the Drinking Water Inspectorate. Closure of an event cannot take place without their approval.

## Further information

Various information leaflets giving more details of water information may be found at [www.niwater.com/about-your-water](http://www.niwater.com/about-your-water)

# The Water Supply

## (Water Fittings) Regulations (NI) 2009

### Water Regulation Background

NI Water was granted an operating license to provide water and sewerage services in Northern Ireland on 1st April 2007, replacing the former Water Service which was an executive agency within the former Department for Regional Development (DRD). This change in the delivery of water and sewerage services in Northern Ireland was as a result of new legislation – The Water and Sewerage Services (Northern Ireland) Order 2006 (the 2006 Order).

The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 (the 2009 Regulations) were made by the then DRD under Articles 114 and 300(2) of the 2006 Order and came into operation on 3rd August 2009.

NI Water has an obligation to ensure the 2009 Regulations are being complied with and to publish a report on customer compliance activities no later than the 30th June every year.

The 2009 Regulations are primarily designed to prevent the waste, misuse, undue consumption, erroneous measurement of water and most importantly to prevent contamination of wholesome water. Owners and occupiers of premises, and anyone who installs plumbing systems or water fittings, have a legal duty to ensure that their systems satisfy the requirements of the regulations. Advance notice must be given, in most cases,

of proposed installations, so architects, building developers and plumbers have to follow the Regulations on behalf of future owners or occupiers.

### For the purpose of this return:

NI Water is obliged to inspect its customer premises for compliance with the requirements of the Regulations and the Department for Infrastructure (DfI) Water and Drainage Policy Division (WDPD) is deemed the Regulator of this activity. Non-compliance may result in the NI Water legal team taking formal enforcement action against customers. NI Water and WDPD meet quarterly to discuss issues arising under the Regulations, compliance activities, and contraventions.

Government codes known as the Standard Industrial Classification (SIC) of economic activity codes are used by NI Water to generate fluid categories. These are then used to define risk categories associated with different types of domestic and non-domestic properties.

NI Water's implementation of the 2009 regulations is detailed at Appendix 5 herein. Detailed below are the numbers of inspections completed, contraventions observed, and contraventions awaiting customer resolutions. The ongoing COVID 19 pandemic affected the inspection programme, with adherence to lockdowns and restrictions, limiting the scope of inspection activity.

Description	Number
*Number of Domestic and Non Domestic Inspections	
• Proactive Inspections	405
• Reactive Inspection	96
Total number of all Inspections	<b>501</b>
*Number of Premises/Bodies visited	501
*Number of Contraventions Active recorded	360
*Number of Contraventions Closed	231
*Number of Outstanding Contraventions	129
*Number of Inspections with outstanding contraventions > 3 months passed to NI Water Legal Department	0

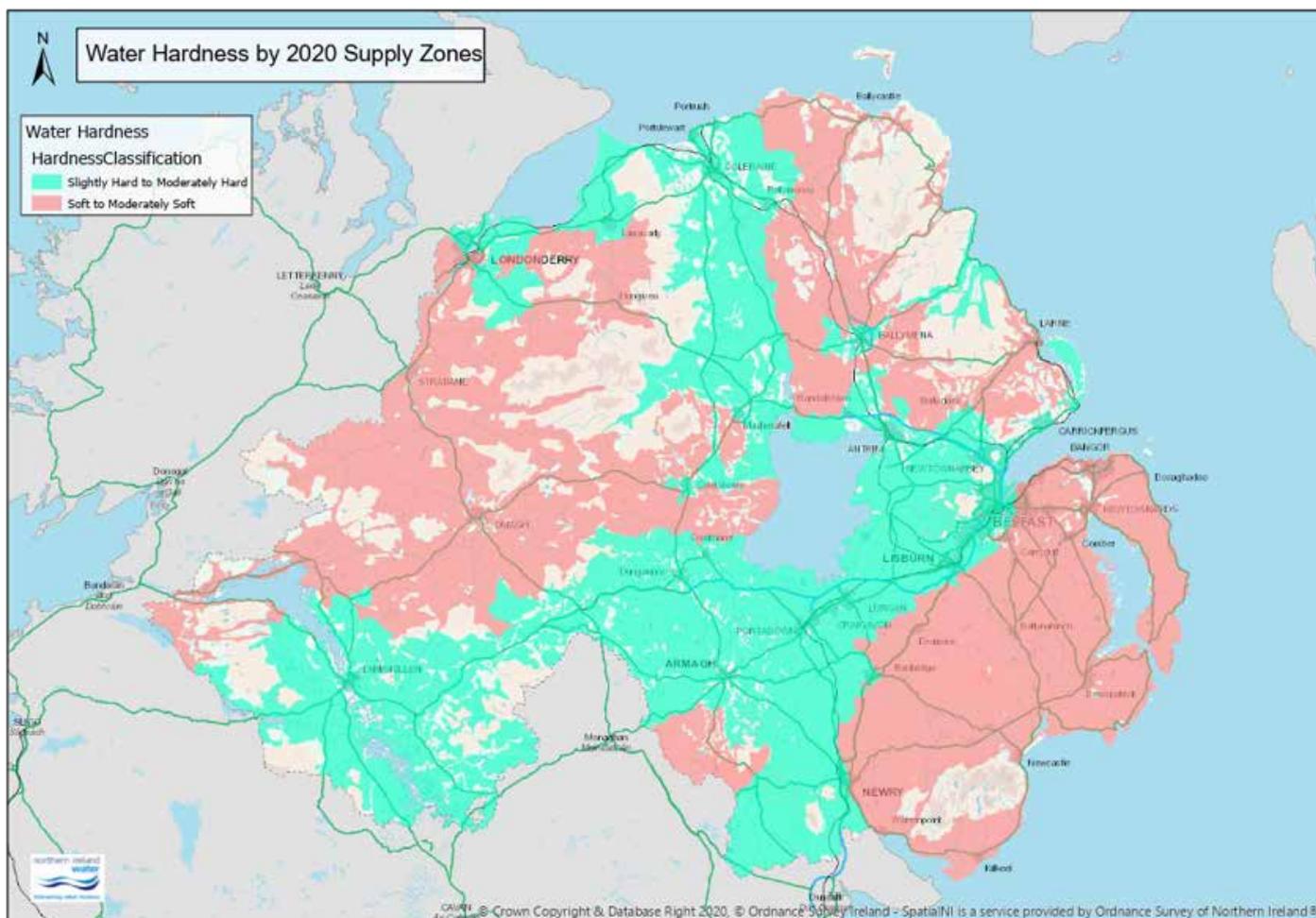
\*2020 Calendar year

# Public Information

## Drinking Water Register

A Drinking Water Register is available from NI Water's website at <http://www.niwater.com/water-quality-results/> showing the most recent year's detailed water quality results for customers based on their postcode, and details of water hardness to enable customers to set up dishwashers etc. correctly.

## Water Hardness Map



If you are unable to access the website, the Register may be requested, free of charge, during normal working office hours through the customer relations centre below. Customers may request and obtain a free copy of the information for the water supply zone they live in. A charge may be made for printed information on other zones.

Customers, who wish to receive information about the quality of water in their water supply zone by post, can write to the address listed below:

**Customer Relations Centre  
4th Floor  
Capital House  
3 Upper Queen St  
Belfast BT1 6PU**

Customers can contact the Customer Relations Centre on our Waterline:  
**03457 440088**

Customers who have hearing difficulties can also contact us via Text Relay on:  
**03457 440088**

### Social Media

NI Water actively uses social media to interact with and inform its customers. This includes:

#### Facebook



This is updated routinely and in the event of a major incident will be used to communicate directly with customers on <https://www.facebook.com/niwater/>

#### YouTube



NI Water has its own YouTube channel <http://www.youtube.com/northernirelandwater> that hosts NI Water videos such as “How to protect your pipes”, “Saving water in the home” or “Your water bill explained”. It can also be used to host video messages for customers during a major incident.



NI Water’s twitter account is routinely used to respond directly to customers queries at <https://twitter.com/niwnews>

We are extending our social media service and introducing WebChat at <https://www.niwater.com/contact-us/>, providing more ways to keep our customers informed and offering them more choices for interacting with us.

Customers may also contact Customer Services by email on:

**[waterline@niwater.com](mailto:waterline@niwater.com)**

Further information for customers may be obtained at the following website:

**<http://www.niwater.com>**

This site also contains a PDF version of the most recent Water Quality report.

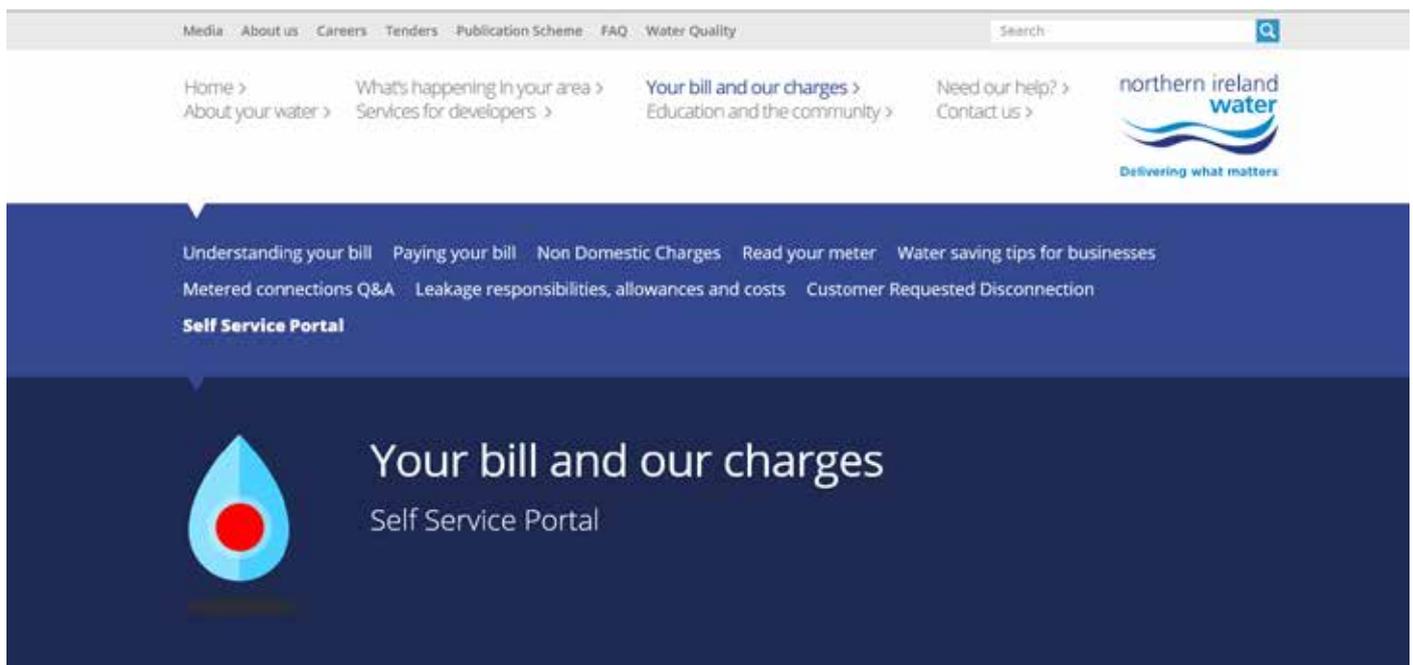
## Customer Services

Staff in the Customer Relations Centre record details and the nature of all enquiries, requests for services, emergencies and complaints. All contacts are logged and routed directly to staff who will investigate the matter and resolve the problem as quickly as possible.

Customer Services produces a range of leaflets about services provided, including those designed to give customers the opportunity to learn more about water quality standards, water efficiency and the need to use water wisely. The leaflets can be obtained from the Customer Relations Centre or may be viewed on the above Website at [www.niwater.com/about-your-water](http://www.niwater.com/about-your-water)

## Self Service Portal

As part of our ongoing efforts to improve the overall customer experience, we have taken steps to make interactions more convenient by developing a web based Self Service platform. This allows customers to log into their personal account online and access their details at a time that is convenient to them.



Once registered, customers are able to:

- view their account balance
- view the payment plan of individual schedules
- view bill and payment history
- view desludging request history
- process a new desludging request
- pay a bill
- manage account details
- participate in a live WebChat with a Customer Service advisor

This web portal is found at:

<https://selfservice.niwater.com>

## Customer Care Register



NI Water provides essential services for all our customers throughout Northern Ireland.

We offer a range of free additional services if you are an older customer, have a serious medical condition, or need extra help for any other reason.

You need to join our Customer Care Register at this [link](#) to get the extra free services you or anyone in your household would like to receive.

Alternatively, telephone Waterline on **03457 440088**

### Doorstep Service

If you have a hearing difficulty, we will knock the door louder and speak clearly when we call with you. If you have a mobility problem, we will allow more time for you to answer the door.

### Password scheme

You can ask for a password to help you identify our staff. Please arrange a password with us. Our staff will always use this password when they visit you.

If someone claims to work for us but does not know your password, do not let them in.

Instead, please get in touch with us and we will check to see if the caller really works for us.

### Carers Contact Service

You can name a carer or relative who:

- can contact us on your behalf
- we can contact if we need to reach you at anytime
- we can post information directly to

# Major Incident Information

In a major incident or emergency (such as the sudden flooding following heavy rainfall in recent years), NI Water can experience a massive increase in demand for information by our customers which would overwhelm the normal systems in place.

To increase the number of calls answered and the quality of information provided, NI Water has installed a High Volume Call Answering (HVCA) system. This “always-on” service monitors all incoming calls to Waterline and takes on the additional load during unexpected peaks. The NI Water HVCA system recognises customers using the telephone number held on their customer record or it can use Voice Recognition to allow customers to state their Post Code etc. (Voice Recognition like this is used on many smartphones and call handling systems in banks etc.).

NI Water’s customers should have a better experience when they ring us because their call will always be answered, and they should be provided with up to date information.

NI Water’s management of the incident will be improved because we will know when, and why, each customer has called. This allows a more detailed picture of the reasons customers are calling and the potential causes to be built up. This technology puts NI Water on a par with other utilities in Northern Ireland and other water companies in the UK.

## Major Incident and Major Emergency Website

NI Water’s website routinely provides information to its customers regarding interruptions, repairs and planned upgrades as well as frequently asked questions and answers and links to helpful sites e.g. to find a plumber etc..

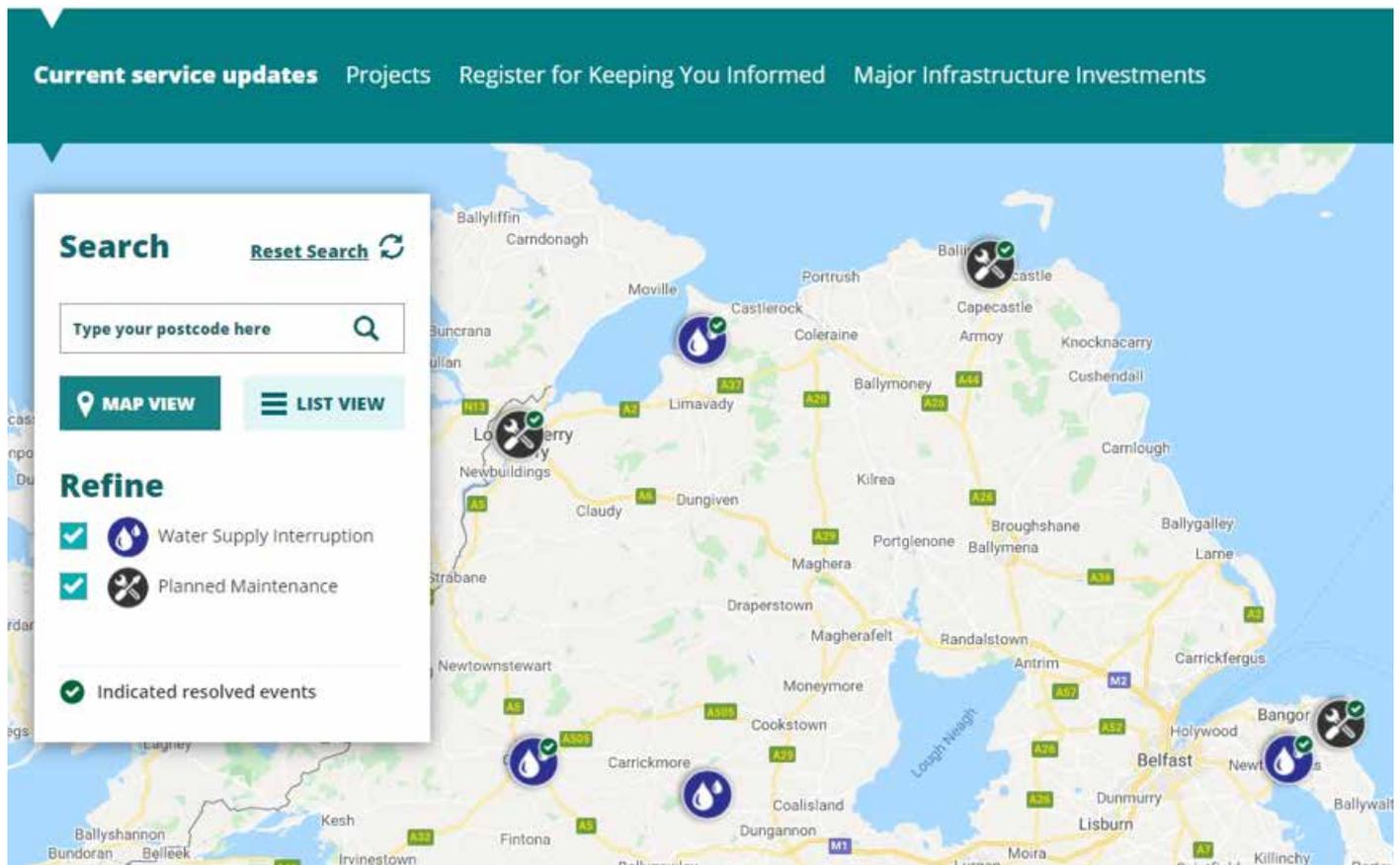
If a major incident or emergency is declared, NI Water’s normal website has the facility to become a dedicated portal for emergency information. This allows customers to quickly find out information based on their postcode.

The screenshot shows the NI Water website interface. At the top, there is a navigation bar with links: Home >, About your water >, What's happening in your area >, Services for developers >, Your bill and our charges >, Education and the community >, Need our help? >, Contact us >. The NI Water logo and tagline "Delivering what matters" are on the right. Below the navigation bar is a row of service icons: Water problem?, Pay Your Bill, Septic Tank, New Connections, Report a Leak, No Water/ Low Pressure, Blocked Sewer, and Cloudy Water. The main content area features a large blue banner with a white warning triangle containing a red exclamation mark. The text on the banner reads: "Belfast City Centre Water Supply Disruption" and "Waterline 03457 440088". A "Learn more" button is located at the bottom left of the banner.

Information available includes:

- Bursts
- Alternative Water Supplies
- Planned Restrictions to Supply
- Low Reservoir Levels
- Boil Notices

The site support and throughput allows in excess of 200,000 visits per hour by customers.



# 2020 Summary

**2020 presented challenges to the Water Industry, like no other year before. NI Water rose to those challenges and found new ways of working, demonstrating a commitment to delivering what matters.**

NI Water teams worked collaboratively to ensure that we contributed to public health protection through the provision of high quality drinking water for the people of Northern Ireland, and that wastewater continued to be treated to a standard that protects our environment.

We worked closely with the Drinking Water Inspectorate with regards to initiating new protocols and risk based sampling requirements, to protect both our customers and colleagues, and we greatly appreciate their good guidance and support throughout the year.

Finally, I would like to thank all the teams and individuals who have contributed to this excellent outcome under exceptional circumstances.

Sara Venning  
Chief Executive Officer

# Appendix 1

## Drinking Water Quality Standards

### Water Supply (Water Quality) Regulations (Northern Ireland) 2017

#### Schedule 1

#### Prescribed Concentrations And Values

**Table A.**

#### Microbiological Parameters

##### Part I: Directive Requirements

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Enterococci	0	number/100ml	Customers' taps
Escherichia coli (E. coli)	0	number/100ml	Customers' taps
Coliform bacteria	0	number/100ml	Customers' taps

**Table B.**

#### Chemical Parameters

##### Part I: Directive requirements

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Acrylamide	0.10	µg/l	(i)
Antimony	5	µg Sb/l	Customers' taps
Arsenic	10	µg As/l	Customers' taps
Benzene	1	µg/l	Customers' taps
Benzo(a)pyrene	0.01	µg/l	Customers' taps
Boron	1	mg B/l	Customers' taps
Bromate	10	µg BrO <sub>3</sub> /l	Customers' taps
Cadmium	5	µg Cd/l	Customers' taps
Chromium	50	µg Cr/l	Customers' taps
Copper	2	mg Cu/l	Customers' taps
Cyanide	50	µg CN/l	Customers' taps
1,2 Dichloroethane	3	µg/l	Customers' taps*
Epichlorohydrin	0.10	µg/l	(i)
Fluoride	1.5	mg F/l	Customers' taps
Lead	10	µg Pb/l	Customers' taps
Mercury	1	µg Hg/l	Customers' taps
Nickel	20	µg Ni/l	Customers' taps
Nitrate	50	mg NO <sub>3</sub> /l	Customers' taps
Nitrite	0.5	mg NO <sub>2</sub> /l	Customers' taps
Aldrin	0.03	µg/l	Customers' taps*
Dieldrin	0.03	µg/l	Customers' taps*
Heptachlor	0.03	µg/l	Customers' taps*
Heptachlor epoxide	0.03	µg/l	Customers' taps*

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Other pesticides	0.1	µg/l	Customers' taps*
Total Pesticides (ii)	0.5	µg/l	Customers' taps*
PAH - Sum of four substances (iii)	0.1	µg/l	Customers' taps
Selenium	10	µg Se/l	Customers' taps
Tetrachloroethene/Trichloroethene - Sum (iv)	10	µg/l	Customers' taps*
Total Trihalomethanes (v)	100	µg/l	Customers' taps
Vinyl chloride	0.50	µg/l	(i)

#### Notes:

- (i) The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.
- (ii) Total Pesticides: means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.
- (iii) The specified compounds are:
- benzo(b)fluoranthene
  - benzo(k)fluoranthene
  - benzo(ghi)perylene
  - Indeno (1,2,3-cd) pyrene.
- (iv) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.
- (v) The specified compounds are:
- chloroform
  - bromoform
  - dibromochloromethane
  - bromodichloromethane

\* May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

## Part II: National Requirements

Parameters	Concentration Or Value (Maximum Unless Otherwise Stated)	Units Of Measurement	Point Of Compliance
Aluminium	200	µg Al/l	Customers' taps
Colour	20	mg/L Pt/Co	Customers' taps
Iron	200	µg Fe/l	Customers' taps
Manganese	50	µg Mn/l	Customers' taps
Odour	0	Dilution number	Customers' taps
Sodium	200	mg Na/l	Customers' taps
Taste	0	Dilution number	Customers' taps
Tetrachloromethane	3	µg/l	Customers' taps
Turbidity	4	NTU	Customers' taps

### Schedule 2 Indicator Parameters

Parameters	Specification Concentration or Value (maximum) or State	Units Of Measurement	Point Of Monitoring
Ammonium	0.5	mg $NH_4$ /l	Customers' taps
Chloride (i)	250	mg Cl/l	Supply Point*
Clostridium Perfringens (Including Spores)	0	Number/100ml	Supply Point*
Colony Counts	No abnormal change	Number/1ml at 22°C Number/1ml at 37°C	Customers' taps,
Conductivity (i)	2500	µS/cm At 20°C	Supply Point*
Hydrogen Ion	9.5	pH Value	Customers' taps
	6.5 (minimum)	pH Value	
Sulphate (i)	250	mg $SO_4$ /l	Supply Point*
Total Indicative Dose (For Radioactivity) (ii)	0.1	mSv/Year	Supply Point*
Total Organic Carbon (TOC)	No abnormal change	mg C/l	Supply Point*
Tritium (For Radioactivity)	100	Bq/l	Supply Point*
Turbidity	1	NTU	Treatment Works

#### Notes:

- (i) The water should not be aggressive.  
(ii) Excluding tritium, potassium-40, radon and radon decay products.

\* May be monitored from samples of water leaving treatment works or other supply point, as no significant change during distribution.

#### Explanatory Notes

#### Measurement Units:

Milligram per litre (mg/l) means one part in a million.  
Microgram per litre (µg/l) means one part in a thousand million.

#### Parameter:

A parameter refers to any substance, organism or property listed above.

# Appendix 2

## Water Quality Report for Water Supply Zones

Schedule 1 parameters	Units	2020 Samples	No > PCV	% > PCV
Enterococci	No./100ml	348	1	0.29%
E. coli	No./100ml	4805	0	0.00%
1,2 Dichloroethane	µg/l	236	0	0.00%
Aluminium	µg Al/l	1830	13	0.71%
Antimony	µg Sb/l	338	0	0.00%
Arsenic	µg As/l	345	0	0.00%
Benzene	µg/l	236	0	0.00%
Benzo(a)pyrene	ng/l	399	0	0.00%
Boron	µg B/l	345	0	0.00%
Bromate	µg/l	400	0	0.00%
Cadmium	µg Cd/l	345	0	0.00%
Chromium	µg Cr/l	345	0	0.00%
Colour	mg/l Pt/Co	1790	0	0.00%
Copper	mg Cu/l	122	0	0.00%
Fluoride	mg F/l	332	0	0.00%
Iron	µg Fe/l	1836	8	0.44%
Lead	µg Pb/l	121	0	0.00%
Manganese	µg Mn/l	1821	0	0.00%
Mercury	µg Hg/l	331	0	0.00%
Nickel	µg Ni/l	120	3	2.50%
Nitrate	mg NO <sub>3</sub> /l	334	0	0.00%
Nitrite	mg NO <sub>2</sub> /l	334	0	0.00%
Odour	dilution No	1097	2	0.18%
Selenium	µg Se/l	340	0	0.00%
Sodium	mg Na/l	341	0	0.00%
Taste	dilution No	1092	3	0.27%
PAH - Sum of four substances	µg/l	399	0	0.00%
Tetrachloroethene/Trichloroethene - Sum	µg/l	236	0	0.00%
Tetrachloromethane	µg/l	236	0	0.00%
Total Trihalomethanes	µg/l	399	0	0.00%
Turbidity	FTU	1830	0	0.00%

Indicator parameters	Units	2020 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	4805	4	0.08%
Total - Residual disinfectant	mg Cl/l	4805	-	-
Free - Residual disinfectant	mg Cl/l	4805	-	-
Colony Counts 37 (48hrs)	No./1 ml	1715	-	-
Colony Counts 22	No./1 ml	1714	-	-
Total Organic Carbon	mg C/l	347	-	-
Ammonium	mg NH <sub>4</sub> /l	398	0	0.00%
Chloride	mg Cl/l	325	0	0.00%
Hydrogen Ion	pH value	1823	0	0.00%
Conductivity	uS/cm 20	1823	0	0.00%
Sulphate	mg SO <sub>4</sub> /l	332	0	0.00%

### Water Quality Report for Authorised Supply Points

Schedule 1 parameters	Units	2020 Samples	No > PCV	% > PCV
Cyanide	µg CN/l	236	0	0.00%
Pesticides - Total Substances	µg/l	236	0	0.00%
All other analysed Pesticides	µg/l	8968	5	0.06%

Indicator parameters	Units	2020 Samples	No > PCV	% > PCV
Clostridium perfringens (sulph red)	No./100ml	236	1	0.42%
Total Indicative Dose		24	0	0.00%
Tritium	Bq/l	24	0	0.00%

### Water Quality Report for Water Treatment Works

Schedule 1 parameters	Units	2020 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	6422	2	0.03%
E. coli	No./100ml	6422	0	0.00%
Nitrite	mg NO <sub>2</sub> /l	236	0	0.00%

Indicator parameters	Units	2020 Samples	No > PVC	% > PVC
Turbidity	FTU	6422	4	0.06%
Total - Residual disinfectant	mg Cl/l	6422	-	-
Free - Residual disinfectant	mg Cl/l	6422	-	-
Colony Counts 37 (48hrs)	No./1 ml	6422	-	-
Colony Counts 22	No./1 ml	6422	-	-

## Water Quality Report for Service Reservoirs

Schedule 1 parameters	Units	2020 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	14883	13	0.09%
E. coli	No./100ml	14883	0	0.00%

Indicator 1 parameters	Units	2020 Samples	No > PVC	% > PVC
Colony Counts 37 (48hrs)	No./1 ml	14883	-	-
Colony Counts 22	No./1 ml	14883	-	-
Total - Residual disinfectant	mg Cl/l	14883	-	-
Free - Residual disinfectant	mg Cl/l	14883	-	-

# Appendix 3

## Water Quality by Northern Ireland Council Area

This section of the Drinking Water Quality Report is designed to demonstrate water quality by individual council area based on the Percentage Compliance at Customer Tap (including Supply Points) over the water supply zones associated with that council area, as shown on the associated maps.

For monitoring purposes, NI Water's supply area is divided into water supply zones. These are areas serving not more than 100,000 people, each of which are normally supplied from a single water supply source or combination of sources. There are areas where owing to topography and dispersal of population, it is not practicable to provide a mains water supply. Currently over 99.9% of Northern Ireland's population receive public water supplies.

In a number of cases, water supply zones overlap council boundaries. The council reports indicate which water supply zones are wholly or partially contained within the council areas, including those zones that may have a relatively small area within the council area. Separation of data within these water supply zones across council boundaries is not practicable, therefore the information used in calculating the zonal and council compliance relates to the whole zone and not merely the part included within a council boundary. Following discussions with the Drinking Water Inspectorate, water supply zones with fewer than 40 properties within the council area have not been used to calculate the individual council compliance. The information is based on samples taken randomly from customer taps in each water supply zone and

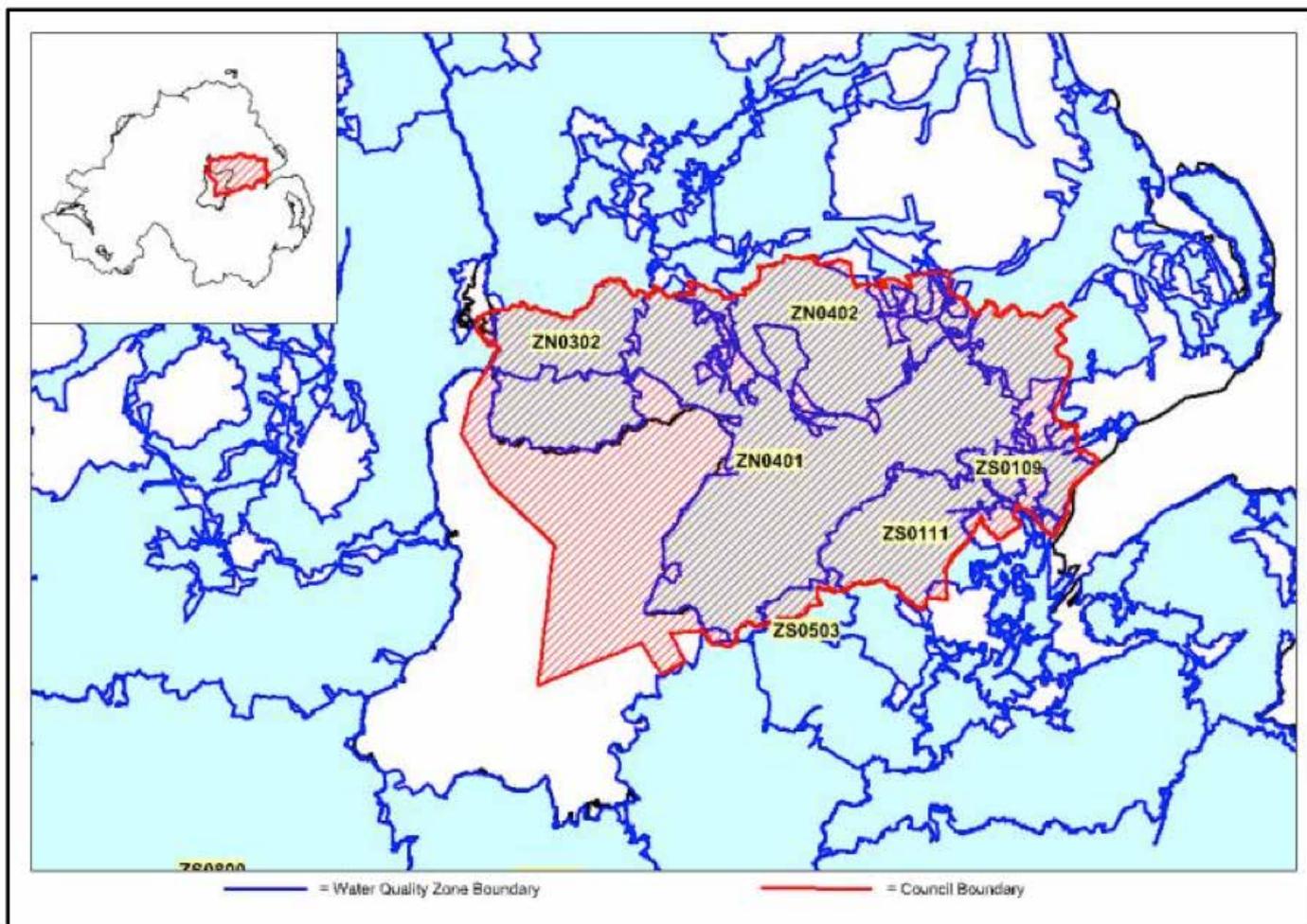
from planned samples at authorised supply points. Due to the nature of random sampling, there may be fluctuations in water quality across the water supply zones.

The report also details Capital Work Programmes affecting the council area, which directly related to water quality during the reporting period.

Small variations in water quality compliance performance occur across Northern Ireland. This reflects the need to continue to invest in and to maintain water treatment works, and to improve the water mains network.

A change to the Drinking Water Quality Regulations in 2017 resulted in a reduction of testing frequencies for some parameters at Authorised Supply Points for 2018 onwards. This has slightly lowered the percentage Compliance at Customer Tap at council level, but has not affected the overall compliance.

NI Water has identified the need to deliver a significant volume of water mains rehabilitation and other works across its ageing network. The works are necessary to ensure the efficient and cost effective operation of its water supply system in the immediate future and longer term as well as ensuring adequate levels of water quality and customer supply. To achieve this goal, NI Water has implemented a Water mains Rehabilitation Framework, within which it undertakes work on a Northern Ireland wide basis as identified by the zonal study programme of work.



Percentage Compliance at Customer Tap (including Supply Points)

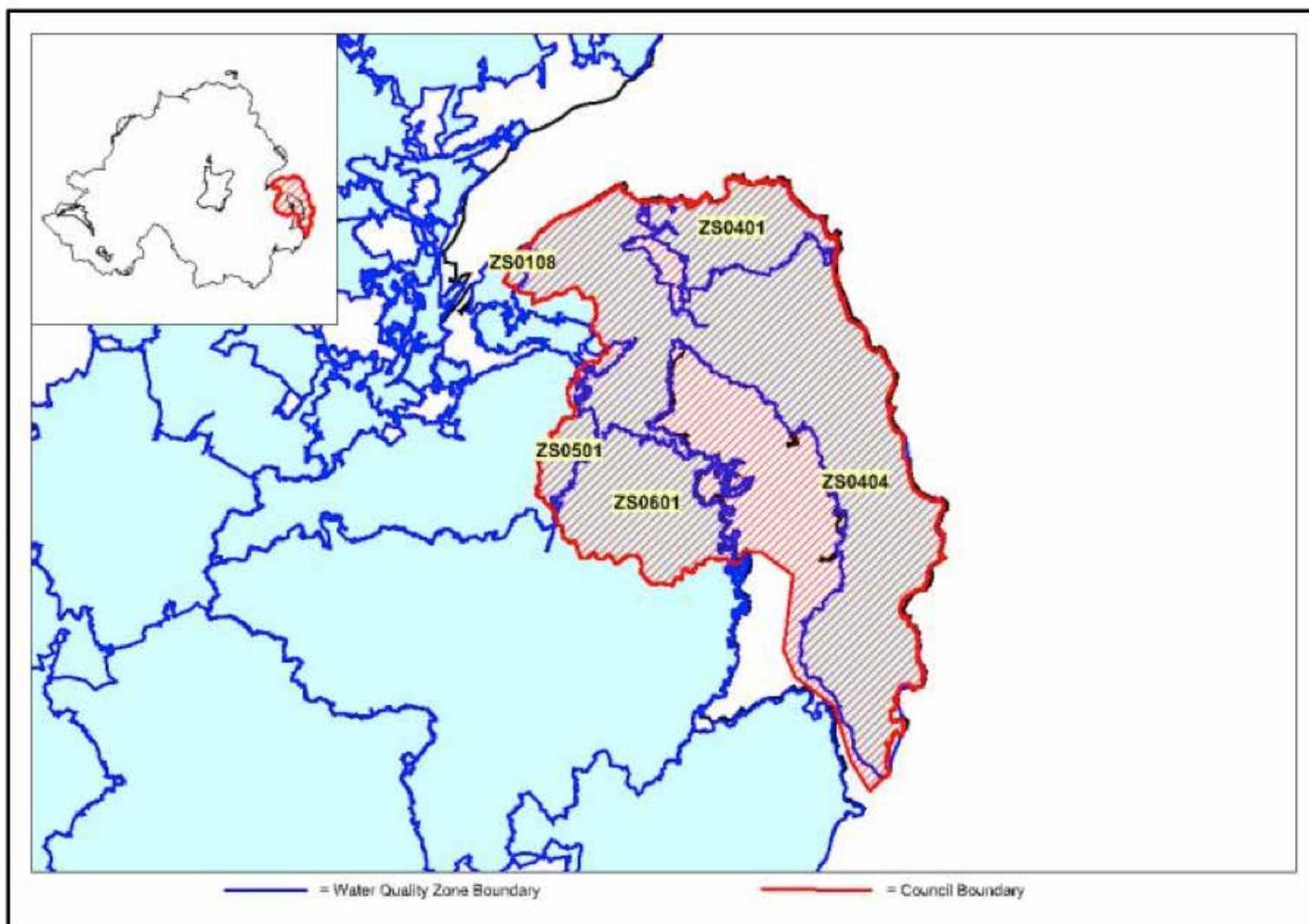
	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Antrim and Newtownabbey Compliance	99.7%	99.8%	99.7%	99.9%	99.9%	99.8%	100.0%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZS0109	Dorisland Whiteabbey
ZN0401	Dunore Point Antrim	ZS0111	Dunore Point Hydepark
ZN0402	Killylane Ballynure	ZS0201	Dorisland Carrick
ZS0106	Dunore Belfast North	ZS0503	Forked Bridge Stoneyford

## 2020 water quality Capital Works Programmes affecting the council area:

Antrim South WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
Killylane Dunore East Phase 1  
MIMP Central (Major Incident Mitigation Project Central Region) Freeze Thaw Improvements  
Newtownabbey Zone Watermains Improvements Phase 3  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
West Belfast/ North Lisburn  
WIIM Phase 2 Dunore East WP  
WIIM Phase 2 Dunore Point WP

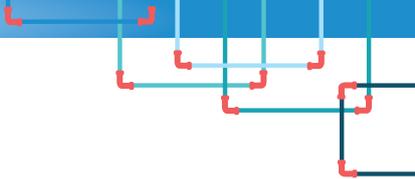


Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Ards and North Down Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%

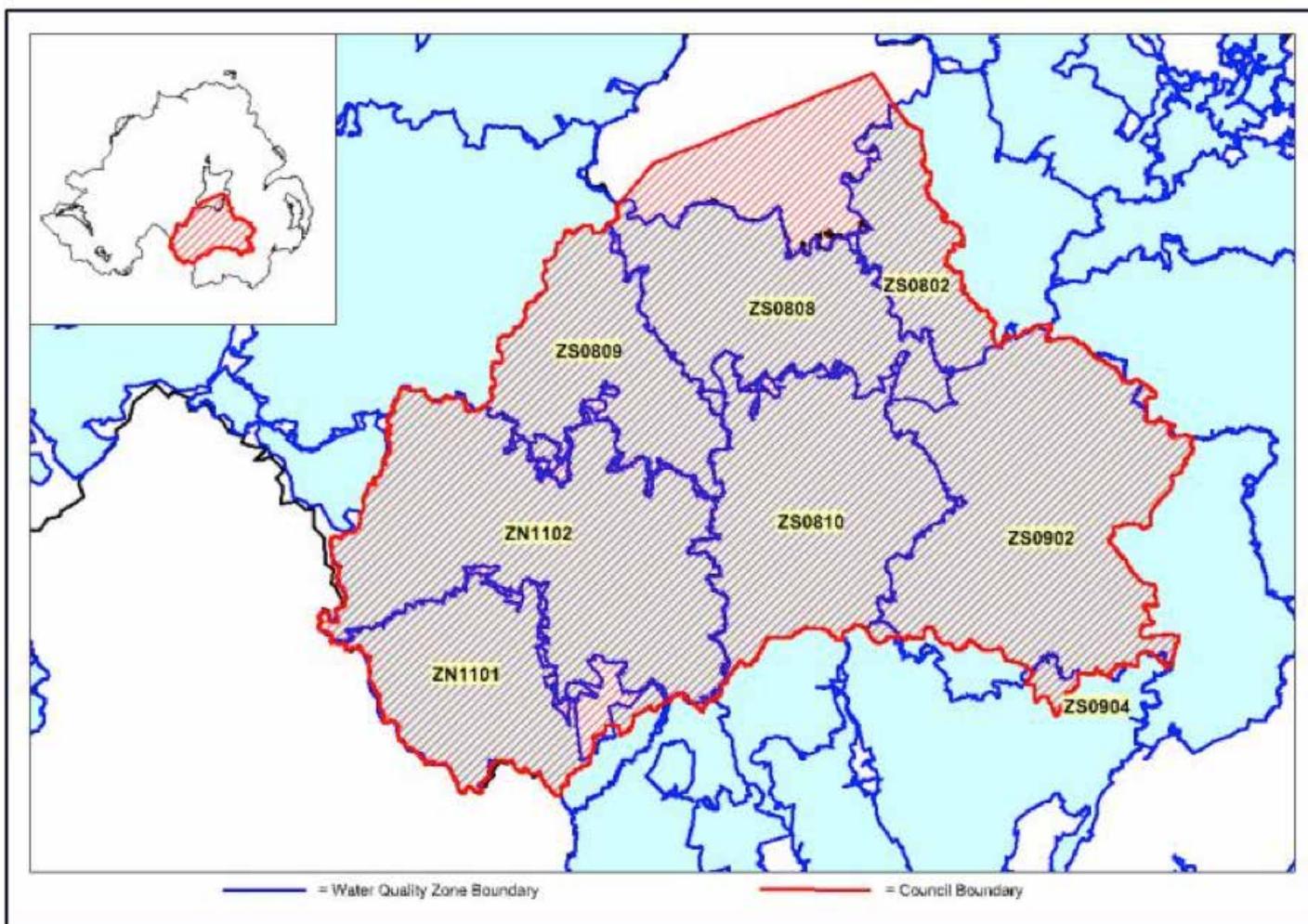
2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0108	Belfast Purdysburn	ZS0501	Drumaroad Lisburn
ZS0401	Drumaroad Bangor	ZS0601	Drumaroad Ballynahinch
ZS0404	Drumaroad Ards		



## 2020 water quality Capital Works Programmes affecting the council area:

17-23 Ballyreagh Rd Ards Watermains Extension  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Replacement Watermains 2014/15 - Reactive, Bundle 2  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees

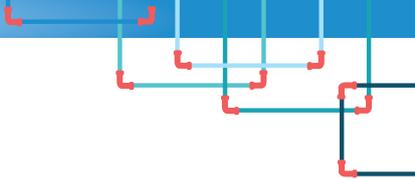


Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Armagh, Banbridge & Craigavon Compliance	99.7%	99.8%	99.7%	99.9%	99.9%	99.9%	99.9%

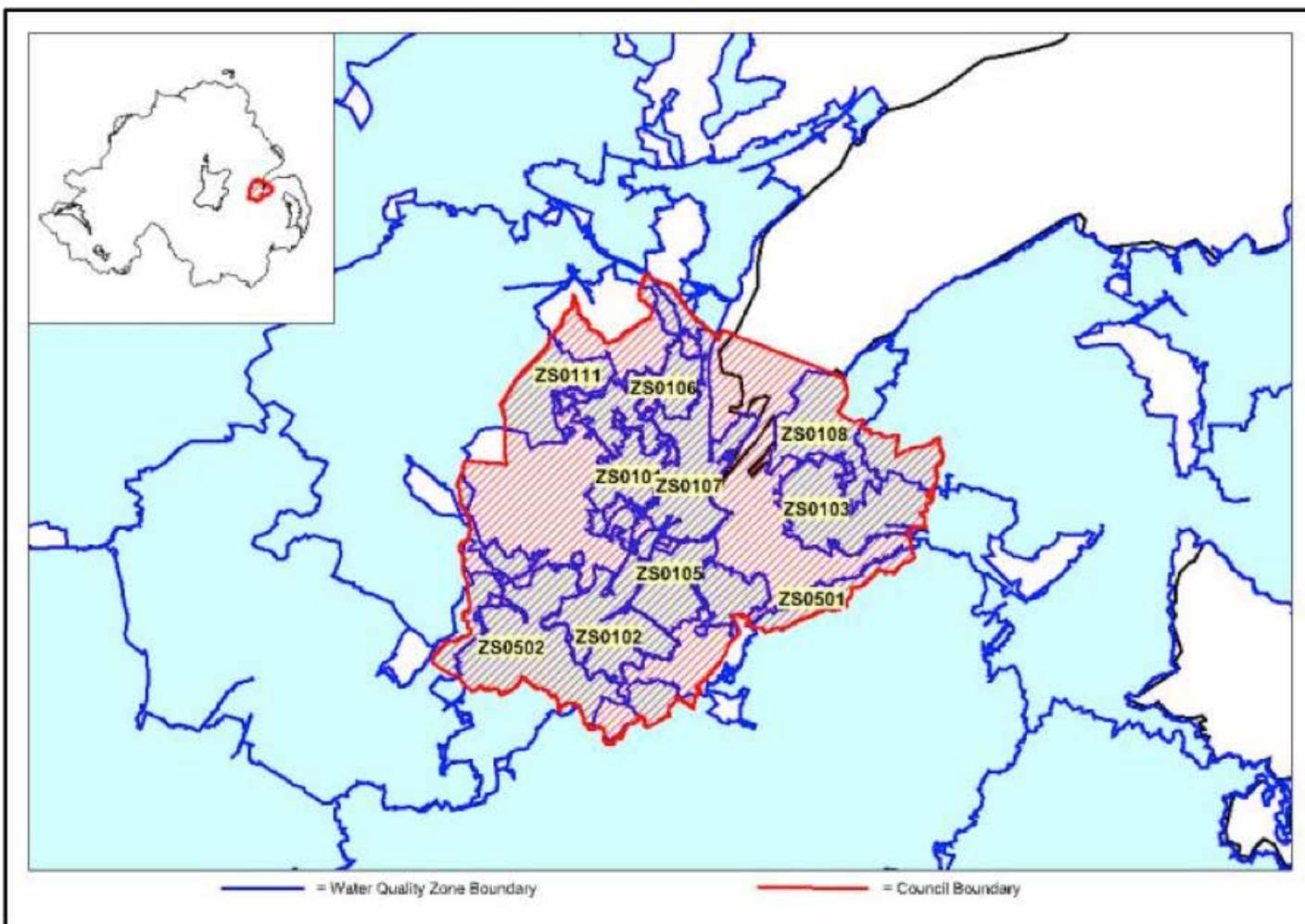
2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN1101	Clay Lake Keady	ZS0809	Castor Bay Dungannon
ZN1102	Seagahan Armagh	ZS0810	Castor Bay Tandragee
ZS0802	Castor Bay Lurgan	ZS0902	Fofanny Dromore
ZS0808	Castor Bay Craigavon	ZS0904	Fofanny Mourne



## 2020 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement  
Banbridge South Armagh WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Castor Bay to Dungannon Strategic Trunk Mains  
Castor Bay WTW to Ballydougan SR Upgrade  
Clean Water Network Modelling 2021 to 2024  
Craigavon WIIM 2.1 Work Package  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
Lurgan Moira WIIM 2.1 Work Package  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
WIIM 1 Phase 2 Carran Hill Crossmaglen WP  
WIIM Phase 2 Clay Lake Keady WP

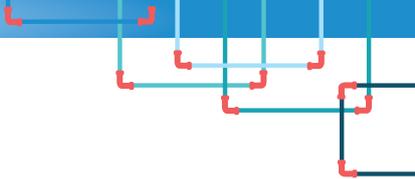


Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Belfast Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%

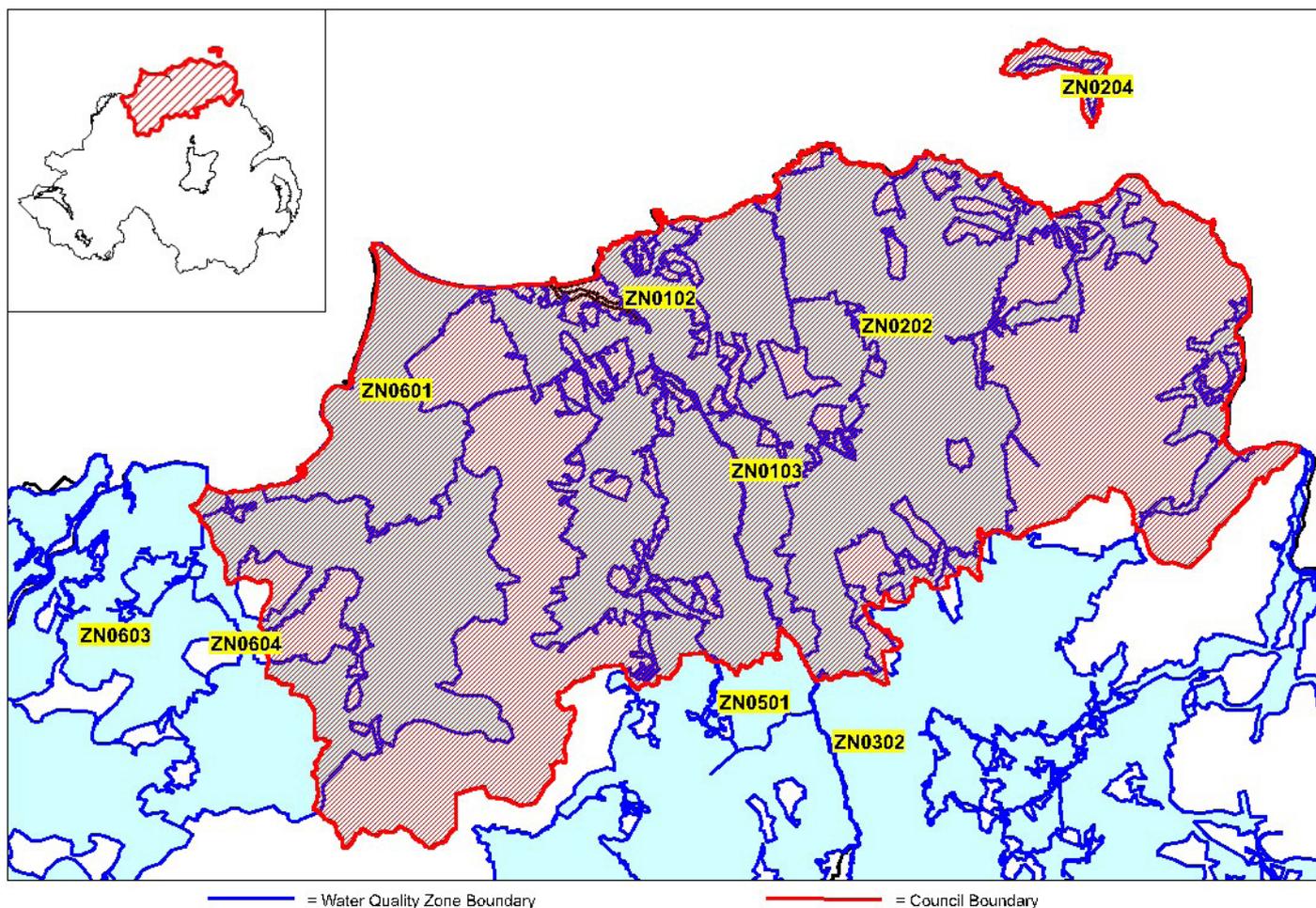
2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0101	Dunore Ballygomartin North	ZS0108	Belfast Purdysburn
ZS0102	Dunore Ballygomartin South	ZS0109	Dorisland Whiteabbey
ZS0103	Belfast Ballyhanwood	ZS0111	Dunore Point Hydepark
ZS0104	Dunore Breda North	ZS0404	Drumaroad Ards
ZS0105	Dunore Breda South	ZS0501	Drumaroad Lisburn
ZS0106	Dunore Belfast North	ZS0502	Forked Bridge Dunmurry
ZS0107	Belfast Oldpark	ZS0503	Forked Bridge Stoneyford



## 2020 water quality Capital Works Programmes affecting the council area:

Ballygomartin North Phase 1 Watermains Improvements  
Ballygomartin South Phase 1 Watermains Improvements  
Breda North Zone Watermains Improvements  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Kyle Street NIR Crossing, Watermains  
NIAMP5 Project Support  
Oldpark Watermains Improvements  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
West Belfast/ North Lisburn  
WIIM Phase 2 Belfast Ballygomartin North WP

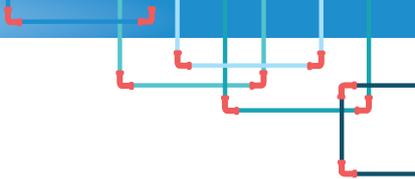


Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Causeway Coast and Glens Compliance	99.7%	99.7%	99.8%	99.9%	99.8%	99.8%	99.9%

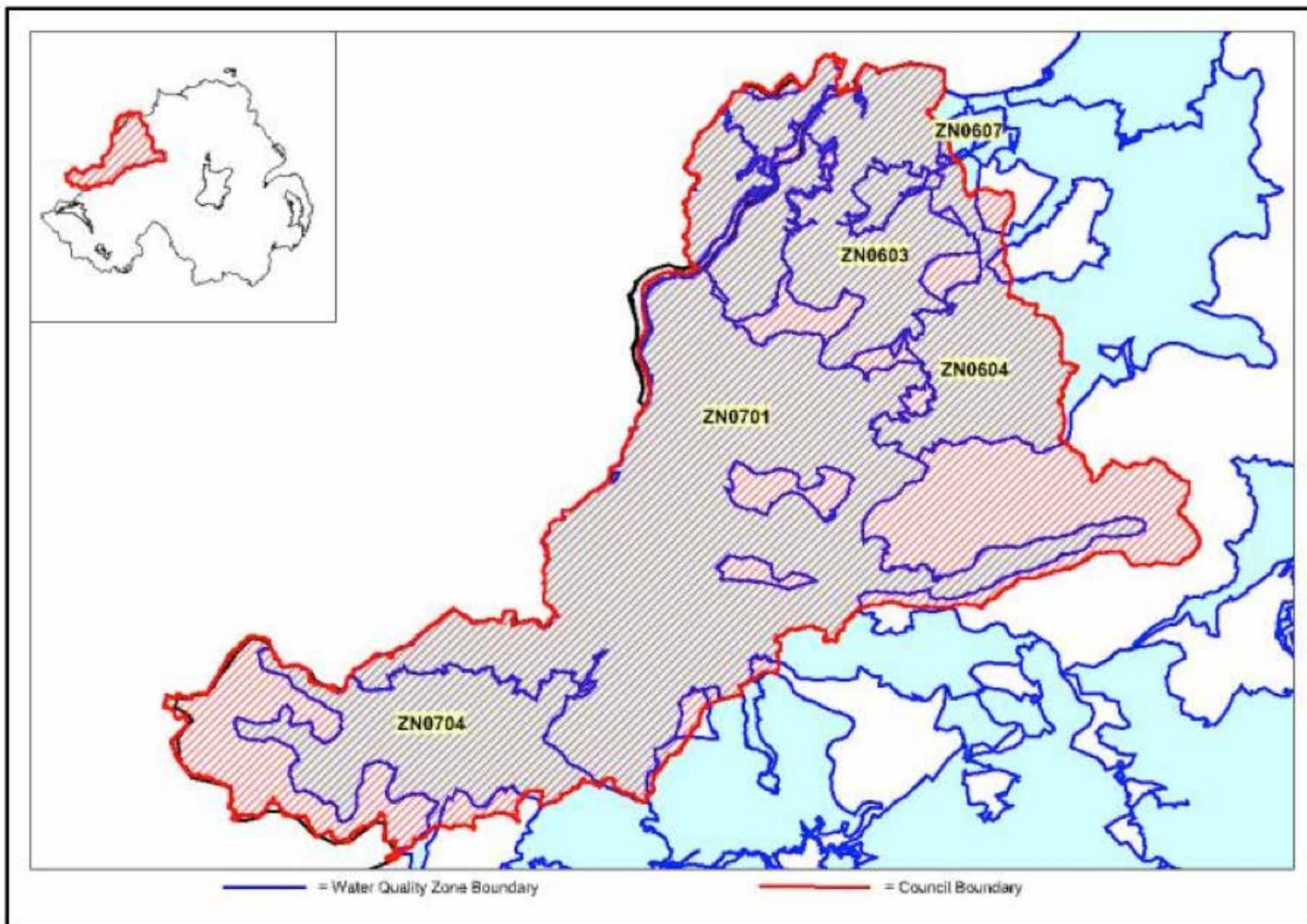
2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0102	Ballinrees West	ZN0501	Moyola Magherafelt
ZN0103	Ballinrees East	ZN0601	Ballinrees Limavady
ZN0202	Altnahinch Bushmills	ZN0603	Carmony Eglinton
ZN0204	Rathlin Island	ZN0604	Caugh Hill Dungiven
ZN0302	Dungonnell Glarryford	ZN0607	Corrody Derry



## 2020 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe  
Antrim North WIIM 2.1 Work Package  
Ballinrees WTW, MCPA treatment investigations  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Kilraughts Road Ballymoney Watermains Replacement  
NIAMP5 Project Support  
Northern WRZ Resilience  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
WIIM Phase 2 Altnahinch Bushmills 2 WP  
WIIM Phase 2 Altnahinch Bushmills WP  
WIIM Phase 2 Ballinrees Limavady WP



Percentage Compliance at Customer Tap (including Supply Points)

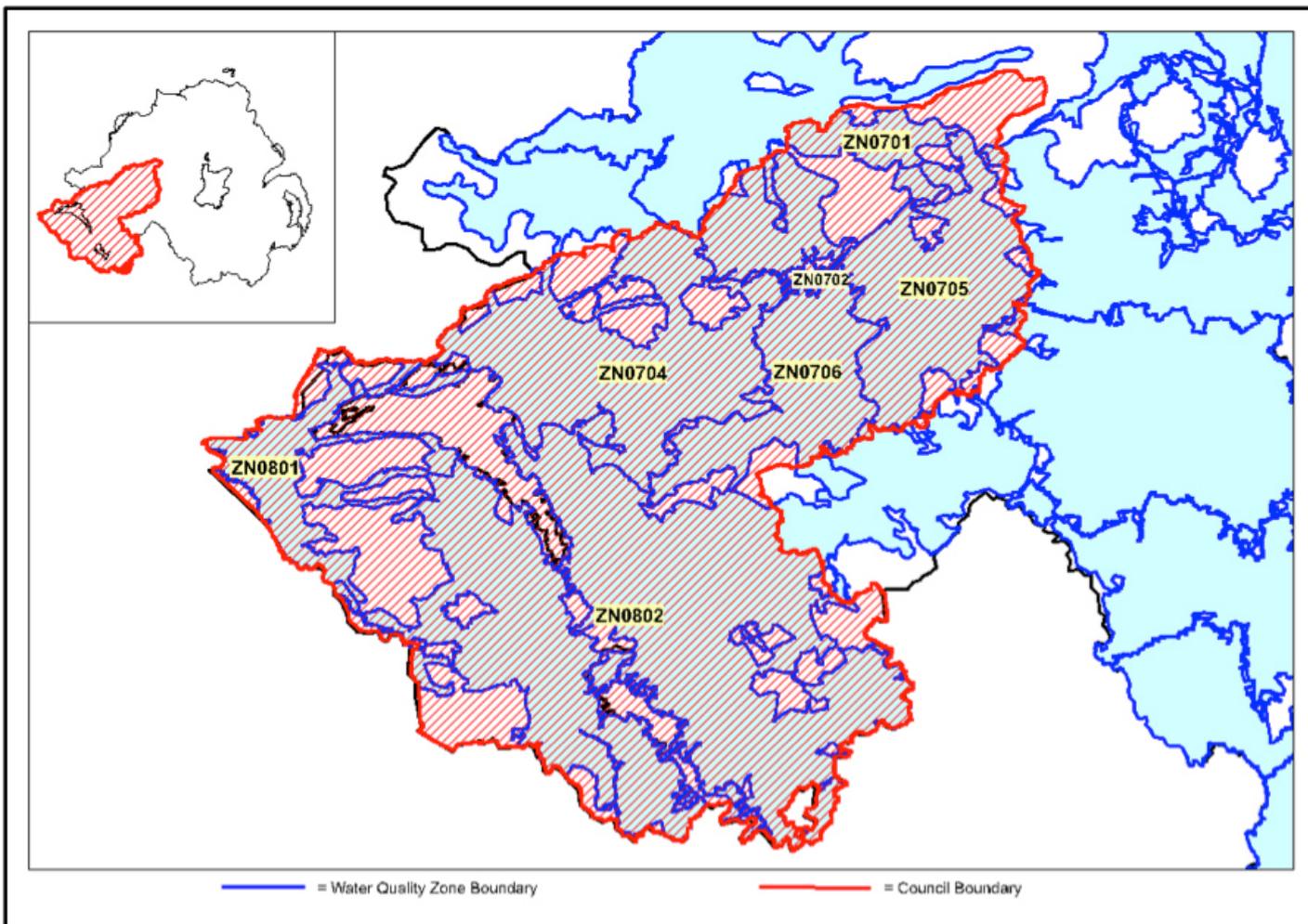
	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Derry City & Strabane Compliance	99.7%	99.8%	99.6%	99.9%	99.8%	99.8%	99.9%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0603	Carmoney Eglinton	ZN0701	Derg Strabane
ZN0604	Caugh Hill Dungiven	ZN0704	Lough Bradan Drumquin
ZN0607	Corrody Derry		

## 2020 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe  
Ballinrees WTW, MCPA treatment investigations  
Buncrana Road / Skeoge Link Trunk Main  
Castor Bay Outage Feasibility Studies  
Caugh Hill, Carmoney to Strabane Strategic Link Watermains  
Clean Water Network Modelling 2021 to 2024  
Crescent Link Trunk Main  
Ebrington Square Limavady Road, Londonderry Watermains Extension  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
Gorticross Rd / Lettershandoney Rd Drumahoe Watermains  
MIMP West (Major Incident Mitigation Project West Region) Freeze Thaw Improvements  
NIAMP5 Project Support  
Northern WRZ Resilience  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees



Percentage Compliance at Customer Tap (including Supply Points)

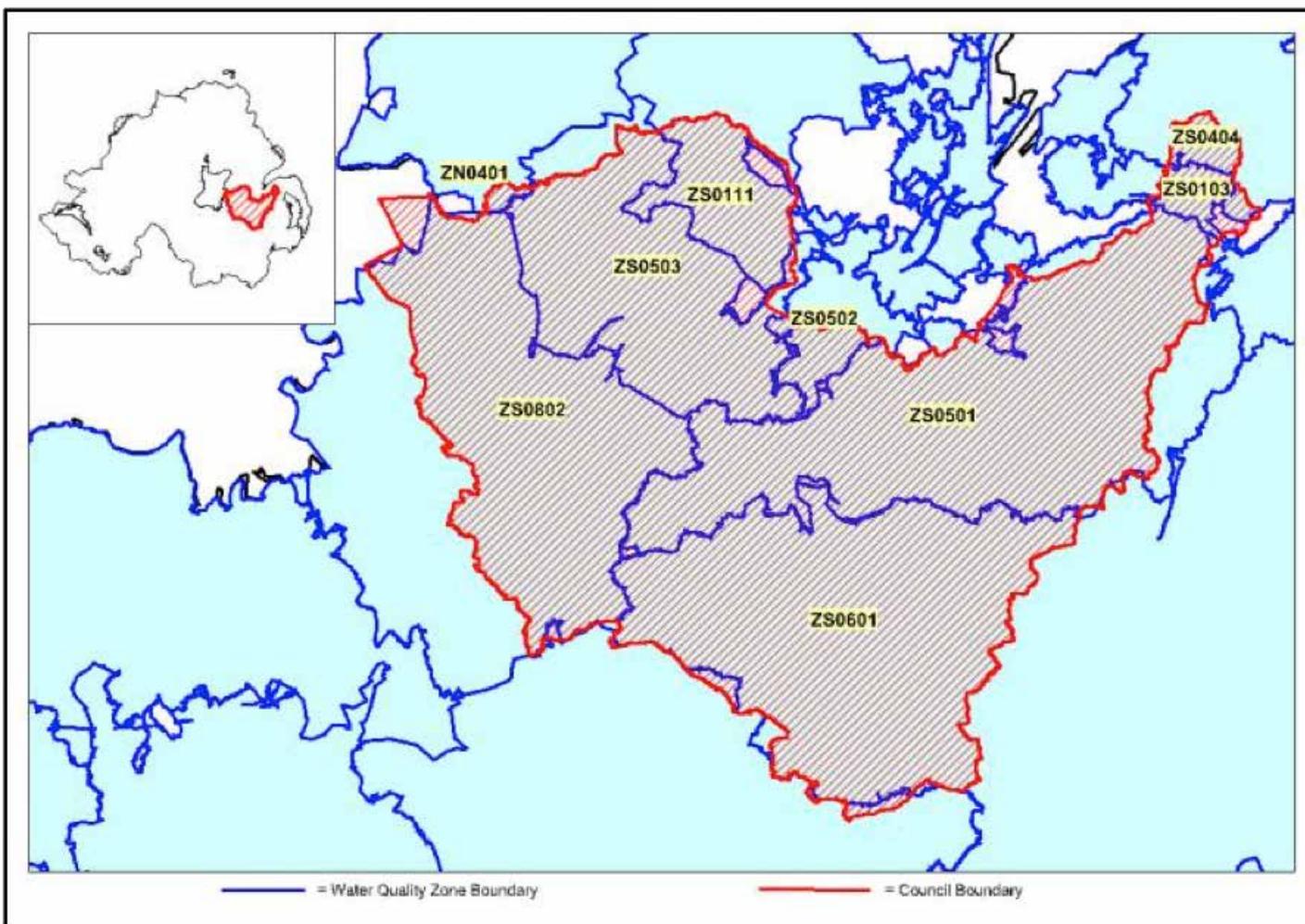
	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Fermanagh & Omagh Compliance	99.7%	99.9%	99.8%	99.9%	99.8%	99.9%	99.9%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0701	Derg Strabane	ZN0706	Lough Macrory Killyclogher
ZN0702	Glenhordial Omagh	ZN0801	Belleek Garrison
ZN0704	Lough Bradan Drumquin	ZN0802	Killyhevlin Enniskillen
ZN0705	Lough Macrory Beragh		

## 2020 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Derg Treatability Improvements  
Derg WTW MCPA PEO Undertakings  
Facilities Management Review  
Fermanagh North WIIM 2.1 Work Package  
Glenhordial to Killybrack TM  
Killyhevlin Clear Water Tank  
Killyhevlin Outlet Mains Replacement  
Killyhevlin WTW treatability recommended improvements. UV installation contract  
MIMP West (Major Incident Mitigation Project West Region) Freeze Thaw Improvements  
NIAMP5 Project Support  
Old Coach Road/Sessiagh Lane Watermains replacement  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
South / South East Zonal Study South East Phase 1 Work Packages  
Southern Zone Resilience  
Swanlinbar Road Watermains Rehab  
Tyrone South WIIM 2.1 Work Package  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
WIIM Phase 2 Lough Braden Drumquin WP  
WIIM Phase 2 Lough Macrory WP



Percentage Compliance at Customer Tap (including Supply Points)

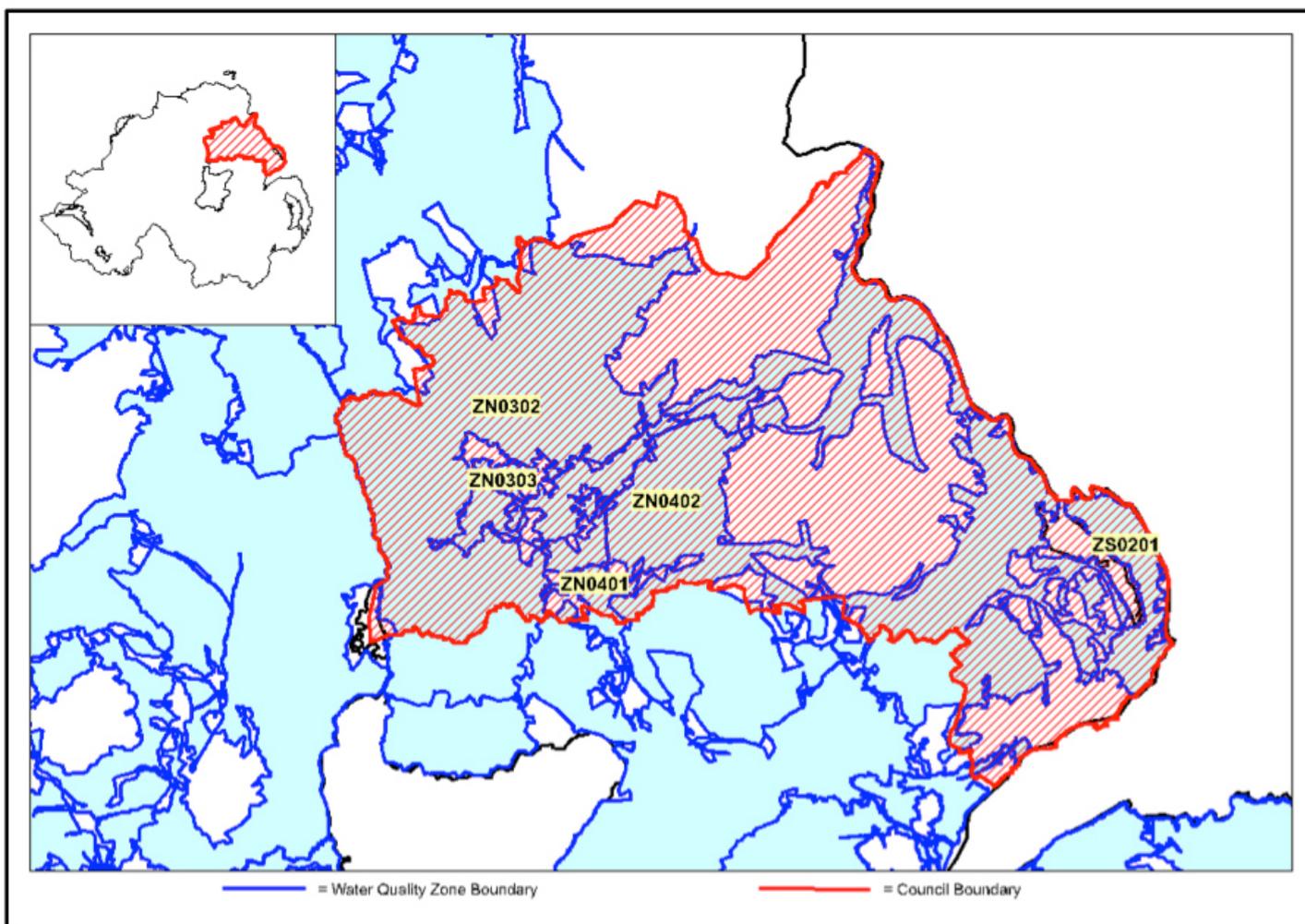
	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Lisburn & Castlereagh Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0502	Forked Bridge Dunmurry
ZS0103	Belfast Ballyhanwood	ZS0503	Forked Bridge Stoneyford
ZS0108	Belfast Purdysburn	ZS0601	Drumaroad Ballynahinch
ZS0111	Dunore Point Hydepark	ZS0802	Castor Bay Lurgan
ZS0404	Drumaroad Ards	ZS0902	Fofanny Dromore
ZS0501	Drumaroad Lisburn		

## 2020 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Lurgan Moira WIIM 2.1 Work Package  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
West Belfast/ North Lisburn

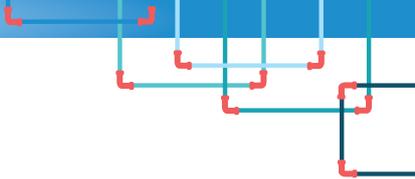


Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Mid & East Antrim Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.8%	100.0%

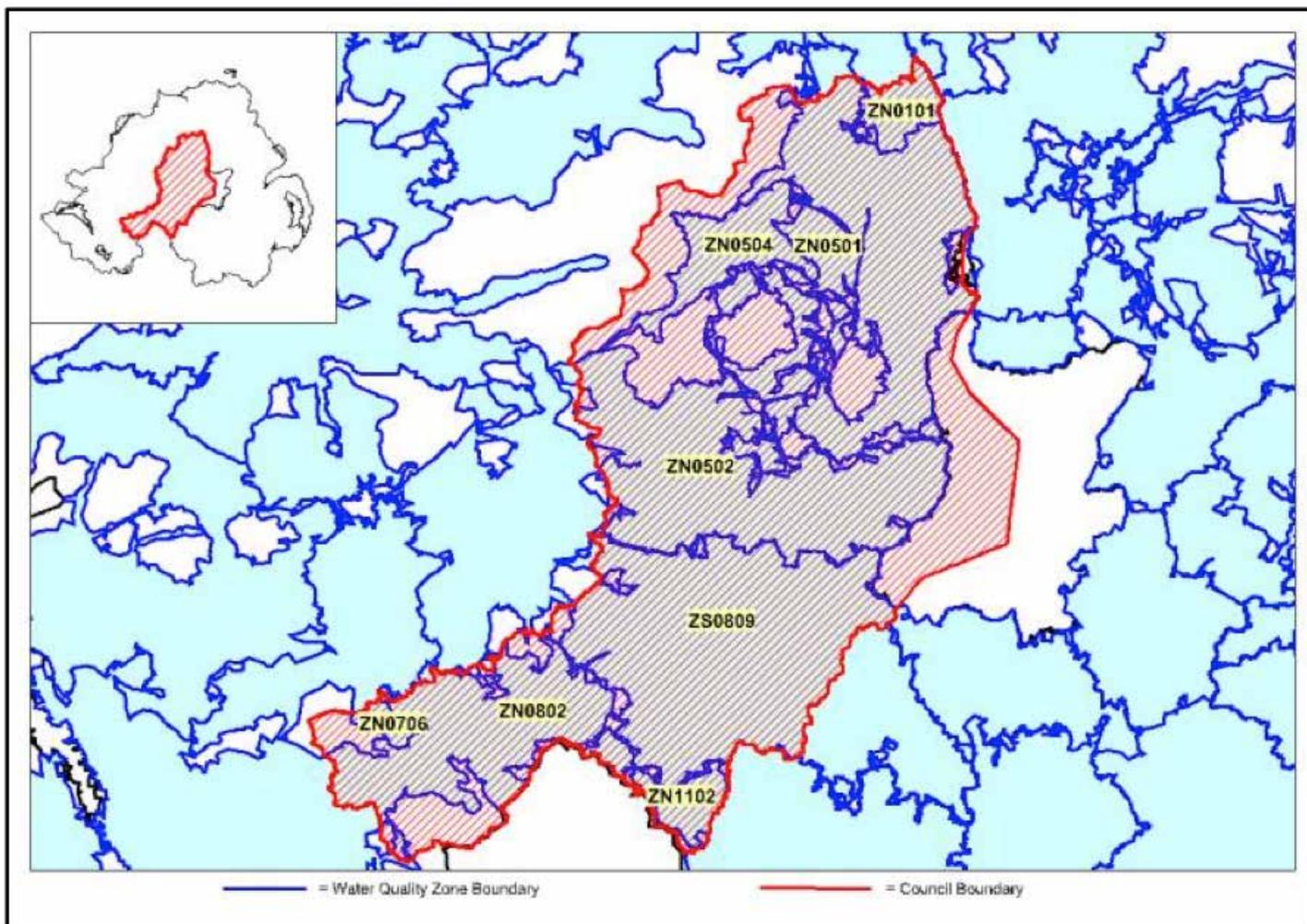
2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZN0402	Killylane Ballynure
ZN0303	Dunore Point Ballymena	ZS0109	Dorisland Whiteabbey
ZN0401	Dunore Point Antrim	ZS0201	Dorisland Carrick



## 2020 water quality Capital Works Programmes affecting the council area:

Antrim North WIIM 2.1 Work Package  
Antrim South WIIM 2.1 Work Package  
Carrickfergus Zone Watermains Improvements Phase 1  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Dorisland Wtw treatability recommended improvements.  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
Killylane Dunore East Phase 1  
McCrae's Brae Whitehead Watermains Extension  
MIMP Central (Major Incident Mitigation Project Central Region) Freeze Thaw Improvements  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP 4: Ballymena Ph1  
PC15 Watermains Rehabilitation WP 7: Carrickfergus  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Replacement Watermains 2014/15 - Reactive, Bundle 2  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees



Percentage Compliance at Customer Tap (including Supply Points)

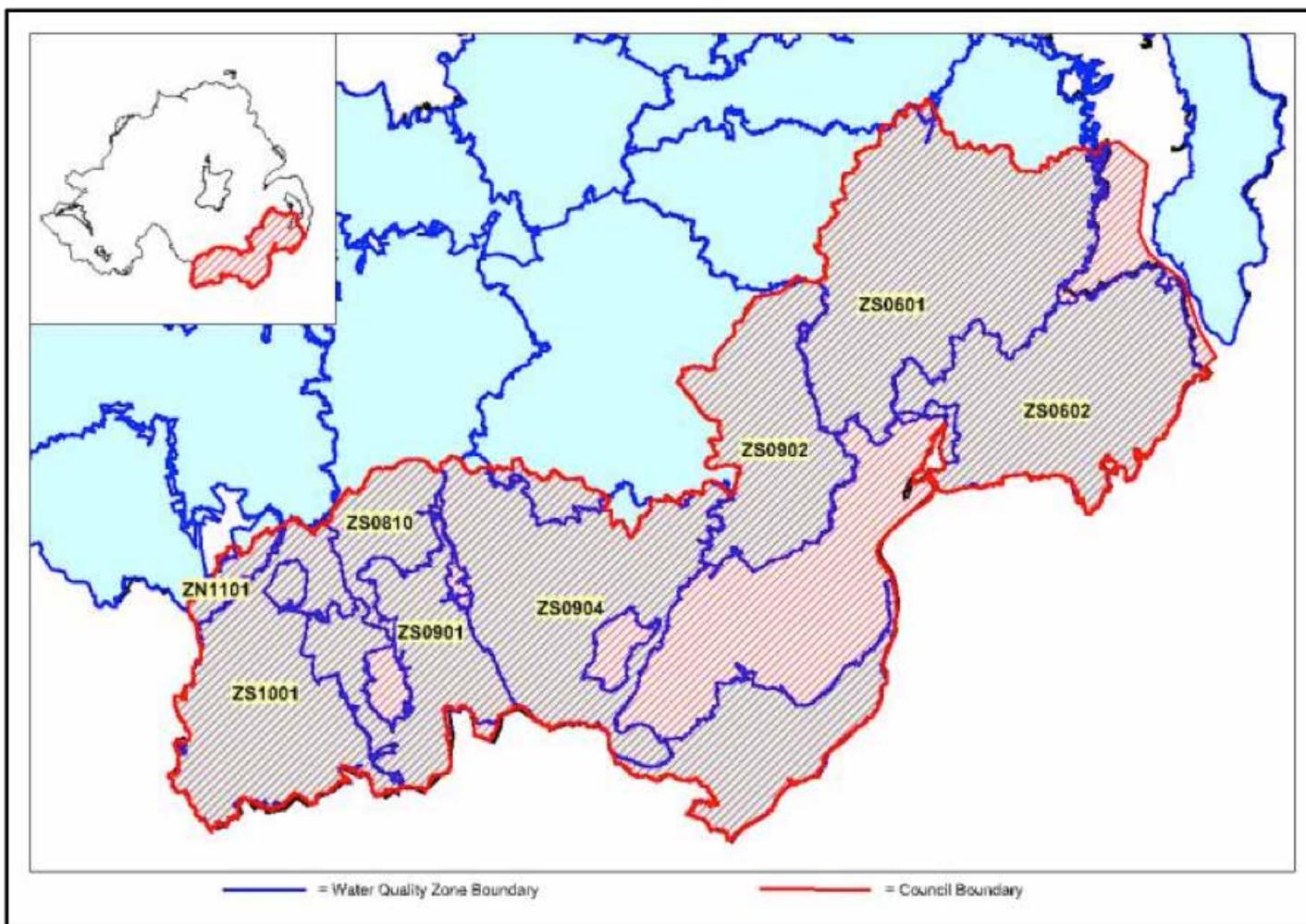
	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Mid-Ulster Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%	99.9%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0103	Ballinrees East	ZN0706	Lough Macrory Killyclogher
ZN0501	Moyola Magherafelt	ZN0802	Killyhevlin Enniskillen
ZN0502	Lough Fea Cookstown	ZN1102	Seagahan Armagh
ZN0504	Moyola Unagh Mormeal	ZS0809	Castor Bay Dungannon
ZN0705	Lough Macrory Beragh		

## 2020 water quality Capital Works Programmes affecting the council area:

A6 Castledawson to Randalstown  
Altmore Phase 2 Watermains Rehabilitation  
Antrim North WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Castor Bay to Dungannon Strategic Trunk Mains  
Central Zone Resilience  
Clean Water Network Modelling 2021 to 2024  
Facilities Management Review  
Falgotrevy Road, Maghera, Watermains Replacement  
Feasibility Study for using Groundwater Abstraction  
Granville Dungannon Invest NI Watermains Extension  
Lough Fea CWB Capacity Increase  
MIMP Central (Major Incident Mitigation Project Central Region) Freeze Thaw Improvements  
MIMP West (Major Incident Mitigation Project West Region) Freeze Thaw Improvements  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Replacement Watermains 2014/15 - Reactive, Bundle 2  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Tyrone North WIIM 2.1 Work Package  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
WIIM Phase 2 Lough Fea WP  
WIIM Phase 2 Moyola Magherafelt WP



Percentage Compliance at Customer Tap (including Supply Points)

	Target	2015	2016	2017	2018	2019	2020
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%
Newry, Mourne & Down Compliance	99.7%	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%

2020 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN1101	Clay Lake Keady	ZS0902	Fofanny Dromore
ZS0601	Drumaroad Ballynahinch	ZS0904	Fofanny Mourne
ZS0602	Drumaroad Downpatrick	ZS1001	Carran Hill Crossmaglen
ZS0810	Castor Bay Tandragee	ZS1002	Carran Hill Camly
ZS0901	Castor Bay Newry West		

## 2020 water quality Capital Works Programmes affecting the council area:

A24 Ballynahinch Bypass  
Ballydougan to Newry Main Link Reinforcement  
Ballymageogh Road, Kilkeel, Watermains Replacement  
Banbridge South Armagh WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Clean Water Network Modelling 2021 to 2024  
Drumroad Outage Resilience, Professional Services Framework  
Facilities Management Review  
Feasibility Study for using Groundwater Abstraction  
High Trees Donaghadee  
Mill Road Kilcoo  
Newline, Hilltown, Watermains Replacement  
NIAMP5 Project Support  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC27 Water Treatability optimisation pilot plant  
Preparation of Initial Workpackages for PC21  
Professional Services Framework Watermains Network PC15  
Review of Water Resource and Supply Resilience Plan Technical Guidance  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees  
WIIM 1 Phase 2 Carran Hill Crossmaglen WP  
WIIM 2.2 Fofanny South Work Package

# Appendix 4

## Water Quality Events

### Major Drinking Water Quality Event in 2020

Date of Major Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
11/03/20 Ongoing	Northern Ireland (1.9 million)	The ongoing COVID-19 pandemic had a serious impact on NI Water's monitoring programme. All regulatory sampling at consumer taps had to be stopped due to Covid-19 restrictions, with customer tap samples taken at designated fixed points. Regulatory sampling was maintained at water treatment works and at service reservoirs.	All

### Serious Drinking Water Quality Events in 2020

Date of Serious Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
10/04/20 – 14/04/20	Fofanny WTW (93,272 population)	Taste and odour complaints were received from the Kilkeel, Ballymartin, and Annalong areas due to elevated chlorine levels from Fofanny WTW following a plant shutdown.	Newry, Mourne & Down District.
29/04/20 – 04/06/20	Northern Ireland (1.9 million)	High water demand in the network due to a period of particularly warm and dry conditions and exacerbated by COVID-19 pandemic. A NI Water Category 1 Incident was declared. Alternative water supplies, including asset to asset tankering, were required.	All
06/08/20 – 14/08/20	High Tober SR (3,258 population)	Consumer complaints of discoloured water were received by NI Water following a malfunction of the inlet valve at High Tober SR. Samples taken in response to this event contravened the aluminium, iron, manganese, and turbidity standards and levels above the Health Notification Values (HNVs) were detected.	Causeway Coast & Glens Borough.

## Significant Drinking Water Quality Events in 2020

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
05/01/20 - 06/01/20	Drummaroad WTW (427,497 population)	Elevated levels of aluminium occurred in the works final water. Following an investigation, NI Water was unable to identify the cause of the contravention.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
24/01/20 - 07/02/20	Rathlin WTW (296 population)	Contraventions of the taste parameter were reported in the works final water. NI Water's investigation was unable to determine a cause for the contraventions.	Causeway Coast & Glens Borough.
04/02/20 - 05/02/20	Drummaroad WTW (445,087 population)	Elevated levels of aluminium occurred in the works final water due to treatment difficulties following an unplanned shutdown.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
02/03/20 - 05/03/20	Killyhevin WTW (79,743 population)	<i>Cryptosporidium</i> oocysts were detected on two separate occasions in early March. There was insufficient evidence to determine their origin - they may have come from the raw water or from contamination at the works.	Fermanagh & Omagh District.
14/03/20 - 17/03/20	Tullybrannigan South SR (11,682 population)	A high number of consumer complaints regarding discoloured water were received in the Newcastle area. Samples taken in response to this event contravened the aluminium and manganese standards. Aluminium levels above the Health Notification Value (HNV) were reported. The event was caused by operational work at Tullybrannigan South SR to install a new inlet control valve.	Newry Mourne & Down District.
24/03/20 - 01/04/20	Killylane WTW (54,243 population)	Contraventions of the aluminium and iron parameters were reported in the works final water. Following an investigation, NI Water was unable to identify the cause of the contravention.	Mid & East Antrim Borough.
04/05/20 - 19/10/20	Carmony WTW (56,996 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water. Carmony WTW has pesticide removal treatment in place, which is normally effective at reducing MCPA levels to below the regulatory limit. The cause of these contraventions is undetermined. There is a risk for the use of MCPA within the catchment area for weed and rush control, and there are occasions of high levels of MCPA in the raw water supply.	Derry City & Strabane District.

## Significant Drinking Water Quality Events in 2020 (continued)

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
04/05/20 - Ongoing	Derg WTW (38,989 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment. A Regulation 31(4) Notice has been issued by DWI in respect of this matter.	Derry City & Strabane District and Fermanagh & Omagh District.
12/05/20 - 28/05/20	Glenhordial WTW (12,040 population)	A contravention of the individual pesticide standard for MCPA occurred in the works final water. The pesticide removal treatment was not in operation at the time of this event.	Fermanagh & Omagh District.
28/05/20 - 29/05/20	Ballybriest SR (273 properties)	Tankering into Ballybriest SR was required to recover storage following a planned shutdown at Lough Fea WTW.	Mid-Ulster District.
11/06/20 - 01/07/20	Ballinrees WTW (180,627 population)	Contraventions of the taste and odour parameters occurred in the works final water and related distribution due to insufficient treatment. A Regulation 31(4) Notice has been issued by DWI in relation to taste and odour contraventions at Ballinrees WTW.	Causeway Coast & Glens Borough & Derry City & Strabane District.
13/06/20 - 19/06/20	Drumaroad WTW/ Ards Trunk Main (186,890 population)	Contraventions of the aluminium parameter were reported in the Drumaroad WTW supply area following a burst on the Ards trunk main.	Newry, Mourne & Down District; and North Down & Ards Borough.
13/07/20 - 14/07/20	Drumaroad WTW (399,177 population)	A contravention of the aluminium parameter occurred in the works final water. Following an investigation, NI Water was unable to identify the cause of the contravention.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
26/07/20 - 27/07/20	Doriland WTW (136,954 population)	A contravention of the aluminium parameter occurred in the works final water following a failure of the lime dosing system, which led to sub-optimal treatment.	Antrim & Newtownabbey Borough; Belfast City; and Mid & East Antrim Borough.
01/08/20 - 04/08/20	Killylane WTW (54,243 population)	Contraventions of the aluminium and turbidity parameters occurred in the works final water following treatment difficulties.	Mid & East Antrim Borough.
16/08/20 - 17/08/20	Ballinrees WTW (180,627 population)	Elevated levels of aluminium and turbidity occurred in the works final water following treatment difficulties caused by a dosing pump failure. NI Water has made improvements to its on-line monitoring to prevent a recurrence.	Causeway Coast & Glens Borough and Derry City & Strabane District.
18/08/20 - 20/08/20	Breda Trunk Main (9,154 population)	Low water pressure and loss of supply to some consumers including part of the Belfast City Hospital estate occurred following a burst main. NI Water carried out re-zoning exercises and provided Alternative Water Supplies.	Belfast City.

## Significant Drinking Water Quality Events in 2020 (continued)

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
22/08/20 - 24/08/20	Derg WTW (38,989 population)	A contravention of the aluminium parameter occurred in the works final water following an issue with the lime dosing system, which led to sub-optimal treatment.	Derry City & Strabane District and Fermanagh & Omagh District.
20/09/20	Killyhevlin WTW (79,743 population)	Following a power cut, a plant shutdown occurred and when the automatic start-up took place, there was internal flooding of the main building. This led to a further plant shutdown. A NI Water Category 1 Incident was declared. Asset to asset tankering to Tattinbar and Cavanacross SRs was required to maintain supply. There were no water quality failure associated with the event and supply to customers was maintained throughout.	Fermanagh & Omagh District.
08/10/20 - 09/10/20	Carmoney WTW (56,996 population)	A <i>Cryptosporidium oocyst</i> was detected in the works final water. All subsequent samples were satisfactory.	Derry City & Strabane District.
26/10/20 - 29/10/20	Killylane WTW (54,243 population)	A contravention of the aluminium parameter occurred in the works final water following an issue with the lime dosing system, which led to sub-optimal treatment.	Mid & East Antrim Borough.
13/10/20 - 20/10/20	Killyhevlin WTW (79,743 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water and two associated service reservoirs. Killyhevlin WTW has pesticide removal treatment but it was by-passed at the time of these contraventions to facilitate work in relation to the installation of UV treatment.	Fermanagh & Omagh District.
11/11/20 - 09/12/20	Clay Lake WTW (9,881 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water. Clay Lake WTW has pesticide removal treatment in place, which is normally effective at reducing MCPA levels to below the regulatory limit. The cause of these contraventions is undetermined. There is a risk for the use of MCPA within the catchment area for weed and rush control and there are occasions of high levels of MCPA in the raw water supply.	Armagh City Banbridge & Craigavon Borough District.
07/12/20 - 18/12/20	Killylane WSZ (626 properties)	Contraventions of the aluminium and iron parameters occurred in a regulatory sample taken at Slimero SR due to COVID-19 restrictions. The contraventions were caused by a low level in the SR.	Mid & East Antrim Borough.

After investigations during the reporting period, there were also three events categorised by DWI as “Minor”, and seven events categorised as “Not Significant”.

# Appendix 5

## The Water Supply (Water Fittings) Regulations (NI) 2009 Compliance Policy

NI Water's new customer leaflet "The Water Supply (Water Fittings) Regulations" details the reason for the 2009 Regulations and highlights customer's obligations. NI Water has also produced an additional leaflet entitled "Planning some plumbing work - Know the Law". This leaflet details notifiable items and promotes the use of approved plumbers through WaterSafe - ([watersafe.org.uk](http://watersafe.org.uk)). An online resource has been published on the NI Water website ([www.niwater.com](http://www.niwater.com)), where customers can download the regulations, guidance notes, information leaflets, and notification forms.

Both the leaflets and digital resources provide customers with a valuable insight to, and understanding of, what the Regulations mean, the benefits in protecting drinking water supplies and the potential consequences of non-compliance. Customers are advised that they must notify NI Water in writing of plans to commence certain plumbing installations or alterations at least ten days before commencing work.

NI Water promotes and advocates the benefits of customers using Approved Plumbers (APs) who are members of WaterSafe and the Plumbing Industry Licensing Scheme (PILS). The PILS scheme is administered by the trade association known as the Scottish and Northern Ireland Plumbing Employers Federations (SNIPEF).

NI Water employs an operational Field Manager, supported by a team of five customer facing water regulation inspectors along with an Administrative Scheduler across Northern Ireland, under the

direct management of a Senior Manager who oversees all activities.

NI Water has allocated every customer's premises with a fluid category rating which was derived from SIC codes on a risk basis. A proactive inspection programme is carried out each year with inspection intervals based on national best practice as agreed between the UK water suppliers and the industries representative organisation, WaterRegsUK previously (The Water Regulations Advisory Scheme (WRAS) which has separated its subscriptions and approvals activities into two separate businesses, Water Regs UK and the Water Regulations Approval Scheme (WRAS).

The Water Fittings Regulation team has systems and processes in place to schedule and report on inspections, repeat inspections, findings, contraventions and improvement notices. The Regulation team regularly liaises with external customers, in addition to internal scientific services and network water teams regarding regulatory compliance and non-compliance. The team also liaises with other GB water company regulation teams and water industry expert groups to ensure consistent application of the 2009 Regulations.

NI Water will only consider applying to the Regulator (WDPD) within DfI, for a relaxation of requirements in exceptional circumstances and not as a result of failure or lack of due diligence by customers to comply with their legal obligations under the Regulations.

## NI Water Customer Base

Base Data, using NIAUR 2019 Annual Information Return (AIR) figures:

Description	Number
*Total number of connected premises	889,687
*Total number of new connections from 1st Jan 2020 – 31st Dec 2020	
Up to and including 32mm dia.	5,188
Over 32mm dia.	33

\* 2020 Calendar Year

## Compliance Data

### Staff and Training

Number of staff involved in enforcement.

Description	Number
Spending more than 95% of time	5
Spending between 70% and 80% of time	0
Spending between 0% and 20% of time	0

All Water Fittings Regulation team members will have attended one or more of the courses detailed below and attained qualifications as certified by the training organisations or award body. As a minimum, all Regulation Compliance staff are expected to have passed the City and Guilds (C&G) qualification in Water Fittings Regulations for Compliance staff. Any change of staff will be conditional on new team members undertaking and passing the Water Regulation C&G qualification.

- C&G Water Supply (Water Fittings) Regulations for Compliance Staff
- Introduction into RPZ installations (Reduced Pressure Zone Devices)
- Bond Salon Criminal investigation procedures course

### Promotion of the Regulations

As a fully subscribing member of WaterRegsUK, NI Water has representation on the WaterRegsUK Board, Technical Committee and Technical Support Group national forums, which each meet five times per year. Participation on this national stage ensures that NI Water like other water suppliers is applying the Regulations consistently across its customer base. In addition, it provides a very useful networking forum where NI Water and other water suppliers can field difficult and complex questions and receive comprehensive and timely feedback.

NI Water requests advice from WaterRegsUK on the interpretation of the Regulations where unusual installations are discovered or a dispute arises with an installer/manufacturee regarding interpretation.

A Water Regulation page is available on the company web site (<http://www.niwater.com/water-fittings-regulations/>) for domestic and non-domestic customers to refer to. The site contains regulation specific background information, leaflets in PDF format and customer notification forms. An official water regulation e-mail address has also been provided to facilitate customer enquiries – [waterregulations@niwater.com](mailto:waterregulations@niwater.com)

## Notifications

Description	Number
*Total No. of new water connection applications received	
<32mm	2356 Applications: 7966 Connections
>32mm	64 Applications: 116 Connections
*Total number of notifications relating to aspects of water fittings not relating to new connections.	
01/Jan/2020 and 31/Dec/2020	269

\*2020 Calendar year

In most cases, customers must notify NI Water in advance of installing or making changes to the water plumbing systems within their premises. Owners, occupiers, and plumbing installers must obtain approval from NI Water by giving advance notice in writing of their intentions. Advance notification forms can be obtained from the NI Water website, completed and returned to the address detailed on the form. The list of work that cannot commence without advance notification can be obtained by referring to the 2009 Regulations and is detailed under Regulation 5. NI Water will not unreasonably withhold consent for any work but it may be granted subject to conditions, which must be followed. If customers do not hear from NI Water within 10 working days of writing to us, consent is deemed to have been given and work may proceed.

NI Water recommends that customers use an approved plumbing contractor when installing, altering, or repairing plumbing systems, water fittings, and water-using appliances.

NI Water will be distributing water (fittings) regulations leaflets to all measured billing customers in the upcoming year.

## Approved Contractors Scheme

Owners and occupiers of premises and anyone who installs plumbing systems have a legal duty to ensure their systems satisfy the requirements of the 2009 Regulations.

NI Water recommends customers use approved plumbing contractors who are members of an approved contractors' scheme. These include firms and individuals who are members of the WaterSafe scheme funded by the water industry including NI Water. WaterSafe is a dedicated search facility bringing together thousands of qualified contractors employed by plumbing businesses from the existing Approved Contractors scheme across the UK. WaterSafe can be contacted by telephoning 08456805685 or by referring to [www.watersafe.org.uk](http://www.watersafe.org.uk). The Scottish and Northern Ireland Plumbing Employers Federation (SNIPEF) Plumbing Industry Licensing Scheme is also a long-standing approved contractor scheme which NI Water also recommends. To find a SNIPEF Licensed Plumber in your area simply enter your postcode or town on their web site [www.needaplumber.org.uk](http://www.needaplumber.org.uk) or contact SNIPEF on 0131 556 0600

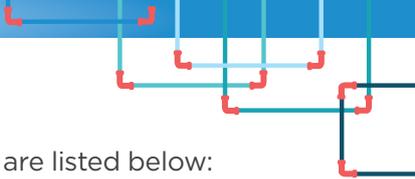
An approved plumbing contractor will certify that his or her work meets the requirements of the Regulations and any subsequent breaches associated with their work is the legal responsibility of the plumber and not the individual owner or occupier.

### Approved Contractors

Description (Number)	2016	2017	2018	2019	2020
No. of Approved Plumber firms in Northern Ireland. No of individual plumbers in brackets	69	55	52	69	61
No. of Northern Ireland members who are members of <b>WaterSafe</b> and the <b>Plumbing Industry Licensing Scheme</b>	50	39	41	40	38
No. of members in Northern Ireland who are Approved Plumbers but <b>not</b> registered with WaterSafe	15	10	11	12	13
No. of SNIPEF Northern Ireland members <b>not</b> WaterSafe or Plumbing Industry Licensing Scheme	N/A	N/A	N/A	7	10

### Inspections (Other than those arising from Notification)

Description	Number 2017	Number 2018	Number 2019	Number 2020
*Total number of Domestic and Non Domestic Inspections	1004	1115	1279	501
*Total number of active contraventions recorded in year	1128	1068	1144	360
*Total number of closed contraventions in year	1178	989	896	231
*Total Number of outstanding contraventions in year	50	89	248	129



Contraventions found on all property types can vary greatly, some typical examples are listed below:

- Failure to comply with Regulation 5 – Notifications
- Water fittings non-compliant with Regulation 4
- Inadequate protection against cold and heat, most commonly no or inadequate insulation
- Storage cisterns having the wrong type of Air Gap fitted
- Overflows running to waste in non-visual areas
- Dead legs on pipe-work
- The requirement to install servicing valves at float valves
- Insulation and labelling of pipe-work
- Cross connections between public and private water supplies, (Bore Wells linked to NI Water supplies within private premises)
- Alternative/Rain Water Harvesting systems not being installed in compliance with British Standards and the Regulations
- Shallow service pipes providing insufficient protection from ground frost penetration

### **Disputes**

No formal disputes were referred to arbitration in the reporting year.

### **Relaxations**

None applied for.

### **Compliance Actions**

NI Water, through its compliance activities, has a graduated process of engaging customers. Appointment letters are issued to customers and these are followed by inspection report findings, which may include recommendations or improvement notices. Customers are given an adequate period of time to comply with notices depending on the level of risk to water supplies associated with the contraventions. Failure to comply with these requests will generate further repeat inspections and notifications, and where these requests are not complied with, a non-compliance report is forwarded to the NI Water legal team for appropriate action. Two outstanding cases of failure to comply or engage are currently with NI Water's legal representatives for consideration.

## General Information

Assessed number of high-risk premises connected to the NIW distribution network (i.e. Class 4 and 5 Fluid Category (FC))

- There are Circa 49,000 FC4&5, 32,000 farms and 17,000 other premises across Northern Ireland
- NIW inspected 501 premises in total with all risks
- Of those inspected, FC4&5s totalled 303 during the reporting year
- Number of Reactive Water Regulation inspections – 96
- Attributed to water quality incidents and NIW observations – 22

## Information (Jan 01/01/2020-March 31/03/2020) from Connect 2

Connect 2 is the software system NI Water uses to drive a proactive risk based inspection programme, record findings and advise or direct customers as to what corrective action is required to bring their systems into compliance with the 2009 Regulations. NI Water from April 2020, started to use an “In House” Excel spreadsheet data-reporting system until such times as the procurement options for the upgrade or replacement of the existing Connect 2 system is in place, which is built on de-supported IT platforms.

In addition to proactive inspections, NI Water’s Water Fittings Regulation team also undertook reactive inspections because of water quality concerns following sample failures requests for assistance from NI Water staff and customers. Educational visits are carried out to bring customers and contractors up to date with water (fittings) regulations.

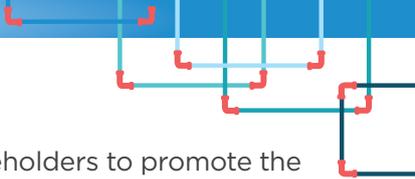
## Action taken by NI Water

Reports are submitted to NI Water scientific and operational teams and copies are made available to the water quality Regulator. Customers are required to take remedial action to provide whole site protection and are given Water Fittings Regulation compliance advice.

## Reporting Year Recap

NI Water’s Water Fittings Regulations team has in the last reporting year:

- Continued to promote the benefits of Water Regulations, and safeguards provided by the 2009 regulations across NI
- Procured backflow demonstration rigs to help educate customers as to how easy it is to cause backflow within premises and beyond to the mains network
- Provided performance measure information on water regulation activities to WaterRegsUK for inclusion in a publically available national report. The report can be viewed on the WaterRegsUK web site
- Continued to update, as required, the NI Water, Water Fittings Regulation web page and literature necessary for the compliance of the Regulations and customer compliance guidance
- Contributed specialist advice for inclusion in NI Water public events & publications including the winter preparation campaign
- Promoted compliance with the Water Fittings Regulations at every opportunity and attended conferences, trade shows and agricultural shows, such as the Balmoral Show
- Participated in water industry national working groups to further explore opportunities to promote regulatory consistency, customer notifications and performance standards reporting across the industry:
  - o Ports and Harbours working group
  - o Consistency measurers working group
  - o Performance measurers working group
  - o RPZ Measurers working group
  - o Point of sale working group

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- The regulation team has participated in a number of meetings with other key stakeholders to promote the Regulations and how these interact with other Northern Ireland statutory bodies such as;
    - o Drinking Water Inspectorate (DWI)
    - o Department for the Economy (DfE)
    - o Environmental Health Officers
    - o Trading Standards
    - o Drinking Water & Health Liaison Group (DWHLG) multi agency group
    - o DfI (Long Term Water Resource Strategy)
  - Reported to DfI (Regulator), along with other “stakeholders”, on a quarterly/yearly basis.
  - Worked with NI Water procurement section to determine if there are any readily available systems suitable to replace the existing Connect2 system

### Looking Forward

- NI Water will continue to participate with other GB water suppliers facilitated by WaterRegsUK in further refining and implementing the National Compliance Policy (Keeping Water Safe in Premises). NI Water will also chair a number of WaterRegsUK national working groups looking at recognition principles associated with new fittings approval schemes, contamination risks recently identified and associated with WC fill valves.
- NI Water will continue to promote, at every appropriate opportunity, the general awareness of the 2009 Regulations to customers through suitable public and professional interfaces;
  - o Continue to develop and formalise meeting between the Fittings Regulations team and DWI
  - o Develop closer links and raise awareness of the Fittings Regulations with EHO’s and the importance of water fittings product safety.
  - o Develop proposals for changes to temporary event guidance in Northern Ireland and consideration by other relevant stakeholders.
  - o RHI/RPZ
- Continue to participate in and benefit from the attendance at WaterRegsUK forums;
- Continue to assist SNIPEF in the governance of the approved plumbing contractors’ scheme as well as promotional opportunities to raise plumbing standards in Northern Ireland through WaterSafe.
- Continuous improvement and refinement of the annual Water Regulation return and interim Regulatory reports.
- Continue to provide WaterRegsUK with a performance measurers report detailing activity levels associated with the enforcement of the 2009 Regulations. The first publically available report published in 2017 continues to be refined by the UK water supplies to ensure consistency of reporting definitions.

# Appendix 6

## Glossary of Technical Terms

<b>Aesthetic</b>	Associated with the senses of taste, smell and sight
<b>Authorised Supply Point</b>	A sampling point within the distribution system authorised by the DWI for certain parameters, because the results of the analysis of such samples are unlikely to differ in any material respect from the results of the analysis of samples taken from customer taps
<b>Catchment</b>	The area of land that drains into a watercourse
<b>Coagulation</b>	The process of aggregating colloidal and fine particulate matter into a settleable material
<b>Coliform bacteria</b>	A group of bacteria that may be faecal or environmental in origin
<b>Compliance assessment</b>	A comparison made by the DWI of data (gathered by NI Water) against standards and other regulatory requirements
<b>Contravention</b>	A breach of the regulatory requirement
<b>CPEO</b>	'Consideration of Provisional Enforcement Order' - first stage in DWI enforcement process
<b>Cryptosporidiosis</b>	The illness produced by infection with <i>Cryptosporidium</i>
<b>Cryptosporidium</b>	A protozoan parasite
<b>Determination</b>	A single analytical result for a specific parameter
<b>Distribution systems</b>	NI Water's network of mains, pipes, pumping stations and service reservoirs through which treated water is conveyed to customers
<b>Drinking Water Directive</b>	European Council Directive (98/83/EC) relating to the quality of water intended for human consumption
<b>DWI</b>	Northern Ireland Drinking Water Inspectorate - has an independent responsibility to audit drinking water quality compliance against the standards set in the Regulations
<b>DWSP</b>	'Drinking Water Safety Plan' Based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain
<b>EO</b>	'Enforcement Order' - third stage in DWI enforcement process
<b>Event</b>	A situation affecting or threatening to affect drinking water quality
<b>Exceedance</b>	Synonym for contravention (see above)
<b>Faecal coliforms</b>	A sub-group of coliforms, almost exclusively faecal in origin
<b>Filtration</b>	The separation of suspended particulate matter from a fluid
<b>GPS</b>	Global Positioning System - a satellite based location system that gives an accurate record of position
<b>Groundwater</b>	Water from aquifers or other underground sources
<b>Hydrogen ion</b>	A measure of the acidity or basicity related to the concentration of the hydrogen ion (also referred to as pH)
<b>Incident</b>	An event where there has been a demonstrable deterioration in the quality of drinking water
<b>Investment programme</b>	Investment in improvement works to water treatment works and distribution systems

<b>LIMS</b>	Laboratory Information Management System – the computer system used by NI Water to record and audit the results of the hundreds of thousands of parameters analysed each year
<b>Mains rehabilitation</b>	Restoration or replacement of water mains pipework to a proper condition
<b>MCPA</b>	MCPA is a selective hormone-type herbicide, which is absorbed by the leaves and to some degree the roots
<b>Mean Zonal Compliance</b>	The former assessment of water quality at a parameter level based on water supply zones
<b>Microbiological</b>	Associated with the study of microbes
<b>m<sup>3</sup>/d</b>	Cubic metres per day
<b>mg/l</b>	Milligrams per litre
<b>µg/l</b>	Micrograms per litre
<b>ml</b>	Millilitre
<b>MI/d</b>	Megalitres per day (one MI/d is equivalent to 1,000 m <sup>3</sup> /d or 220,000 gallon/d)
<b>Oocyst</b>	The resistant form in which <i>Cryptosporidium</i> occurs in the environment, and which is capable of causing infection
<b>Orthophosphoric acid</b>	A chemical dosed in low concentrations at water treatment works to minimise the uptake of lead from old pipework into customer water
<b>PAHs</b>	A group of organic compounds known as polycyclic aromatic hydrocarbons, comprising, for the purposes of the Regulations, four substances: benzo(b)fluoranthene, benzo(k)fluoranthene benzo(ghi)perylene and indeno (1,2,3-cd) pyrene
<b>Parameter</b>	A parameter is any substance, organism or property listed in the regulations
<b>Pathogen</b>	An organism that causes disease
<b>PCV</b>	See ‘Prescribed concentration or value’
<b>PEO</b>	‘Provisional Enforcement Order’ – second stage in DWI enforcement process
<b>Pesticides</b>	Any fungicide, herbicide or insecticide or related product (excluding medicines) used for the control of pests or diseases
<b>PHA</b>	The Public Health Agency works to initiate, stimulate, develop and support health promotion
<b>Plumbosolvency</b>	The tendency for lead to dissolve in water
<b>Prescribed Concentration or Value</b>	The numerical value assigned to water quality standards (PCV), defining the maximum or minimum legal concentration or value of a parameter
<b>Protozoan parasites</b>	A single celled organism that can only survive by infecting a host
<b>Public register</b>	The information made available by NI Water to the public as required by regulation 34 in the Regulations
<b>Regulations</b>	The Water Supply (Water Quality) Regulations (Northern Ireland) 2017
<b>Remedial action</b>	Action taken to improve a situation
<b>RPZs</b>	Reduced Pressurised Zone Valve – a type of backflow prevention device
<b>SCaMP NI</b>	Sustainable Catchment Management Planning Northern Ireland
<b>Service reservoir (SR)</b>	A water tower, tank or other reservoir used for the storage of treated water within the distribution system

<b>SIC Code</b>	Standard Industrial Classification Code – used for Water Fittings Regulations
<b>Springs</b>	Groundwater appearing at the surface at the outcrop of the junction of an impermeable stratum
<b>Surface water</b>	Water from rivers, impounding reservoirs or other surface water sources
<b>Technical audit</b>	The means of checking by the DWI that NI Water is complying with its statutory obligation
<b>Toxicology</b>	The study of the health effects of substances
<b>Treated water</b>	Water treated for use for domestic purposes as defined in the Regulations
<b>Trihalomethanes (THMs)</b>	A group of organic substances comprising, for the purposes of the Regulations, four substances: trichloromethane (also known as chloroform), dichlorobromomethane, dibromochloromethane and tribromomethane
<b>UKAS</b>	The sole national accreditation body recognized by the UK government to assess, against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services
<b>Utility Regulator</b>	The Northern Ireland Authority for Utility Regulation (NIAUR)
<b>WDPD</b>	DfI Water and Drainage Policy Division. Deemed to be the Regulator for all activities associated with the Water Supply (Water Fittings) Regulations (NI) 2009
<b>WRAS</b>	The Water Regulation Advisory Scheme. A list of Standard Industrial Classification codes with related fluid categories used to define categories of non-domestic properties
<b>Water Regulations</b>	The Water Supply (Water Fittings) Regulations (NI) 2009
<b>Water Safety Plan</b>	A means of ensuring that a water supply is safe for human consumption based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to tap
<b>Water supply zone (Zone)</b>	The basic unit of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available
<b>Website</b>	Location of information on the Internet. NI Water's website is: <a href="http://www.niwater.com">www.niwater.com</a>
<b>Weed-wiping</b>	Weed treatment method wiping the top of weeds using a roller or wicks infused with pesticide
<b>Wholesomeness</b>	A concept of water quality that is defined by reference to standards and other requirements set out in the Regulations

