

# Drinking Water Quality Annual Report 2018



# Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2018, and I am delighted to report that we have continued to increase the quality of drinking water delivered to our customers with the highest overall water quality for 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.

Drinking water is carefully monitored and tested for quality. This report summarises NI Water's results from 1 January 2018 to 31 December 2018 to meet the requirements of the Regulations under which we operate. During this reporting period, 99.90% 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.

During 2018, a prolonged period of very hot weather over all of Northern Ireland resulted in an unprecedented demand for water by our customers, rising up to three quarters of a billion litres per day - a 30% increase above normal! This led to NI Water reluctantly imposing restrictions to ensure that we could maintain supplies to all our customers, without compromising water quality. Over the course of the incident, we had over 900 colleagues involved in managing it, working weekends, public holidays and in several cases foregoing their own holidays.

We thank all our customers for adopting new habits and ways to conserve water in their everyday lives, and with their assistance, we were able to lift the ban after several weeks.

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. This is caused largely by wash-off from farmland during the very wet weather events we have experienced in recent years. We continue to liaise closely with the farming community and other stakeholders through the Water Catchment Partnership and the SCaMP NI (Sustainable Catchment Management

Planning) programme to try to minimise the chances of recurrence in the future. NI Water, in association with its partners, have been trialling weed-wiping in the Armagh area, with very positive outcomes on MCPA reduction from its initial trials, including rushes completely eliminated from certain pastures - see the Catchment Management section of this report.

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 we assign expenditure in the most effective possible manner. Although our funding programme for our PC15 price control period (2015-21) continues to be uncertain, we are committed to overcome the challenges presented to us and will continue to work closely with the Utility Regulator, the Drinking Water Inspectorate, the Consumer Council and other stakeholders to maintain and improve our services to our customers.

We are currently developing our programme for the upcoming PC21 period, prioritising schemes to put our customers at the heart of what NI Water does, to deliver world class services to underpin the health of the community, the quality of the environment and growth of the regional economy and to provide value for money.

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.

**Sara Venning**  
Chief Executive Officer

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# Drinking Water Quality

## Water Quality Standards

During 2018, 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 standards for water quality 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, 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, 50 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 at all times liaise 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	2012	2013	2014	2015	2016	2017	2018
% Overall compliance with drinking water regulations	99.77%	99.81%	99.86%	99.83%	99.86%	99.88%	99.90%
% Compliance at consumers tap (including supply points)	99.63%	99.74%	99.78%	99.75%	99.77%	99.81%	99.83%
% Iron compliance at consumers tap	97.25%	98.08%	98.95%	98.40%	98.66%	98.85%	98.94%
% Service Reservoirs with coliforms in >5% samples	0.30%	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:

[www.niwater.com/drinking-water-guidance/](http://www.niwater.com/drinking-water-guidance/)

## Lead Monitoring for Vulnerable Customers

The regulatory limit for lead in drinking water was reduced at the end of 2013 from 25µg/l to 10µg/l. In advance of this reduction, from 2011 NI Water (in liaison with the Northern Ireland Education Authorities) put in place a monitoring programme to identify potential high lead levels for schools.

Primary Schools in Northern Ireland have been prioritised based on the age of the school and dates of any building modification and sampled as part of this programme. From this, a monitoring programme was initiated in 2011 that began with the top priority schools and was completed by 2018.

Any school where lead levels were found to be above the 10µg/l standard was investigated and the lead pipework replaced by NI Water and the Education Authorities, as appropriate.

This monitoring programme was further expanded to children’s hospitals and children’s homes during 2013. Other non-domestic locations where children spend a significant amount of their time will be considered as they are identified and opportunistically replaced.

## 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 4 years, NI Water has replaced approximately 8,000 lead service pipes and is on target to meet the 11,000 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 consumer.

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.



# Catchment Management

## Sustainable Catchment Management Planning Northern Ireland (SCaMP NI)

### Overview of SCaMP NI

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 solutions that focus on protecting and enhancing the natural environment and reducing treatment costs for NI Water. Water catchments are designed to be the first stage of a multiple barrier approach to water treatment.

Over the last number of years, NI Water has employed a more environmentally sustainable approach to this problem, by working with farmers, land managers and other groups within our source catchments to improve raw water quality at the top of the catchment, before it even reaches the WTWs for treatment. This work means careful consideration before proceeding with the traditional model of constructing expensive WTWs, with a high carbon footprint and high operating costs. More consideration is being given to the catchment area as the first stage of the treatment process, using a more holistic approach, which benefits the environment, biodiversity and reduces our operating costs, especially when resources are pooled with stakeholders and external finance is maximised through match funding.

Reducing pollution at source avoids the need for this expensive capital investment in WTWs, also reducing operating costs of remove substances such as sediments that cause increased colour and turbidity issues and pesticides from the raw water abstracted for the drinking water supply.

The SCaMP NI project has been successful at demonstrating how, by working together, we can manage catchments for water quality and an improved natural environment. The SCaMP NI Steering Group, involving representatives from a wide range of environmental stakeholders, meeting regularly with the aim of ensuring that actions are aligned with industry best practice and the aims and objectives of all stakeholders, therefore contributing holistically to sustainable catchment management.

NI Water has a background of effective management of the land we own around our reservoirs and catchment areas – much of which the public can visit and enjoy. Our goal to achieve this is to work collaboratively with all stakeholders to provide NI Water's essential services to customers in a way that is sustainable for our natural environment.

### Catchment Management Studies

One of our strategic priorities to 2021 is to complete a Catchment Management Plan for each live drinking water catchment. In NI Water, there are 23 drinking water catchment areas and it is our target to complete a study in each area. To date 21 Catchment Management Studies have been completed with the remaining two at draft stage.

The Catchment Management Studies have undertaken a scoping and planning study of the drinking water catchments. This uses 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. Diffuse water pollution and insensitive land management may pollute surface and ground water supplies with substances such as nutrients, pesticides and microbial pathogens. It may also increase colour, turbidity and suspended solids in abstracted water. These unwelcome substances increase the capital and operating costs of water treatment, increase the quantity of effluent and waste produced, and increase the carbon footprint of the industry.

Where such risks are identified in drinking water catchments, NI Water aims to implement catchment management schemes that improve raw water quality, enhance water resources and reduce future catchment-based risks to raw water quality and quantity. We also want to meet NI Water's obligations as a responsible landowner whilst adopting an approach that gives a sustainable reduced cost for treating water to a high quality.

## Managing Invasive Species

Many non-native species have been intentionally or unintentionally introduced into Northern Ireland from around the world. NI Water has been working to ensure that the spread of invasive species is managed on NI Water landholdings. In particular, this has involved a lot of work in the Silent Valley catchment area in the Mourne Mountains with invasive plants like rhododendron and cotoneaster. 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. A 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.

## Wildfire Control

Wildfires have devastating effects on habitats, flora and fauna and can also result in a deterioration in raw water quality and increased treatment costs significantly. 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 in conjunction with stakeholders have developed a coordinated approach to wildfire prevention in order protect the water supply and preserve the precious Mourne landscape for generations to come.

## Riparian Planting

The SCaMP NI team have been working with stakeholders to plant riparian zones. These are vegetated areas or buffer strips along watercourses, usually planted with trees, which helps shade and partially protect water from the impact of adjacent land uses e.g. livestock. It plays a key role in increasing water quality in associated streams, rivers, and lakes, thus providing environmental benefits through intercepting sediments/nutrients, intercepting pesticides, erosion prevention through riverbank stabilization and reducing livestock encroachment into watercourses.

## Working on Cross-Border Catchments

Several of our catchments straddle the border with the Republic of Ireland and a close working relationship has been established with Irish Water and other statutory bodies to co-operate to mutual benefit and to deal with the issues through joint catchment initiatives.

## Dealing with Pesticides

Herbicides are essential for weed control and land management in the agricultural sector. However, some herbicides like MCPA make it into watercourses 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.



There have been over 15,000 native deciduous trees planted along watercourses upstream of abstraction points feeding Caugh Hill and Carmoney WTW and in areas along the Faughan and Burntollet rivers which were badly affected by floods in 2017 and 2018.

NI Water's 'Rush Solution Without Pollution' project involves the provision of a free weed control service to landowners within a small drinking water catchment draining into the Seagahan reservoir in Co. Armagh, where there are ongoing issues with soft rush (*Juncus Effusus*) invasive weeds and MCPA raw water detections.

After press promotion, the project was initiated in April 2017 in conjunction with local UFU members and The Water Catchment Partnership, with an information evening held at a local community hall. Interested landowners were encouraged to apply, after which our Farm Liaison Officer visited the landowner to assess eligibility and rush density. A qualified private contractor local to the area was then deployed to carry out the weed-wiping work.

The contractor used the herbicide glyphosate via weed-wiper equipment, using strict best-practice techniques. This chemical and method have been proved by the College of Agriculture, Food and Rural Enterprise (CAFRE) trials to be more efficient than a conventional boom sprayer using MCPA, which is an indiscriminate method of weed control and can contribute to watercourse pollution. Less chemical is used and less wasted, therefore weeds are controlled, cost is lower for users, and water quality is protected.

The trial has been very successful thus far, with benefits including:

- **Rush Reduction** - On the area weed-wiped in Co. Armagh there has been a successful rush reduction between 60% and 90%. Rush treatments during 2018 have seen rushes completely eliminated from certain pastures.
- **Water Quality benefits** - Ongoing water sampling of the reservoir throughout 2018 has shown a marked decrease in MCPA found in raw water. Analysis of the results demonstrated a MCPA residual reduction of more than 50% in the 2017 period and a further 25% decrease in 2018, in comparison with the average for the previous 5 years.

Due to the success of phase one and two of this Seagahan trial, it was re-released for a second trial from 2019-20. NI Water hope to capitalise on the success of the existing pilots and excellent stakeholder relationships that has been fostered. Two additional trials have since begun in Co. Tyrone and Co. Antrim.

NI Water hopes that their ongoing trials will continue to assist the agricultural sector in NI, promoting the message that farming and the water environment are reciprocal and that it is important to preserve both for a sustainable future.



NI Water staff worked closely with UFU and CARFE to deliver the weed-wiping project in several areas where high levels of MCPA were recorded. In the Seagahan catchment, 426 acres of rushes were treated with glyphosate in 2017 and 485 acres in 2018. This prevented a total of 1183 litres of MCPA being applied in the area.

## Forestry Management

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 require careful planning in order to avoid any detrimental impacts on raw water quality that is abstracted for water treatment. NI Water have been working closely with the forestry industry to minimise any detrimental effect to raw water quality or the environment.

## Peatland Restoration

Sustainable land management on blanket bogs helps to lock in the carbon and helps manage the threat from climate change. Using this process on bogs that provide the raw water that will become drinking water should help reduce the cost of treatment and thus the cost to the consumer. These added to the benefits for biodiversity are the results of a real and practical ecosystem services approach.

Garron Plateau is one of the best examples of blanket bog anywhere on the island of Ireland. A well-managed and functioning blanket bog on the site will help species including hen harriers, curlews and cuckoos to survive in future, along with plants including marsh saxifrage and Irish lady's-tresses orchids. Garron is the only known site for the marsh saxifrage in Northern Ireland.

Over the years, many peat bogs have been overgrazed by livestock or damaged when drainage ditches were dug, giving rise to exposed peat that is susceptible to erosion. Grazing management and creation of peat dams reduces the water velocity in the drains, reduces runoff and improves raw water quality and reliability. This results in cost savings at the treatment works, as the requirement for chemical treatment to remove colour from the raw water will be reduced.

NI Water have been working in partnership with RSPB NI and other partners on a project funded by INTERREG VA and managed locally by the Special European Union Programmes Board (SEUPB).

The project is called the 'Co-operation Across Borders for Biodiversity' (CABB) Project and began in 2017, with completion in late 2021.

NI Water owns and manages the site where contractors got to work in January 2018 to block drains that will, alongside appropriate grazing levels, restore and sustainably manage blanket bog habitat.

A substantial amount of the capital work to block the drains was completed in 2018.

By the project close, it will have prepared eight Conservation Action Plans for important Natura 2000 Special Areas of Conservation (SAC) and Special Protection Areas (SPA) sites and delivered works to improve the condition of over 2228 hectares of blanket bog.

The CABB project will restore the natural hydrological conditions by blocking approximately 38.4km of drains using peat, stone and sheet dams to raise the water table. This results in raising the water table and the "re-wetting" of the bog, promoting colonisation by Sphagnum moss, an essential component of a functioning bog. This reduces runoff and improves raw water quality and reliability by improved regulation of supply through the retention effects of the bog. This will result in cost savings at the WTWs, as the requirement for chemical treatment to remove colour from the raw water will be reduced.

Garron Plateau SAC in North Antrim is the largest area of intact blanket bog in N. Ireland. It is home to rare wildlife and consists entirely of bog and marsh. The restoration of 72 ha of this area through the installation of peat, stone and wooden dams to block drains has already shown some successes in reducing the extremity of total organic carbon and colour in the raw water feeding the nearby WTWs.

The CABB project has been supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body.

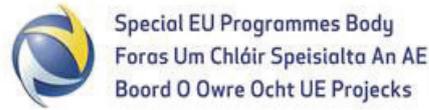


**Interreg**   
Northern Ireland - Ireland - Scotland  
European Regional Development Fund

 Special EU Programmes Body  
Foras Um Chláir Speisialta An AE  
Boord O Owre Ocht UE Projects

Work ongoing at Garron Plateau to complete the CABB Blanket Bog restoration project in summer 2018

# Source to Tap



## Overview of Source to Tap

The Source to Tap 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 the Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland and the Department of Housing, Planning and Local Government (DHPLG) 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 Derg and Erne drinking water catchments straddle the border and are predominantly rural in nature. The partnership will work together over five years (2017 to 2021) to deliver proposals and test pilots for how to protect raw water quality at source across both jurisdictions.

In the upper reaches of these catchments, the landscape is dominated by peatbog 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 pesticides to run off the land and drain into the raw water, which NI Water abstracts for drinking water causing 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 pilot studies to reduce pesticides and sediments getting into the water in the first place, and raise awareness of the importance of protecting our precious drinking water resource. The project includes a number of different work packages, which will ultimately lead to the production of a sustainable catchment management plan.

Work within the project over the past year has focussed on the following areas:



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.



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? During 2018, we completed 19 school events and engaged with 611 pupils. 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.



Riverfly Volunteers monitoring biological quality



Our community engagement programme continued to raise awareness at science fairs, four agricultural shows, eight roadshows across the Erne and Derg to help the local community explore their vision for their river catchments and eight 'get to know' your catchment events.



One of the major areas of work for the project in 2018 was the development of a pilot Land Incentive Scheme for the cross border Derg catchment upstream of the water treatment works. This scheme was launched at the end of July 2018 to over eighty farmers at an event in Castlederg Leisure centre. The scheme, which seeks to encourage farmers to follow water friendly practices, is 100% funded and runs for two years. It offers farmers incentives to install measures to benefit their farm business as well as reducing run off from sediment and herbicides. 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.

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.



Automatic Water Quality Monitoring Station



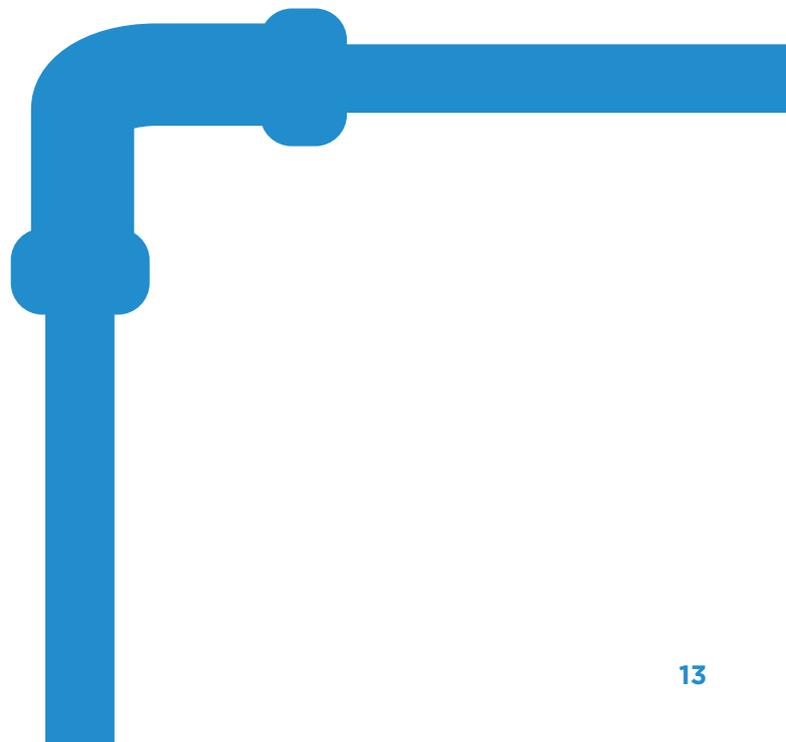
Pictured at the Launch of the Pilot Land Incentive Scheme are L to R: Robin Bolton (CAFRE), Michael Chance (Irish Farmers' Association), Diane Foster (Project Manager), Paul Harper (NI Water Director of Asset Delivery), Trudy Higgins (Irish Water), Mark Horton (The Rivers Trust), David Brown (Ulster Farmers Union)

# 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 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 Environmental Management System (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.

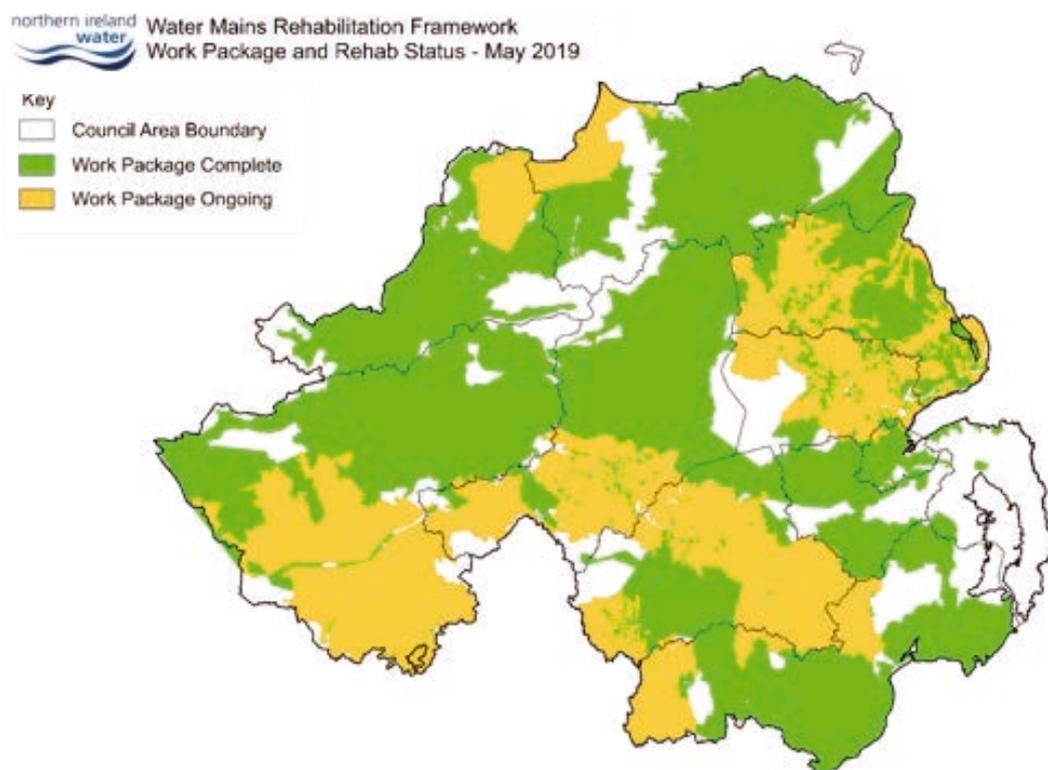
The performance and condition of the water mains were investigated and assessed through a series of Detailed Zonal Studies against standard criteria developed in conjunction with various internal stakeholders and DWI. This zonal study approach was used during the PC10 and PC13 planning periods.

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 if fully funded, should deliver approximately 900km 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 PC 21 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 576 million litres of high quality drinking water to customers every day during 2018. 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.

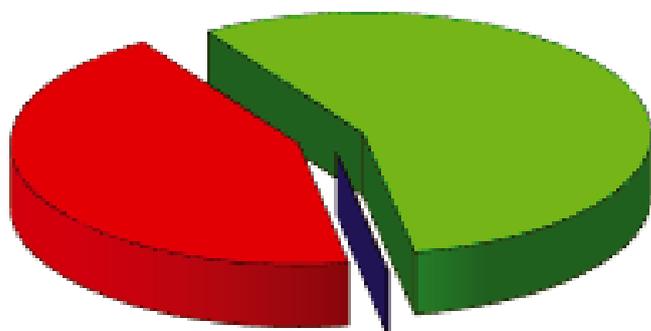
The Draft WR&SR Plan has been completed and an eight week consultation process will begin once Department for Infrastructure (DfI) approval has been granted. Once the consultation responses have been reviewed and actioned as appropriate the Final WR&SR Plan will be issued.

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 - 42.7%**

**Rivers and Loughs - 57.2%**



**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 2018, the technical audit inspection programme included:

- An audit of the Laboratory Information Management System (LIMS)
- An audit of Lough Bradan WTW
- An audit of Mains Rehabilitation
- An audit of Sampling Procedures
- An events follow-up audit of Drumaroad WTW

DWI made a number of recommendations and suggestions and NI Water has followed up on these issues. DWI will report on the inspections and the quality of water supplied by NI Water in its annual report, which is 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 full list of Major, Serious and Significant Water Quality Events notified to the DWI during 2018 is detailed in Appendix 4.



## Regulatory Enforcement

DWI put in place three “Consideration of Provisional Enforcement Orders” (CPEOs) and one “Provisional Enforcement Order” during 2018. It also revoked and reissued an undertaking from a 2016 enforcement and closed and accepted further undertaking from a 2017 enforcement:

- CPEO 18/01 - to seek remedial measures relating to contraventions of the pesticide, MCPA [(4-Chloro-2-methylphenoxy) acetic acid], from water supplied from Glenhordial WTWs was issued on the 31/01/2018. DWI accepted and published a series of Undertakings from NI Water on the 15/03/2018. These Undertakings were completed in January 2019.
- CPEO 18/02 - to seek remedial measures relating to contraventions of THMs (Trihalomethanes: Total) from water supplied from Rathlin WTWs was issued on the 02/03/2018. DWI accepted and published a series of Undertakings from NI Water on the 17/04/2018, with the Undertakings to be completed by March 2019. This CPEO/18/02 was revoked on 12/03/2019 and a Regulation 31(4) Notice 19/02 issued with an extended timeline for the completion of remedial works until June November 2019.
- CPEO 18/03 - to seek remedial measures relating to contraventions of aluminium from water supplied from Drumaroad WTWs was issued on 30/11/18. DWI accepted and published a series of Undertakings from NI Water on the 07/02/19. These Undertakings are scheduled for completion in December 2019.
- PEO/18/01 - to seek remedial measures relating to contraventions of the odour standard from water supplied from Castor Bay WTWs was issued on 25/06/18. DWI accepted and published a series of Undertakings from NI Water on the 16/07/18. One undertaking was revoked and a new undertaking accepted and published by DWI on the 30/08/2018. Undertakings are scheduled for completion in March 2021.
- PEO/16/01 - to seek remedial measures relating to contraventions of the pesticide, MCPA [(4-Chloro-2-methylphenoxy) acetic acid], from water supplied from Derg WTWs. DWI accepted and published a series of Undertakings from NI Water on the 30/06/16. One undertaking was revoked and new undertakings accepted and published by DWI on the 22/03/2018, and scheduled for completion in March 2019. The PEO/16/01 was revoked on 12/03/2019 and a Regulation 31(4) Notice 19/01 issued on the same date with an extended timeline for the completion of remedial works until June 2020.
- CPEO/17/01 - to seek remedial measures relating to contraventions of the pesticide, MCPA [(4-Chloro-2-methylphenoxy) acetic acid], from water supplied from Ballinrees WTWs. DWI accepted and published a series of Undertakings from NI Water on the 24/07/17. These undertaking were completed and further undertakings were requested by DWI on the 18/05/2018. These were accepted and published by DWI on the 05/07/2018 and scheduled for completion in March 2019. The CPEO/17/01 was revoked on 12/03/2019 and a Regulation 31(4) Notice 19/03 issued on the same date with an extended timeline for the completion of remedial works until December 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 a ruggedised tablet PC (Toughpads) based system to produce an enhanced audit trail and eliminate errors in data transcription.

The system uses Toughpads, which incorporate mobile phone SIMs for communication. A built in barcode scanner is used to scan the labels on the sample bottles and 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 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 2018, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	24
Service Reservoirs	288
Water Supply Zones	50
Authorised Supply Points (see glossary)	24

## Overall Water Quality Testing

During 2018, 97,496 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 in the year 2018. Of these, 97,398 tests complied with the regulatory standards giving an overall percentage compliance of 99.90%.

Location Type	No of Samples	Regulatory Parameters Analysed	Regulatory Parameters used for Compliance Assessment
Water Treatment Works	6,409	45,099	19,463
Service Reservoir	14,921	89,526	29,842
Zone ( including Authorised Supply Point)	5,516	62,923	48,191
Overall	26,846	182,816	97,496

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 microorganisms. 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.

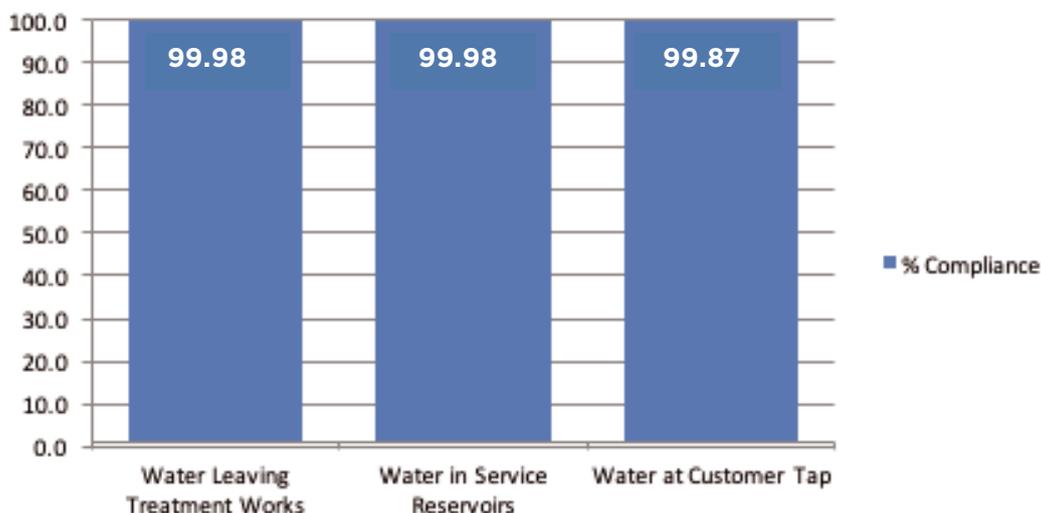
To ensure the effectiveness of the treatment and chlorination process, the wholesomeness of treated water is regularly examined to ensure the absence of coliform bacteria and faecal coliforms (*E. coli*) at water treatment works, service reservoirs and in the distribution system at customer taps. The 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 2018 is given below.

### Overall Microbiological Water Quality



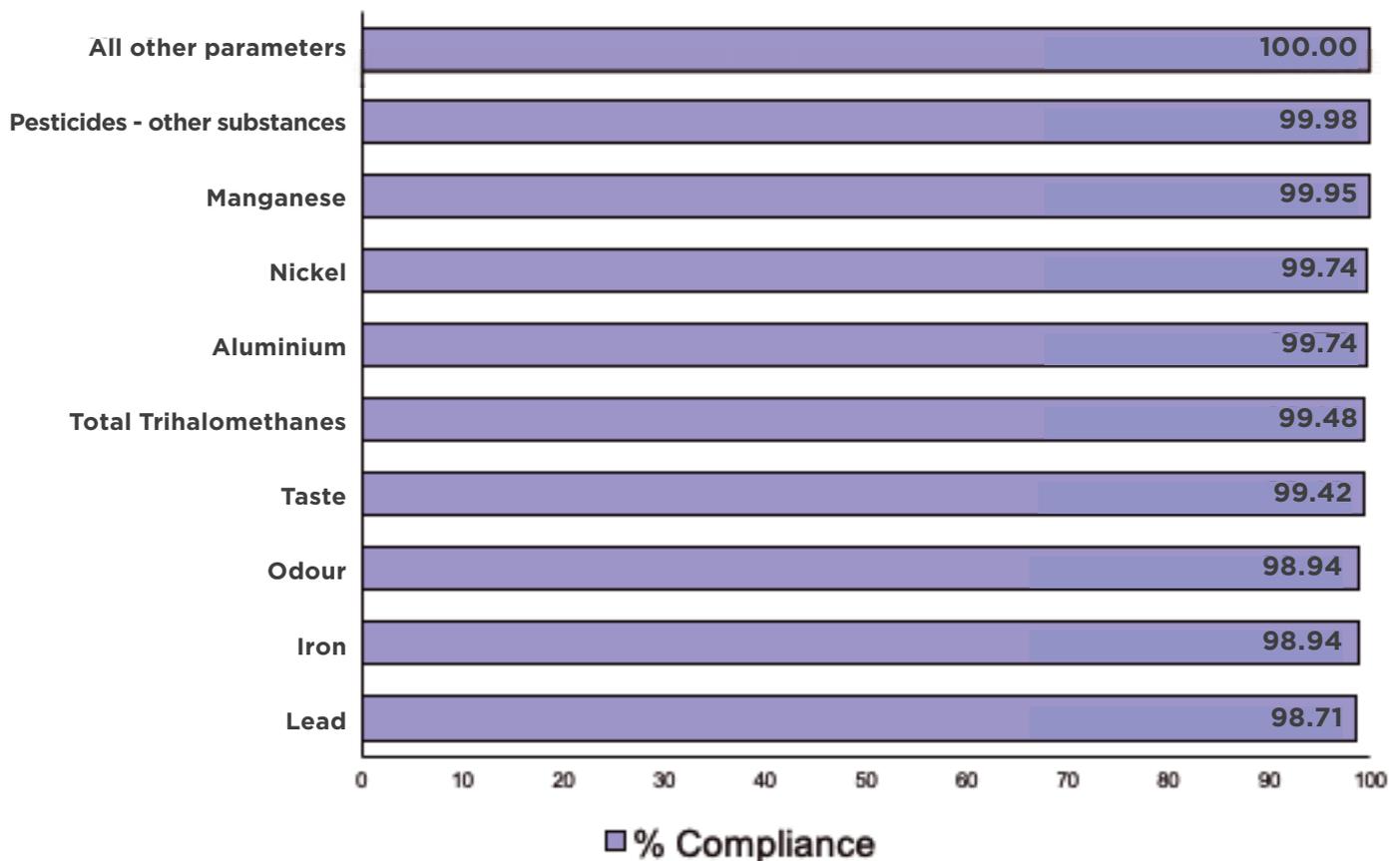
### Physical and Chemical Quality at Customer tap

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 2018, 37,008 physical and chemical tests were assessed against their consent for water samples taken at customer taps or authorised supply points. Of these, 36,941 tests complied with the regulatory standards giving a compliance of 99.82% 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.

### % 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	12,818	2	99.98
Indicator parameters	6,645	4	99.94
<b>Total</b>	<b>19,463</b>	<b>6</b>	<b>99.97</b>
<b>Water in Service Reservoirs</b>			
Bacteriological Analysis	29,842	11	99.96
<b>Total</b>	<b>29,842</b>	<b>11</b>	<b>99.96</b>
<b>Water at Customers' Taps or Authorised Supply Points</b>			
Bacteriological Anal. inc Coliforms	11,184	14	99.87
Zone Chemical Analysis	21,780	65	99.70
Supply Point Chemical Analysis	8,727	2	99.98
Indicator parameters	6,500	0	100.00
<b>Total</b>	<b>48,191</b>	<b>81</b>	<b>99.83</b>
<b>Total Mandatory Parameters</b>	<b>84,351</b>	<b>94</b>	<b>99.89</b>
<b>Total Indicator Parameters</b>	<b>13,145</b>	<b>4</b>	<b>99.97</b>
<b>Overall Water Quality Total</b>	<b>97,496</b>	<b>98</b>	<b>99.90</b>

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 2018, 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.

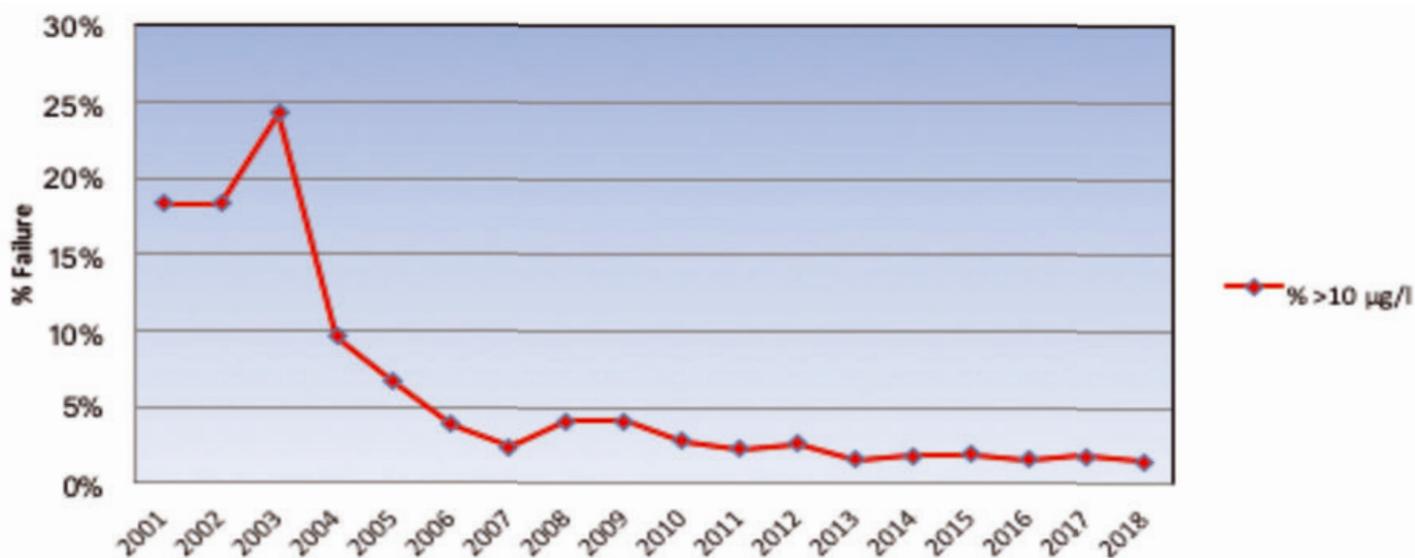
NI Water will also replace free of charge, any of its lead pipes supplying a property, if it receives a written request from a customer who has replaced the portion of lead service pipe for which the householder is responsible.

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.

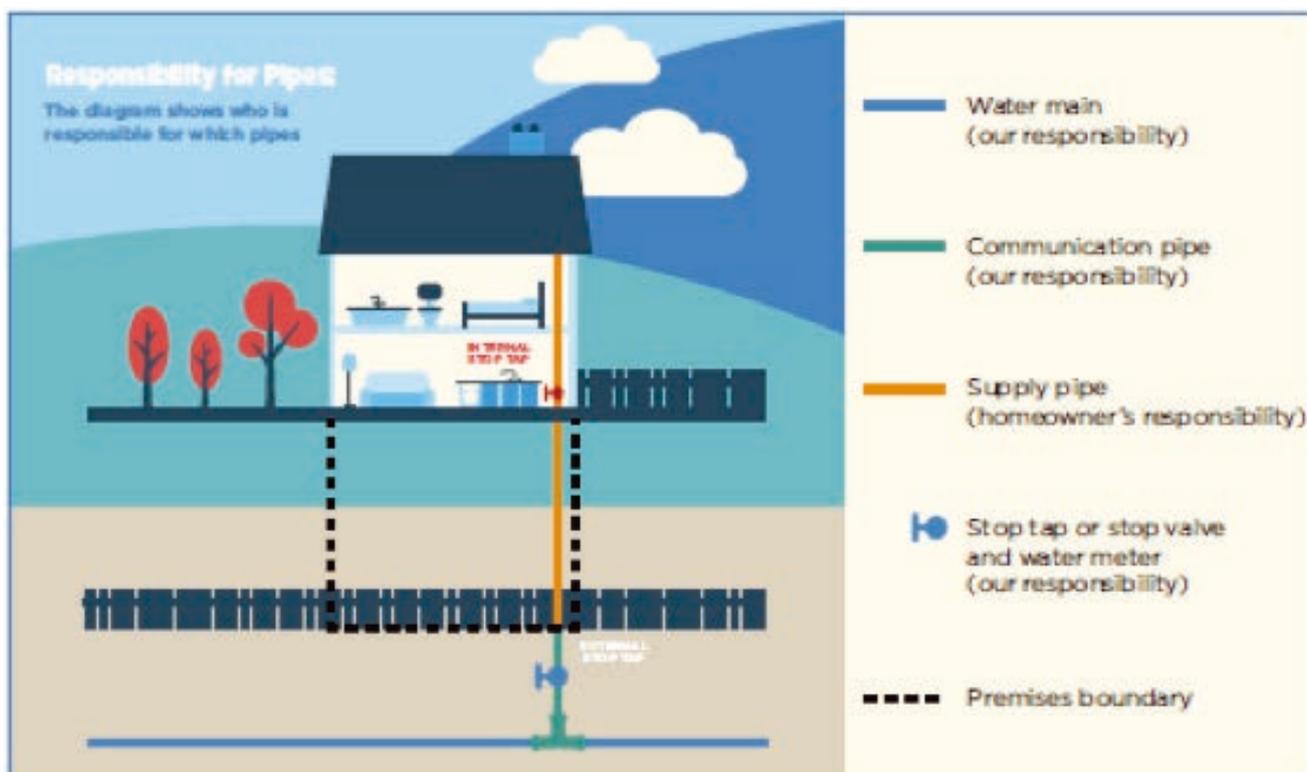
The effectiveness of the dosing can be seen in the graph below, showing the optimisation of the dosing from the water treatment works to meet the new regulations.

### % 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.

## Pesticides

Pesticides include insecticides, herbicides, fungicides and algaecides. 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 35 individual pesticides during 2018. 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.

We have 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)

# Investing for the Future

## Asset Delivery

In October 2014, the Minister for Regional Development provided Social and Environmental Guidance, which outlined the priorities for investment for NI Water for the period April 2015 to March 2021 (PC15). From this, the Utility Regulator for Northern Ireland set a % Overall Water Quality Compliance target of not less than 99.79% for water quality during this period. NI Water developed the PC15 business plan to maintain the quality of water through the investment period. The water quality section of the PC15 plan included the laying of 905km of new, renewed or relined water mains, the provision of three strategic trunk mains, the upgrading of water treatment works, service reservoirs and pumping stations. During 2018/19 NI Water laid 239km of watermains and the cumulative PC15 watermains total is 870 km, which is inclusive of the Water mains rehab programme, and all other contributing sub programmes. The length of rehabilitated main in 18/19 was 167Km with a cumulative PC15 total of 582km.

NI Water's planned investments aim to maintain and locally improve our water quality compliance as well as improving levels of service to customers for example, for customers suffering low water pressure. In addition to the investment targeted at improving the quality of service, capital investment is also allocated towards maintaining the serviceability of our assets, now and in the future. The success of these aims will depend on the availability and priority of capital for investment in the drinking water sector.

NI Water operates an integrated asset management system to ensure this investment is properly targeted towards the maintenance of existing assets and the prioritisation of customer needs. In the water mains programme, the introduction of the Water main Infrastructure Investment Model has allowed NI Water to prioritise expenditure more effectively and help maximise benefits for customers.

NI Water supplies potable water to all of Northern Ireland. A breakdown of water quality by council area detailing capital investment during the reporting period is given at Appendix 3.

## Research, Development and Innovation

NI Water, through its Research, Development and Innovation (RDI) team, undertakes a programme of applying research and technology development. NI Water's RDI investment is targeted to meet business needs by facilitating the transfer of technology and systems developed by others. It is predominantly focussed on incremental innovation, and optimisation i.e. producing more out of existing assets. Innovation, where appropriate, is employed to support the development of standards and best practice, across all of NI Water's activities.

This programme is driven by the desire to maintain and where possible improve water quality, whilst making efficiency gains. It contains projects designed to improve drinking water quality and compliance of our consented discharges while protecting the environment and providing an improved service to our customers.

NI Water, together with other UK Water Companies, employs research bodies such as the United Kingdom Water Industry Research Ltd (UKWIR) to provide a collaborative programme of research. This is tailored to suit the needs of the UK water industry and where required, specifically to suit the needs of NI Water. The research programme covers a wide range of business areas including Best Practice, Climate Change, Regulation and Sustainability.

The RDI section also manages projects, which require industry specialists to provide expertise to bridge knowledge gaps and solve problems specific to NI Water.

Through the RDI section, NI Water collaborates with, and supports local and UK university research.

# 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 1<sup>st</sup> 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 3<sup>rd</sup> 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 30<sup>th</sup> 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 3-4 times per year 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.

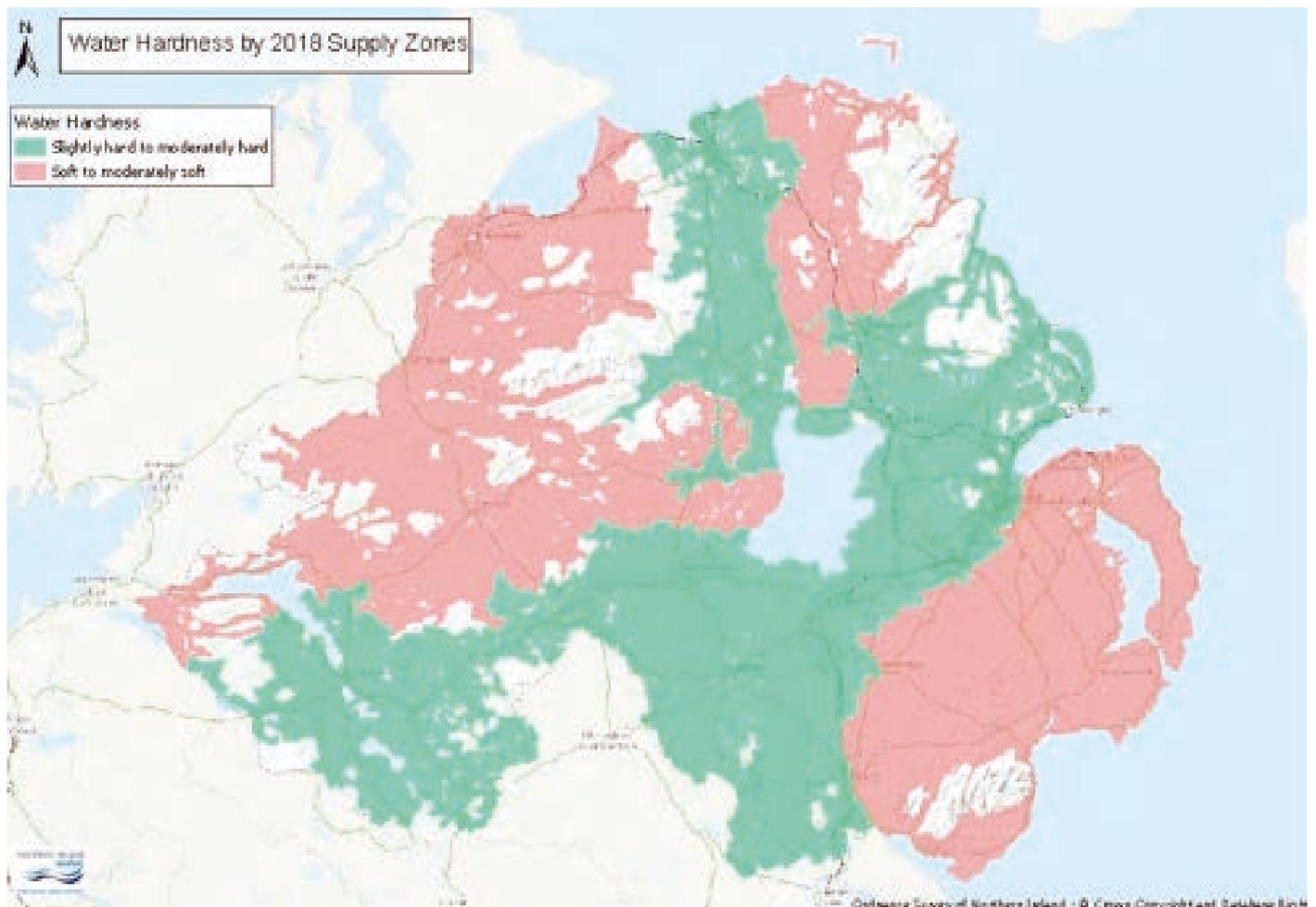
Description	Number
*Number of Domestic and Non Domestic Inspections	
• Full Inspections.	562
• Revisit Inspection.	542
• Drawings Inspection.	11
Total number of all Inspections	1115
*Number of Premises/Bodies visited	1115
*Number of Contraventions Active recorded	1068
*Number of Contraventions Closed	979
*Number of Outstanding Contraventions	89
*Number of Inspections with outstanding contraventions > 3 months passed to NI Water Legal Department	1

# Public Information

## Drinking Water Register

A Drinking Water Register is available from NI Water's website at [www.niwater.com/water-quality-results/](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 type talk on:

03457 440088

Customers may also contact Customer Services by email on: [waterline@niwater.com](mailto:waterline@niwater.com)

Alternatively, via Twitter:  
[@niwnews](https://twitter.com/niwnews)

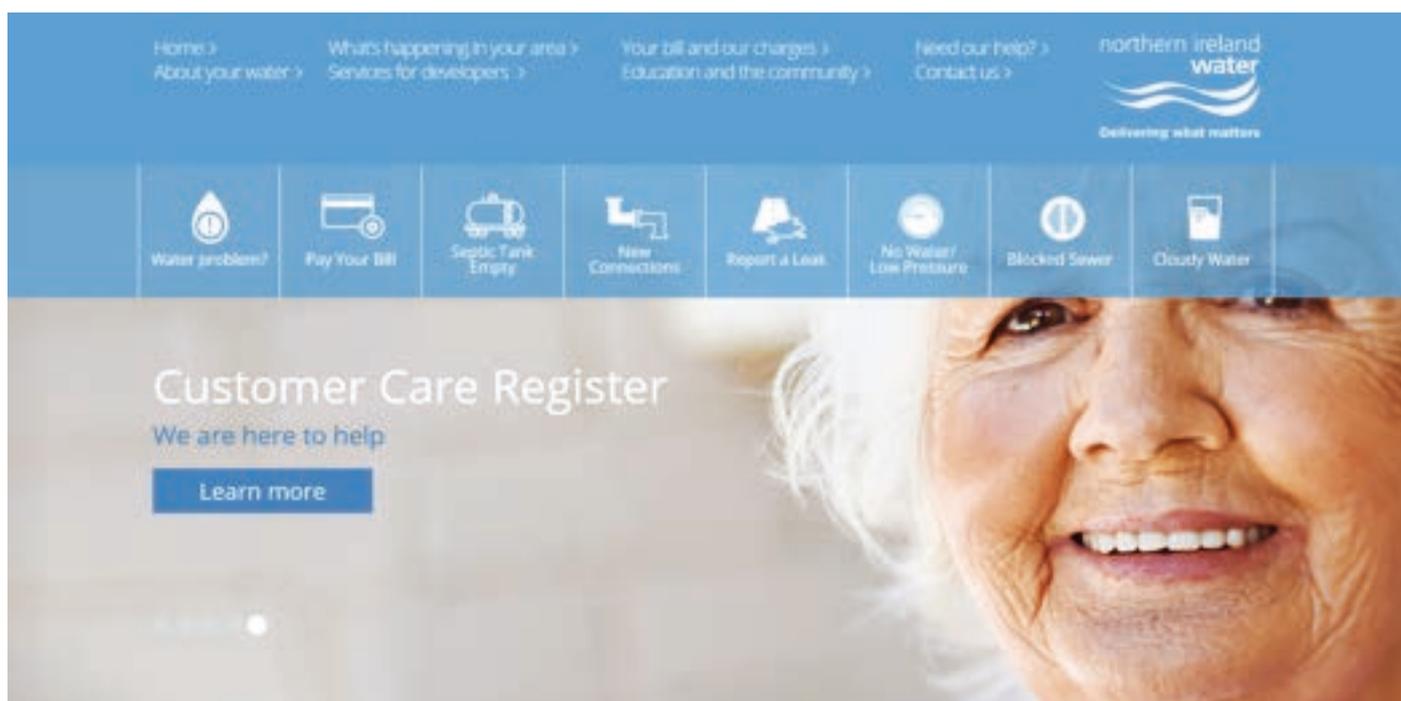
Further information for customers may be obtained at the following website:  
[www.niwater.com](http://www.niwater.com)

This site also contains electronic versions of recent Water Quality reports.

### 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:

[selfservice.niwater.com](http://selfservice.niwater.com)

## Social Media

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



### Facebook

This is updated on a daily basis and in the event of a major incident will be used to communicate directly with customers on

[www.facebook.com/niwater/](http://www.facebook.com/niwater/)



### YouTube

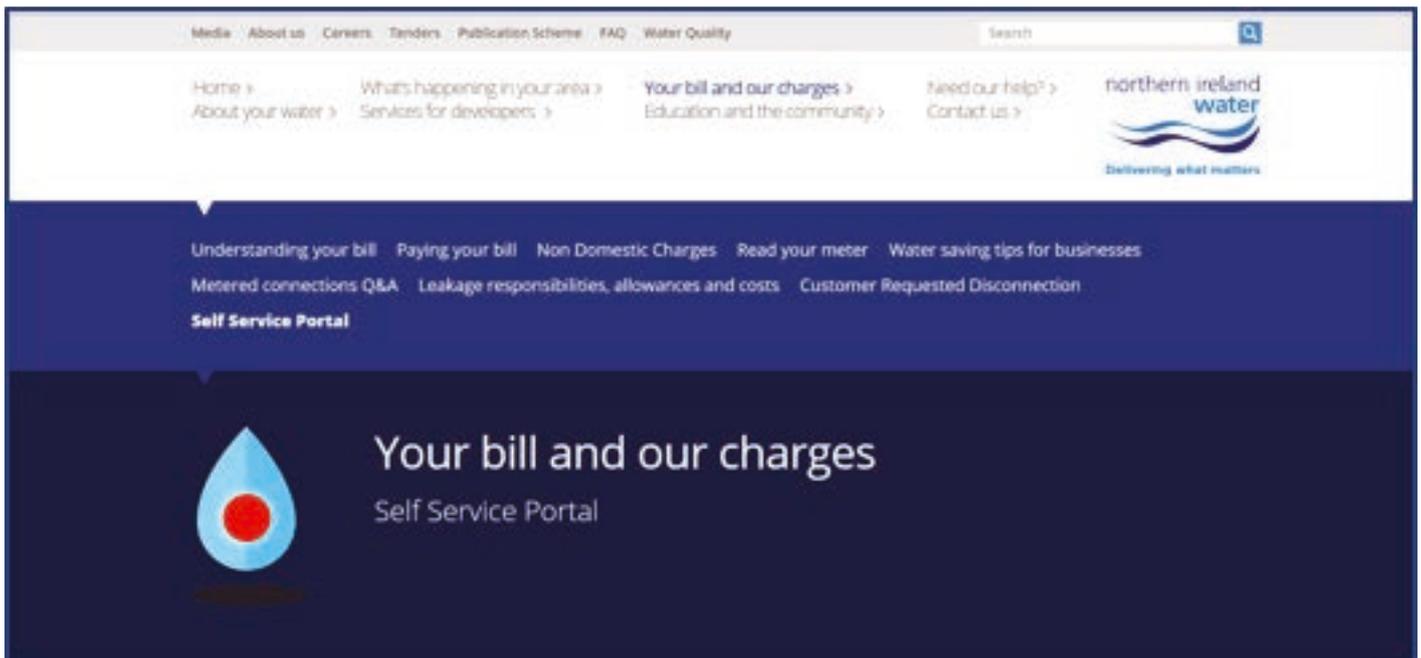
NI Water has its own YouTube channel [www.youtube.com/northernirelandwater](http://www.youtube.com/northernirelandwater) that hosts NI Water videos such as “How to protect your pipes”, “Saving water in the home” or “Protect from Bogus Callers”. It can also be used to host video messages for customers during a major incident.



### Twitter

NI Water’s twitter account is routinely used to respond directly to customers queries at

[@niwnews](https://twitter.com/niwnews).



# 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

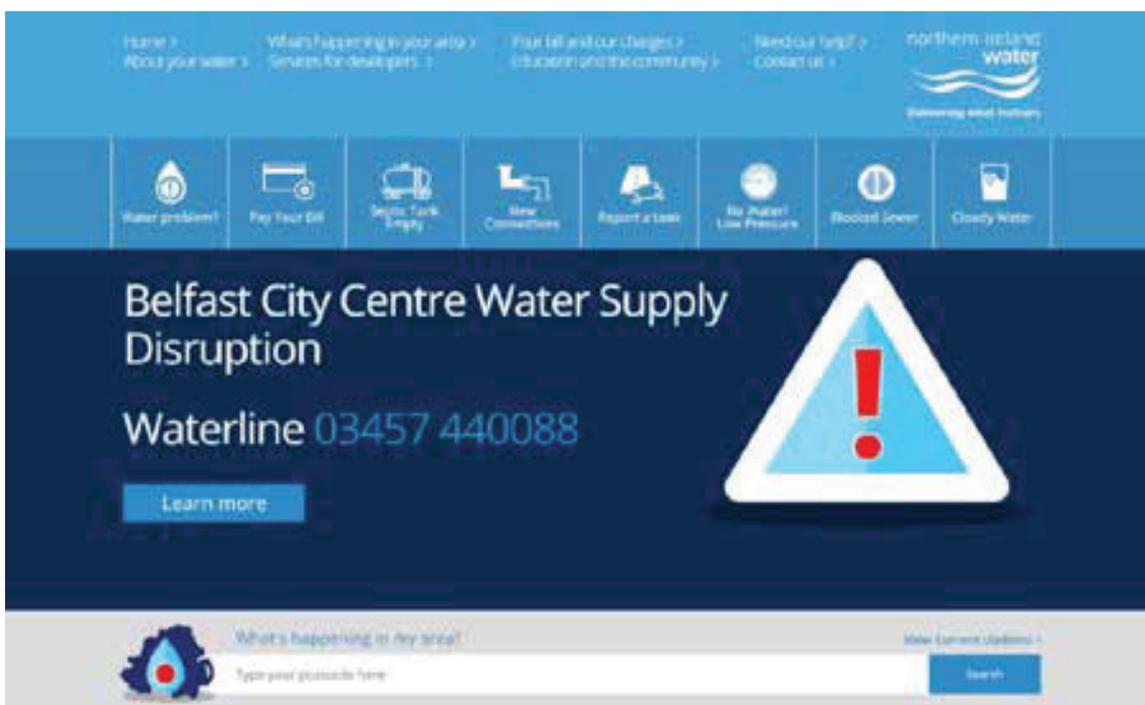
NI Water’s website routinely provides information to its customers regarding interruptions, repairs and planned upgrades as well as frequently asked questions and answers and links to helpful sites e.g. to find a plumber etc.

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.

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.



# 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

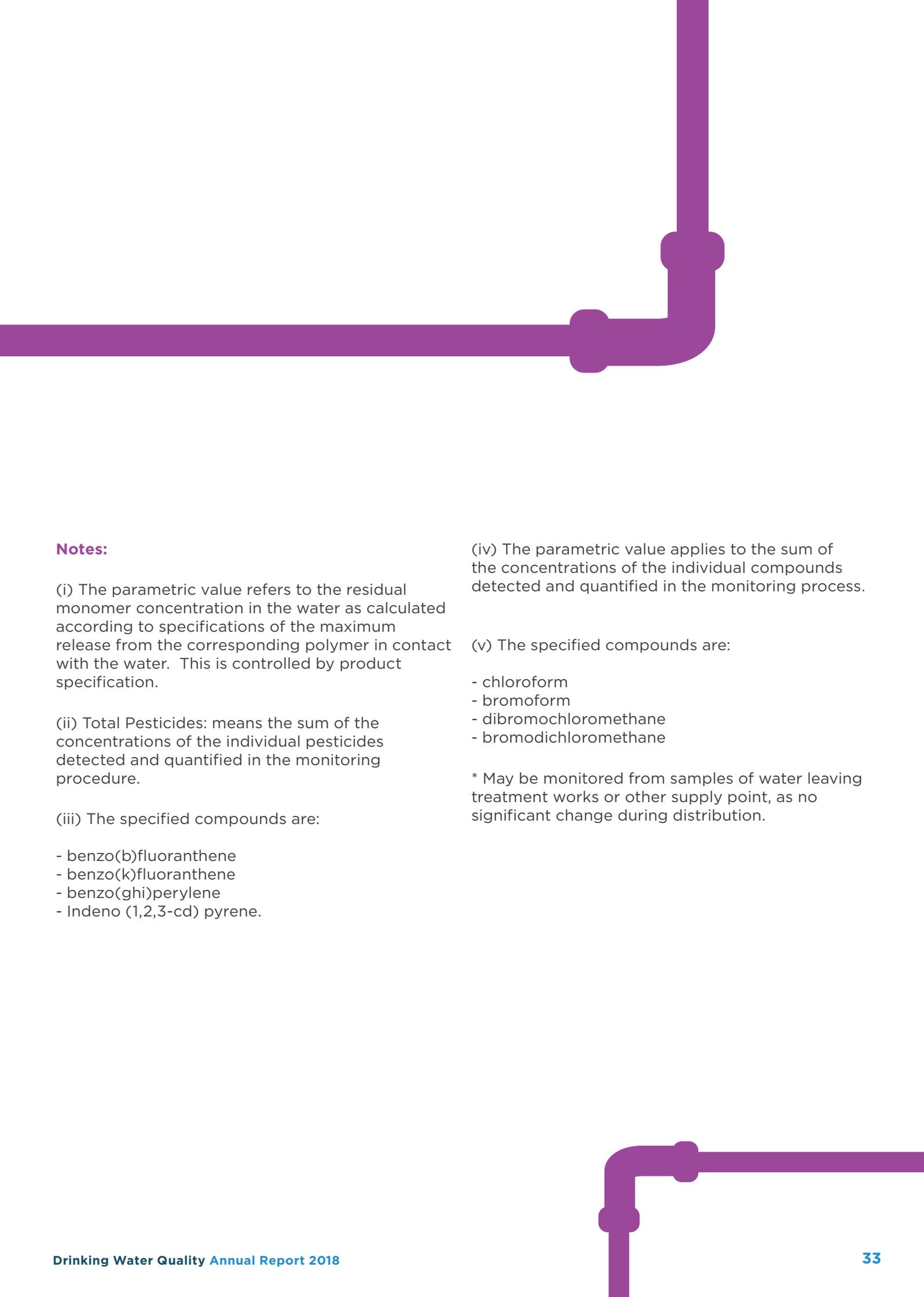
Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Enterococci	0	number/100ml	Consumers' taps
Escherichia coli (E. coli)	0	number/100ml	Consumers' taps
Coliform bacteria	0	number/100ml	Consumers' taps

**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	Consumers' taps
Arsenic	10	µg As/l	Consumers' taps
Benzene	1	µg/l	Consumers' taps
Benzo(a)pyrene	0.01	µg/l	Consumers' taps
Boron	1	mg B/l	Consumers' taps
Bromate	10	µg BrO <sub>3</sub> /l	Consumers' taps
Cadmium	5	µg Cd/l	Consumers' taps
Chromium	50	µg Cr/l	Consumers' taps
Copper	2	mg Cu/l	Consumers' taps
Cyanide	50	µg CN/l	Consumers' taps
1,2 Dichloroethane	3	µg/l	Consumers' taps*
Epichlorohydrin	0.10	Qg/l	(i)
Fluoride	1.5	mg F/l	Consumers' taps
Lead	10	µg Pb/l	Consumers' taps
Mercury	1	µg Hg/l	Consumers' taps
Nickel	20	µg Ni/l	Consumers' taps
Nitrate	50	mg NO <sub>3</sub> /l	Consumers' taps
Nitrite	0.5	mg NO <sub>2</sub> /l	Consumers' taps
Aldrin	0.03	µg/l	Consumers' taps*
Dieldrin	0.03	µg/l	Consumers' taps*
Heptachlor	0.03	µg/l	Consumers' taps*
Heptachlor epoxide	0.03	µg/l	Consumers' taps*
Other pesticides	0.1	µg/l	Consumers' taps*
Total Pesticides (ii)	0.5	µg/l	Consumers' taps*
PAH - Sum of four substances (iii)	0.1	µg/l	Consumers' taps
Selenium	10	µg Se/l	Consumers' taps
Tetrachloroethene/Trichloroethene - Sum (iv)	10	µg/l	Consumers' taps*
Total Trihalomethanes (v)	100	µg/l	Consumers' 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	Consumers' taps
Colour	20	mg/L Pt/Co	Consumers' taps
Iron	200	µg Fe/l	Consumers' taps
Manganese	50	µg Mn/l	Consumers' taps
Odour	0	Dilution number	Consumers' taps
Sodium	200	mg Na/l	Consumers' taps
Taste	0	Dilution number	Consumers' taps
Tetrachloromethane	3	µg/l	Consumers' taps
Turbidity	4	NTU	Consumers' taps

### Schedule 2 Indicator Parameters

Parameters	Specification Concentration or Value (maximum) or State	Units Of Measurement	Point Of Monitoring
Ammonium	0.5	mg Nh <sub>4</sub> /l	Consumers' 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	Consumers' taps,
Conductivity (i)	2500	uS/cm At 20°C	Supply Point*
Hydrogen Ion	9.5	pH Value	Consumers' taps
	6.5 (Minimum)	pH Value	
Sulphate (i)	250	mg So <sub>4</sub> /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	2018 Samples	No > PCV	% > PCV
Enterococci	No./100ml	388	0	0.00%
E. coli	No./100ml	5280	0	0.00%
1,2 Dichloroethane	µg/l	388	0	0.00%
Aluminium	µg Al/l	1892	5	0.26%
Antimony	µg Sb/l	388	0	0.00%
Arsenic	µg As/l	388	0	0.00%
Benzene	µg/l	388	0	0.00%
Benzo(a)pyrene	ng/l	388	0	0.00%
Boron	µg B/l	388	0	0.00%
Bromate	µg/l	388	0	0.00%
Cadmium	µg Cd/l	388	0	0.00%
Chromium	µg Cr/l	388	0	0.00%
Colour	mg/l Pt/Co	1892	0	0.00%
Copper	mg Cu/l	388	0	0.00%
Fluoride	mg F/l	388	0	0.00%
Iron	µg Fe/l	1892	20	1.06%
Lead	µg Pb/l	388	5	1.29%
Manganese	µg Mn/l	1892	1	0.05%
Mercury	µg Hg/l	388	0	0.00%
Nickel	µg Ni/l	388	1	0.26%
Nitrate	mg NO <sub>3</sub> /l	388	0	0.00%
Nitrite	mg NO <sub>2</sub> /l	388	0	0.00%
Odour	dilution No	1892	20	1.06%
Selenium	µg Se/l	388	0	0.00%
Sodium	mg Na/l	388	0	0.00%
Taste	dilution No	1892	11	0.58%
PAH - Sum of four substances	µg/l	388	0	0.00%
Tetrachloroethene/Trichloroethene - Sum	µg/l	388	0	0.00%
Tetrachloromethane	µg/l	388	0	0.00%
Total Trihalomethanes	µg/l	388	2	0.52%
Turbidity	FTU	1892	0	0.00%
Indicator 1 parameters	Units	2018 Samples	No > SPEC	% > SPEC
Coliform bacteria	No./100ml	5280	13	0.25%
Total - Residual disinfectant	mg Cl/l	5280	-	-
Free - Residual disinfectant	mg Cl/l	5280	-	-
Colony Counts 37 (48hrs)	No./1 ml	1892	-	-
Colony Counts 22	No./1 ml	1892	-	-
Total Organic Carbon	mg C/l	388	-	-
Ammonium	mg NH <sub>4</sub> /l	1892	0	0.00%
Chloride	mg Cl/l	388	0	0.00%
Hydrogen Ion	pH value	1892	0	0.00%
Conductivity	uS/cm 20	1892	0	0.00%
Sulphate	mg SO <sub>4</sub> /l	388	0	0.00%

## Water Quality Report for Authorised Supply Points

Schedule 1 parameters	Units	2018 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	8256	2	0.02%

Indicator 1 parameters	Units	2018 Samples	No > SPEC	% > SPEC
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	2018 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	6409	2	0.03%
E. coli	No./100ml	6409	0	0.00%
Nitrite	mg NO <sub>2</sub> /l	236	0	0.00%

Indicator 1 parameters	Units	2018 Samples	No > SPEC	% > SPEC
Turbidity	FTU	6409	4	0.06%
Total - Residual disinfectant	mg Cl/l	6409	-	-
Free - Residual disinfectant	mg Cl/l	6409	-	-
Colony Counts 37 (48hrs)	No./1 ml	6409	-	-
Colony Counts 22	No./1 ml	6409	-	-

## Water Quality Report for Service Reservoirs

Schedule 1 parameters	Units	2018 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	14921	8	0.05%
E. coli	No./100ml	14921	3	0.02%

Indicator 1 parameters	Units	2018 Samples	No > SPEC	% > SPEC
Colony Counts 37 (48hrs)	No./1 ml	14921	-	-
Colony Counts 22	No./1 ml	14921	-	-
Total - Residual disinfectant	mg Cl/l	14921	-	-
Free - Residual disinfectant	mg Cl/l	14921	-	-

# 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 % 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.

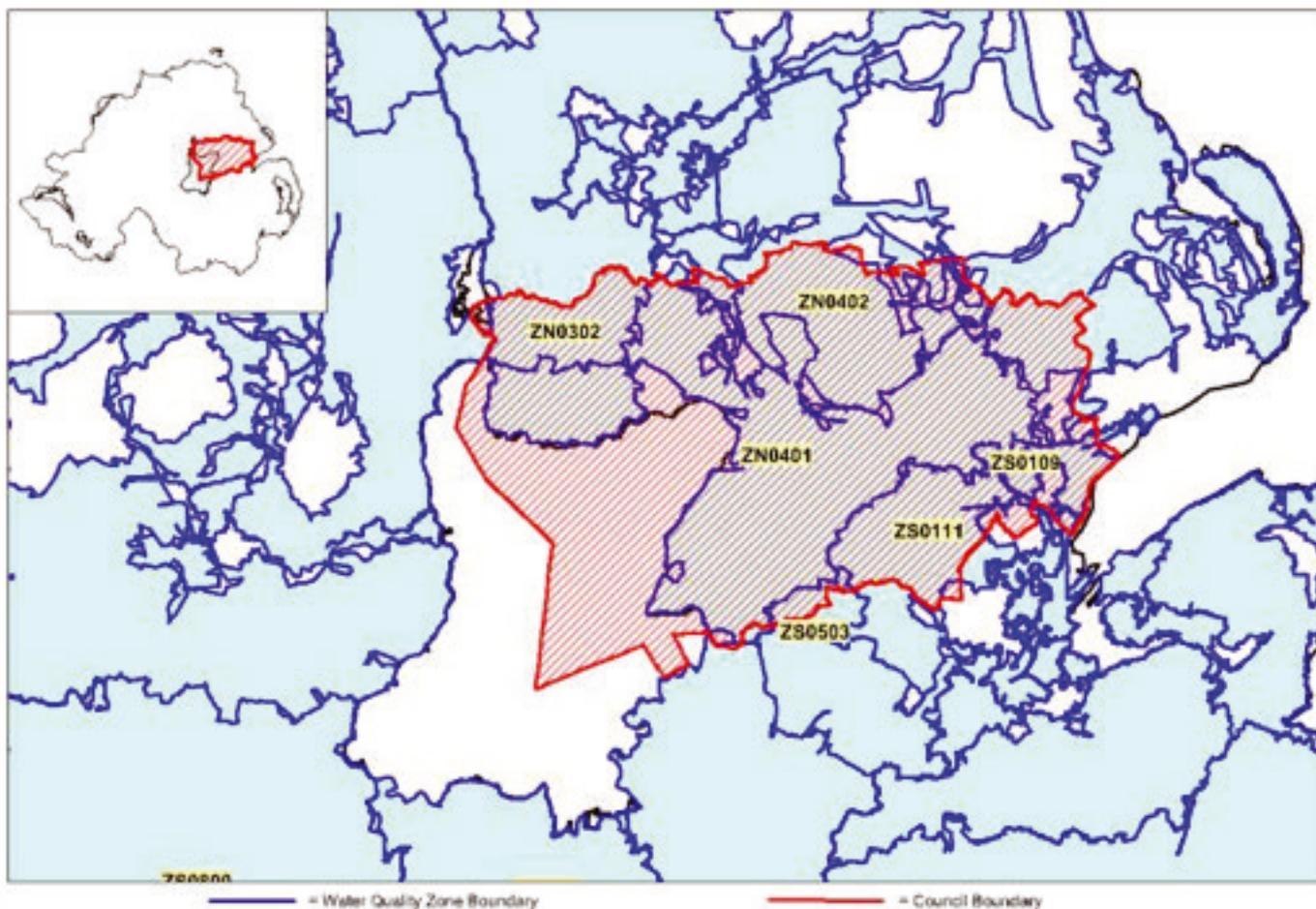
Due to the nature of random sampling, there may be fluctuations in water quality across the water supply zones.

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.



% Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Antrim and Newtownabbey Compliance	99.7%	99.8%	99.8%	99.7%	99.9%	99.9%

**2018 water supply zones wholly or partially within the council area:**

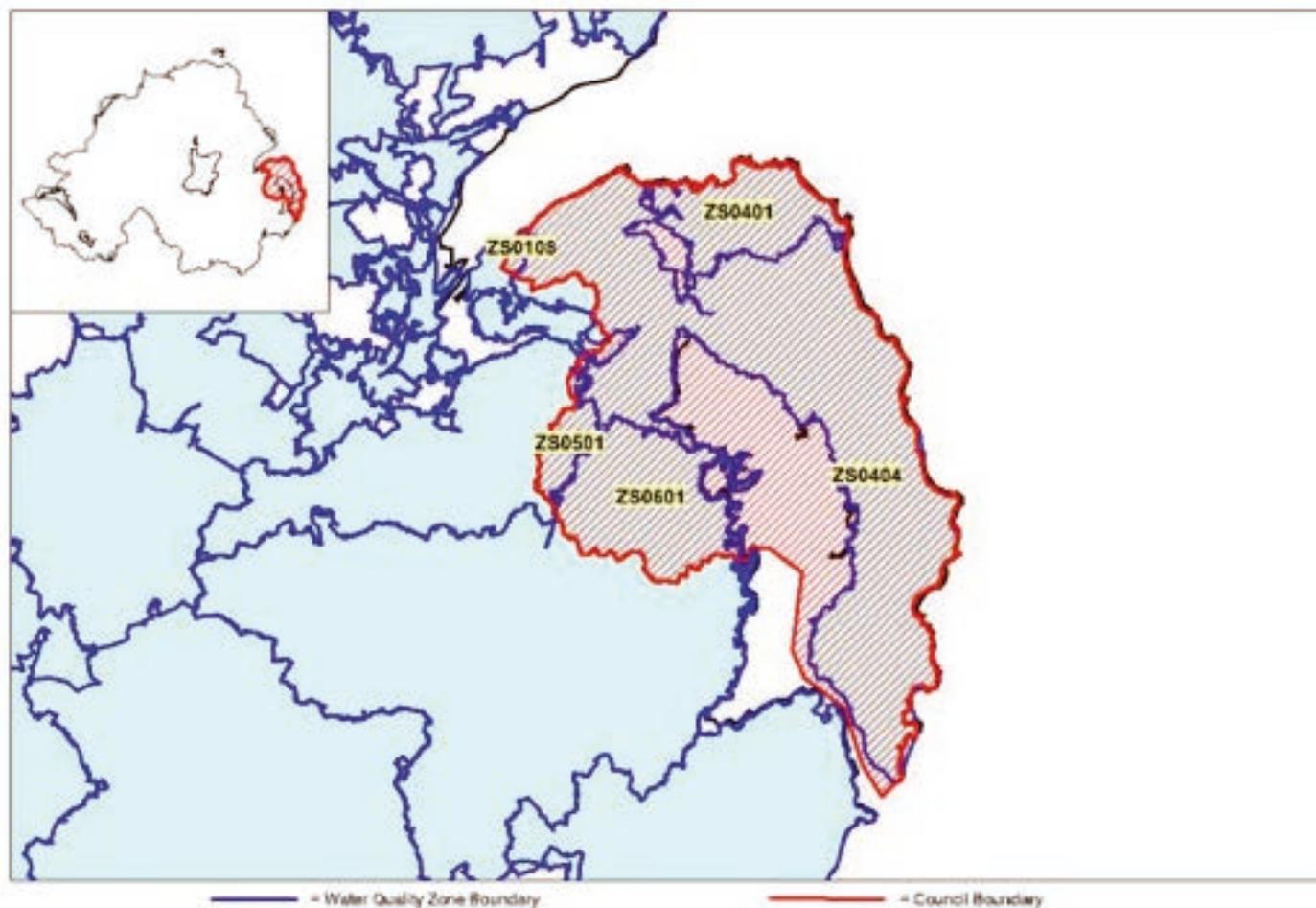
Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZS0109	Dorisland Whiteabbey
ZN0401	Dunore Point Antrim	ZS0111	Dunore Point Hydepark
ZN0402	Killylane Ballynure	ZS0201	Dorisland Carrick
ZS0106	Dunore Belfast North	ZS0503	Forked Bridge Stoneyford



## 2018 water quality Capital Works Programmes affecting the council area:

Ballyclare Road Glengormley Watermains Upgrade  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
Lurgan Road, Glenavy, Watermain Extension  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
Newtownabbey Zone Watermain Improvements Phase 1  
Newtownabbey Zone Watermain Improvements Phase 2  
Newtownabbey Zone Watermain Improvements Phase 3  
Niblock Road, Antrim, Watermain Extension  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP 6: Dungonnell  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Tardree Zone Watermains Improvements  
Templepatrick Road, Ballyclare Foul Sewer  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WIIM Phase 2 Dunore East WP  
WIIM Phase 2 Dunore Point WP

## Ards and North Down Borough Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Ards and North Down Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%

### 2018 water supply zones wholly or partially within the council area:

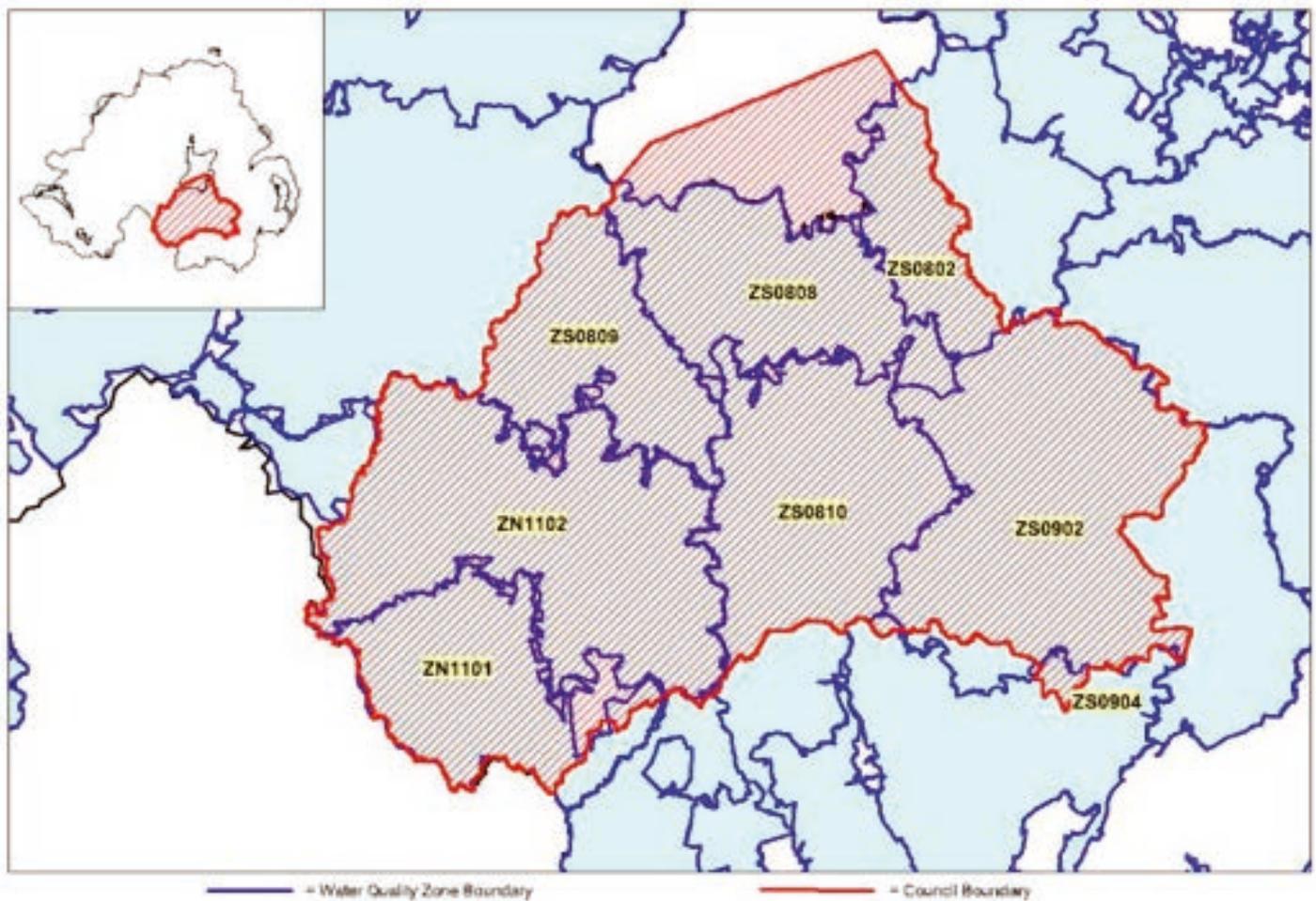
Zone Code	Zone Name	Zone Code	Zone Name
ZS0108	Belfast Purdysburn	ZS0501	Drumaroad Lisburn
ZS0401	Drumaroad Bangor	ZS0601	Drumaroad Ballynahinch
ZS0404	Drumaroad Ards		



## 2018 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Drumarden Road Portaferry  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services

## Armagh City, Banbridge and Craigavon Borough Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Armagh, Banbridge & Craigavon Compliance	99.7%	99.8%	99.8%	99.7%	99.9%	99.9%

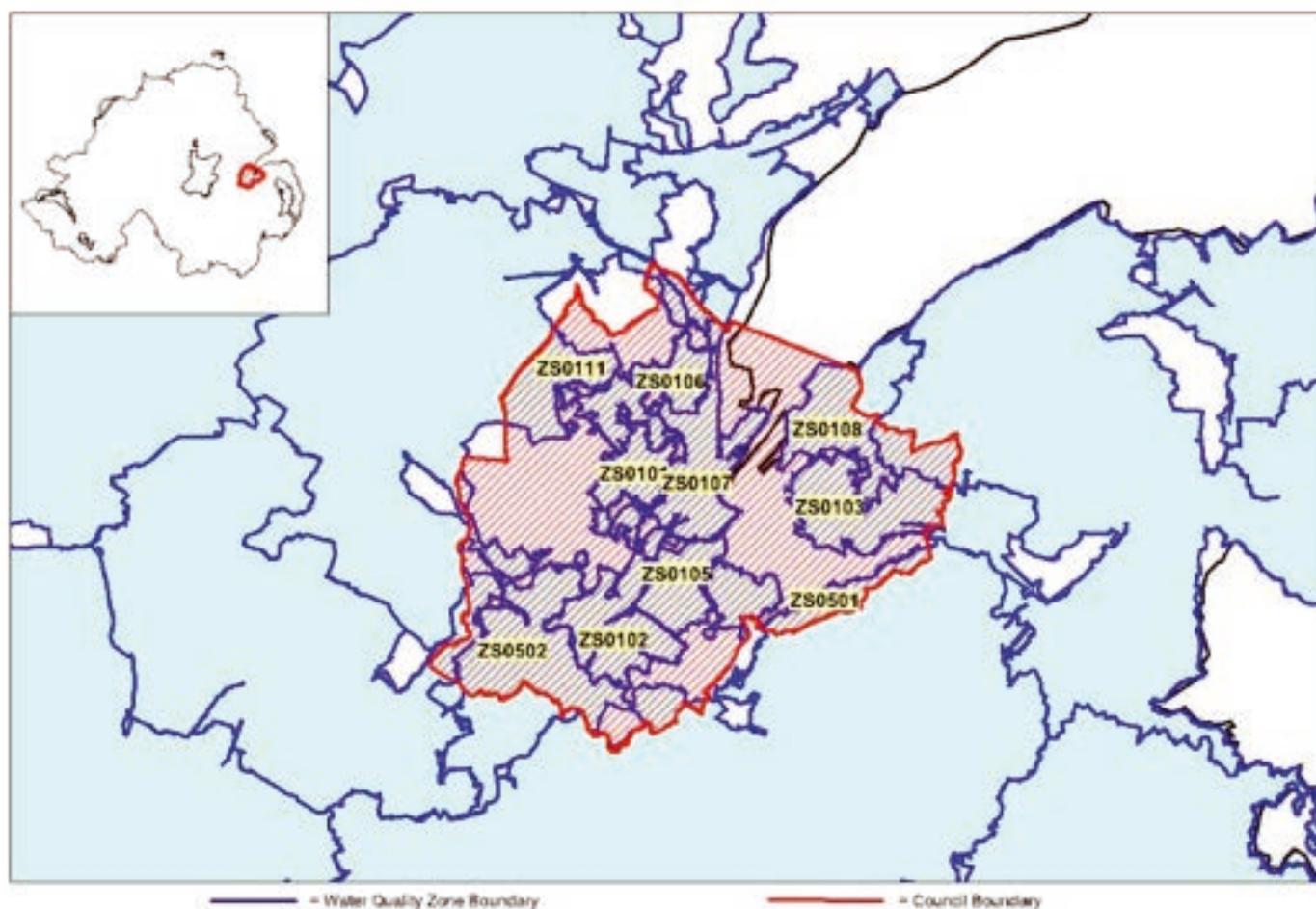
### 2018 water supply zones wholly or partially within the council area:

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



## 2018 water quality Capital Works Programmes affecting the council area:

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  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Cornakinnegar Road, Lurgan Water Main Extension  
Craigavon WIIM 2.1 Work Package  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP1 - Fofanny/North Lisburn South  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Tardree Zone Watermains Improvements  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WIIM 1 Phase 2 Carran Hill Crossmaglen WP  
WIIM Phase 2 Clay Lake Keady WP  
WP134 High Priority Water Mains Ph1



% Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Belfast Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%

2018 water supply zones wholly or partially within the council area:

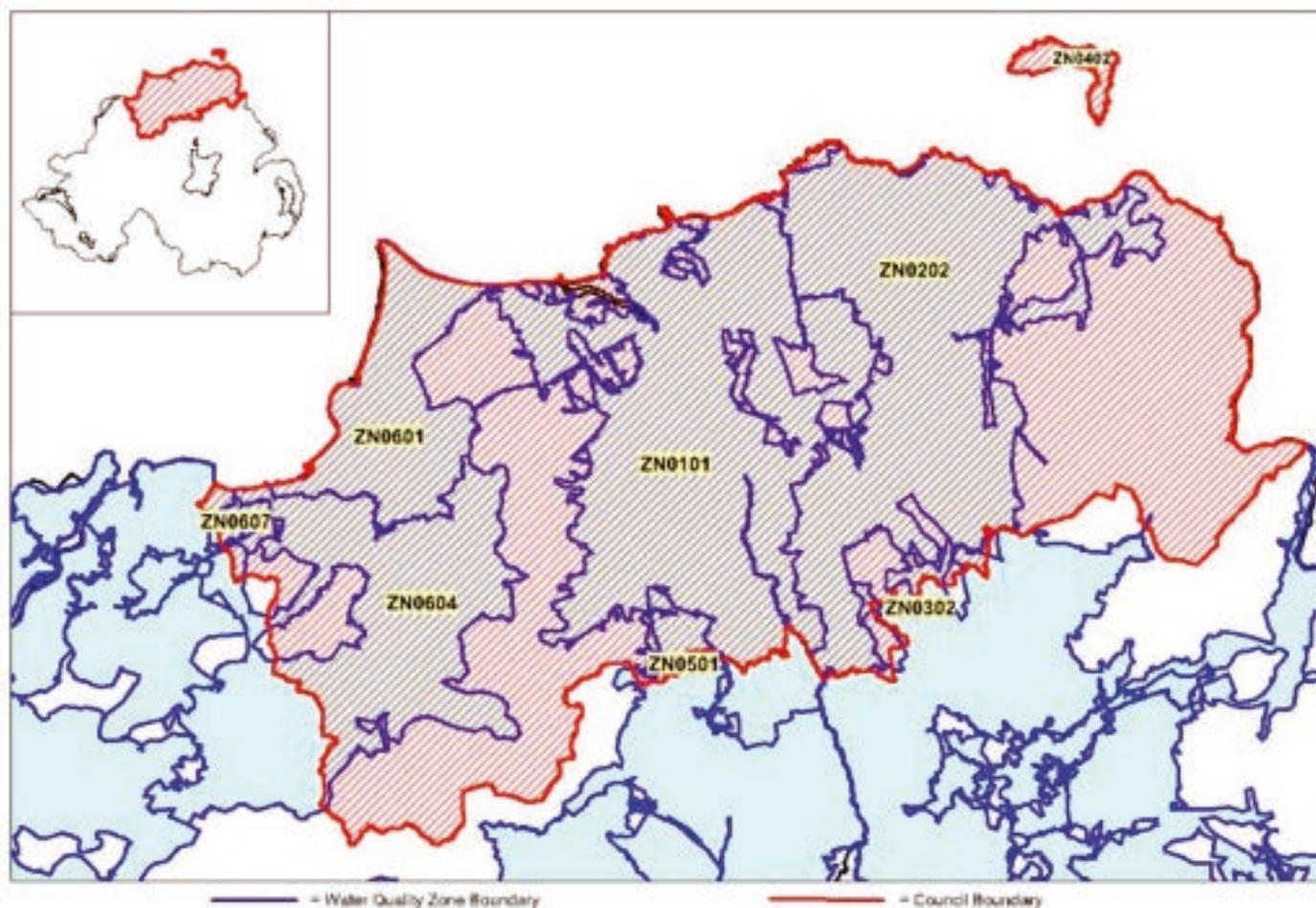
Zone Code	Zone Name	Zone Code	Zone Name
ZS0101	Dunore Ballygomartin North	ZS0108	Belfast Purdysburn
ZS0102	Dunore Ballygomartin South	ZS0109	Dorisland Whiteabbey
ZS0103	Belfast Ballyhanwood	ZS0111	Dunore Point Hydepark
ZS0104	Dunore Breda North	ZS0404	Drumaroad Ards
ZS0105	Dunore Breda South	ZS0501	Drumaroad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



## 2018 water quality Capital Works Programmes affecting the council area:

Ballygomartin North Phase 1 Watermain Improvements  
Ballygomartin South Phase 1 Water Mains Improvements  
Ballysillan Zone Watermain Improvements  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP 2: Forked Bridge Dunmurry  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
Whiterock Phase 1 Watermains Improvements

## Causeway Coast and Glens Borough Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Causeway Coast and Glens Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.8%

### 2018 water supply zones wholly or partially within the council area:

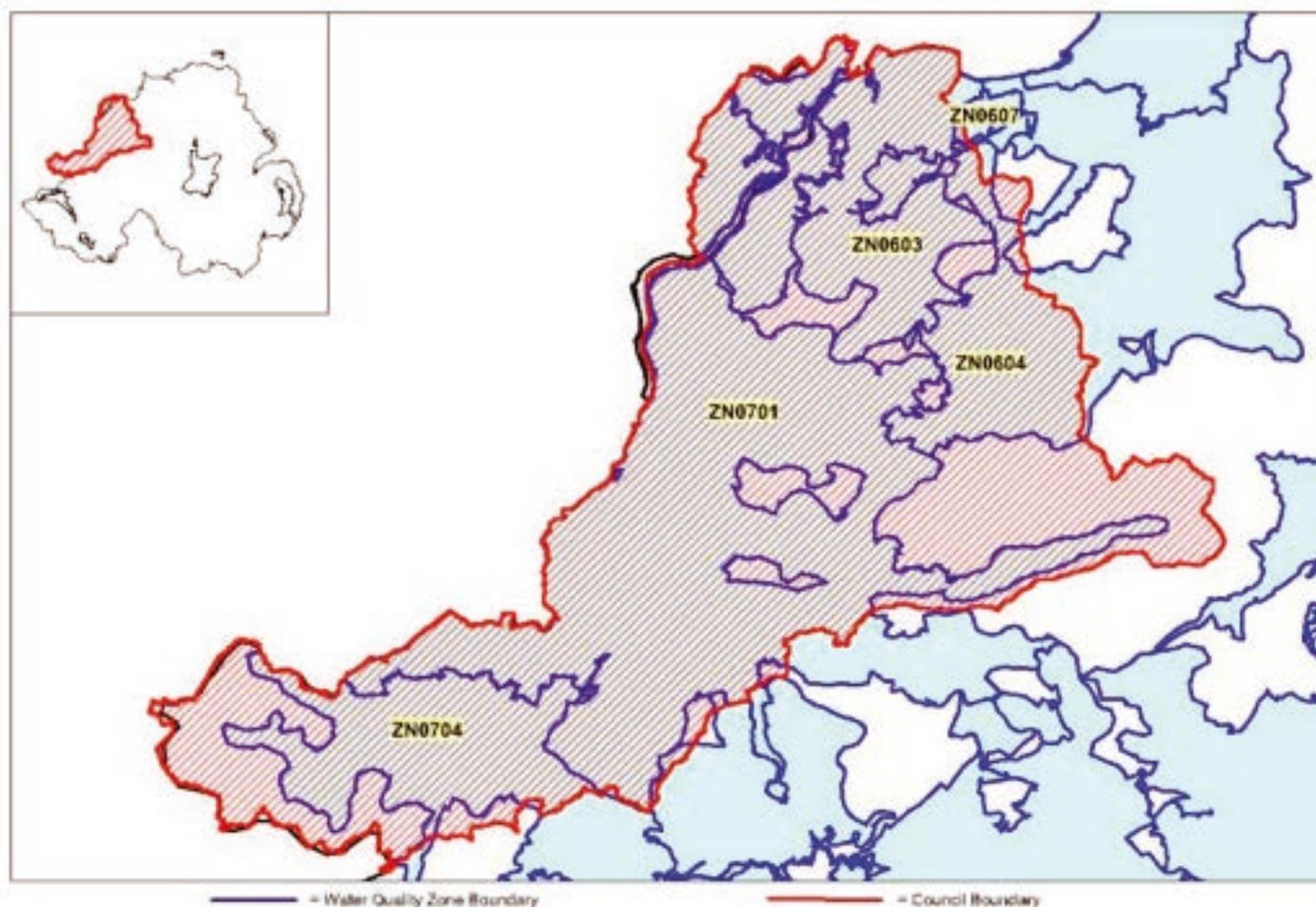
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0601	Ballinrees Limavady
ZN0202	Altnahinch Bushmills	ZN0603	Carmoney Eglinton
ZN0204	Rathlin Island	ZN0604	Caugh Hill Dungiven
ZN0302	Dungonnell Glarryford	ZN0607	Corrody Derry
ZN0501	Moyola Magherafelt		



## 2018 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe  
Antrim North WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Glenlough Pumping Station & Pumping Main  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
NIW Historic Estate Condition Assessments  
Northern WRZ Resilience  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Rathlin Island Borehole Feasibility Study  
Review benefits of UV Disinfection treatment within NIW clean water.  
Royal Portrush - Open 2019 Watermains  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WIIM Phase 2 Altnahinch Bushmills 2 WP  
WIIM Phase 2 Altnahinch Bushmills WP  
WIIM Phase 2 Ballinrees Limavady WP  
WP134 High Priority Water Mains Ph1  
WP134 High Priority Water Mains Ph1  
WTW - Treatability Appraisal of Caugh Hill WTW

## Derry City and Strabane District Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Derry City & Strabane Compliance	99.7%	99.8%	99.8%	99.6%	99.9%	99.8%

### 2018 water supply zones wholly or partially within the council area:

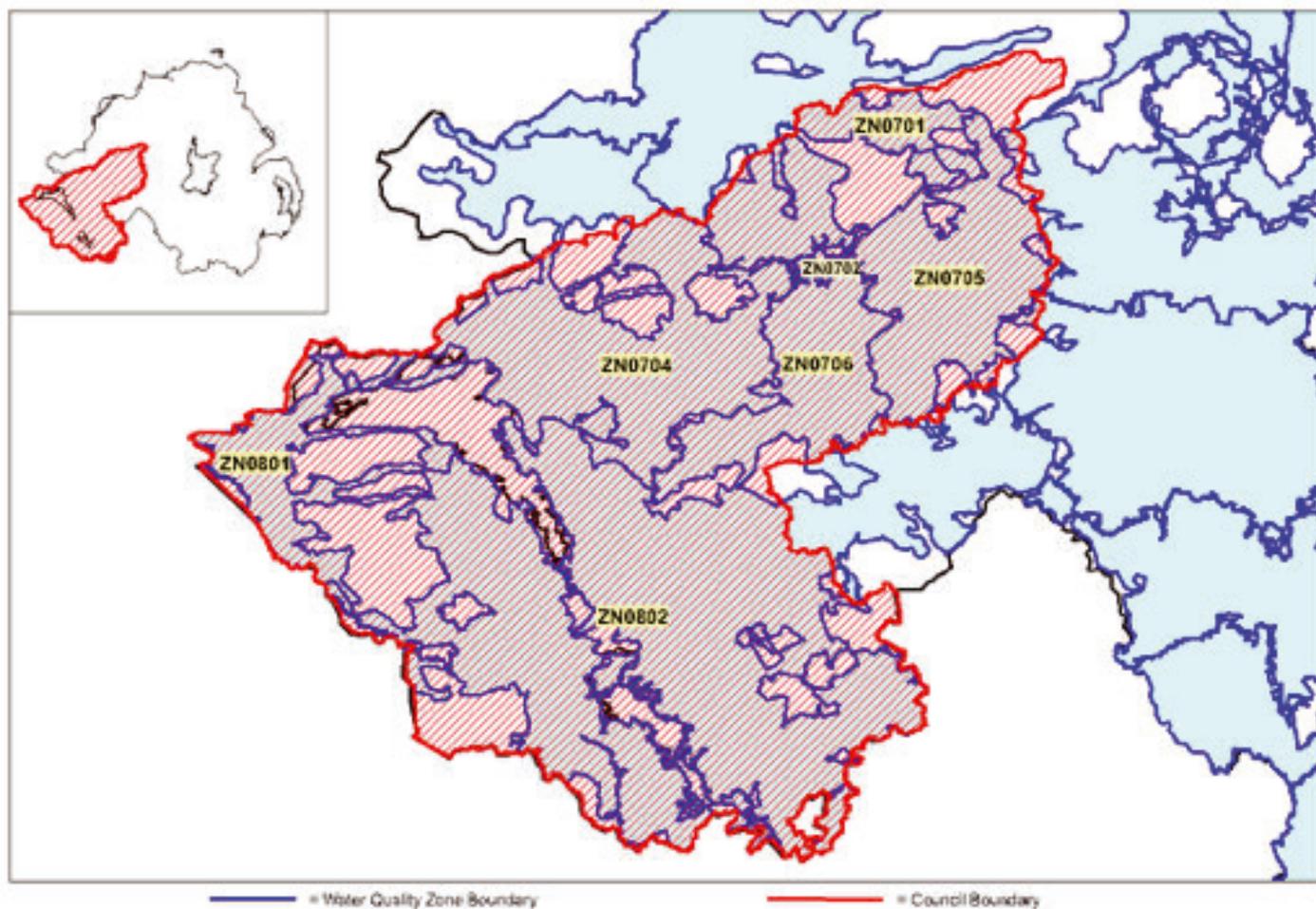
Zone Code	Zone Name	Zone Code	Zone Name
ZN0603	Carmoney Eglinton	ZN0701	Derg Strabane
ZN0604	Caugh Hill Dungiven	ZN0704	Lough Bradan Drumquin
ZN0607	Corrody Derry		



## 2018 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Enhanced Site Security  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
NIW Historic Estate Condition Assessments  
Northern WRZ Resilience  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WP134 High Priority Water Mains Ph1

## Fermanagh and Omagh District Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Fermanagh & Omagh Compliance	99.7%	99.8%	99.9%	99.8%	99.9%	99.8%

### 2018 water supply zones wholly or partially within the council area:

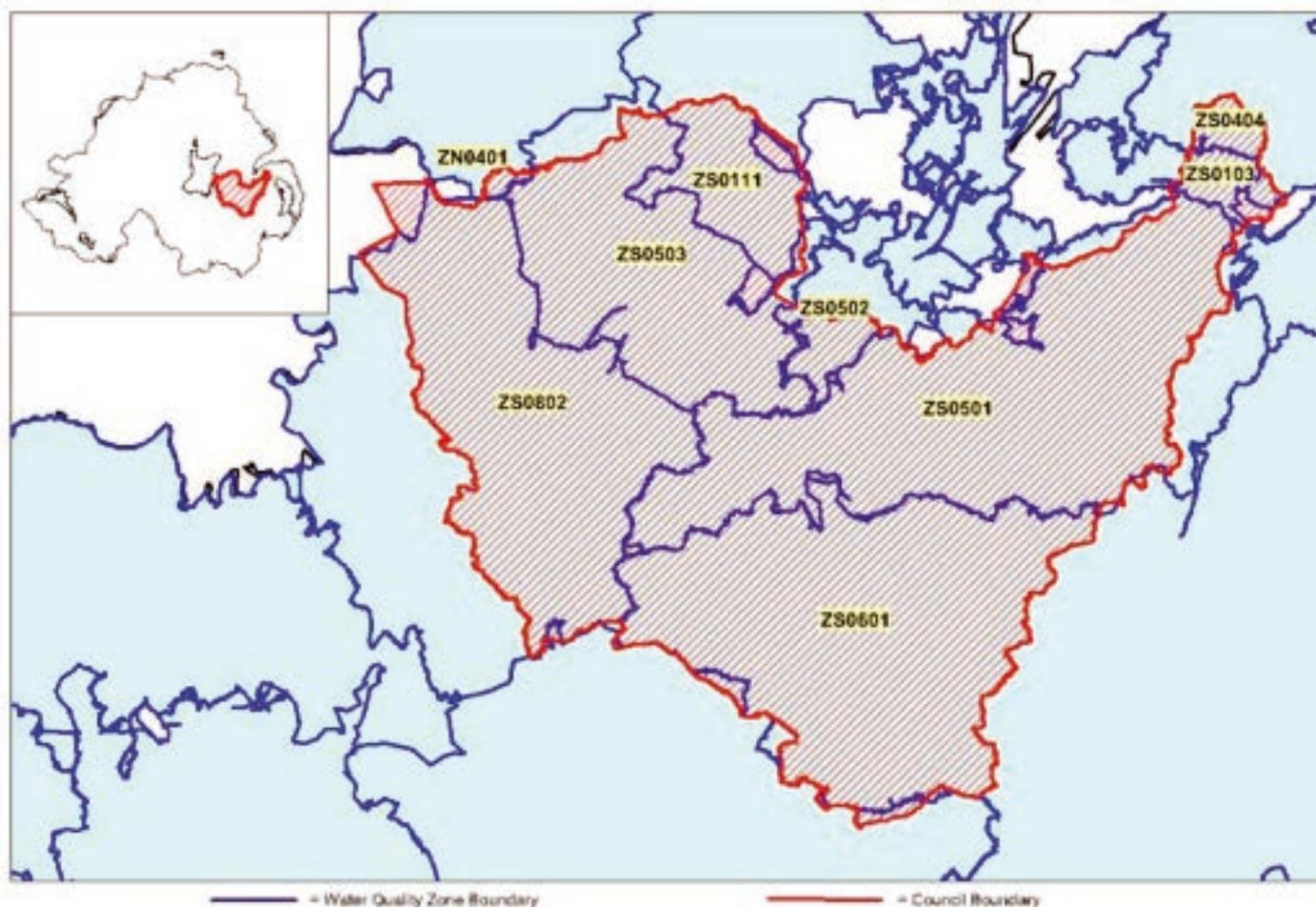
Zone Code	Zone Name	Zone Code	Zone Name
ZN0701	Derg Strabane	ZN0706	Lough Macrory Killyclogher
ZN0702	Glenhordial Omagh	ZN0801	Belleek Garrison
ZN0704	Lough Bradan Drumquin	ZN0802	Killyhevlin Enniskillen
ZN0705	Lough Macrory Beragh		



## 2018 water quality Capital Works Programmes affecting the council area:

Alleyhill to Doochrock Watermain  
Carmoney WTW Abstraction Point Review  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Derg WTW - Upgrade of Filters and Chemical Dosing  
Derg WTW MCPA PEO Undertakings  
Doochrock to Drumkeeran Watermain Upgrades  
Fermanagh North WIIM 2.1 Work Package  
Gortin Road, Omagh - Road Widening  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
Killyhevlin Clear Water Tank  
Killyhevlin Outlet Mains Replacement  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
Rosslea Water Supply  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Strule Intake for Derg WTW  
Tyrone South WIIM 2.1 Work Package  
Upgrade of Killyhevlin WTW  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
Western WRZ Resilience  
WIIM Phase 2 Lough Braden Drumquin WP

## Lisburn and Castlereagh City Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Lisburn & Castlereagh Compliance	99.7%	99.9%	99.8%	99.9%	99.9%	99.9%

### 2018 water supply zones wholly or partially within the council area:

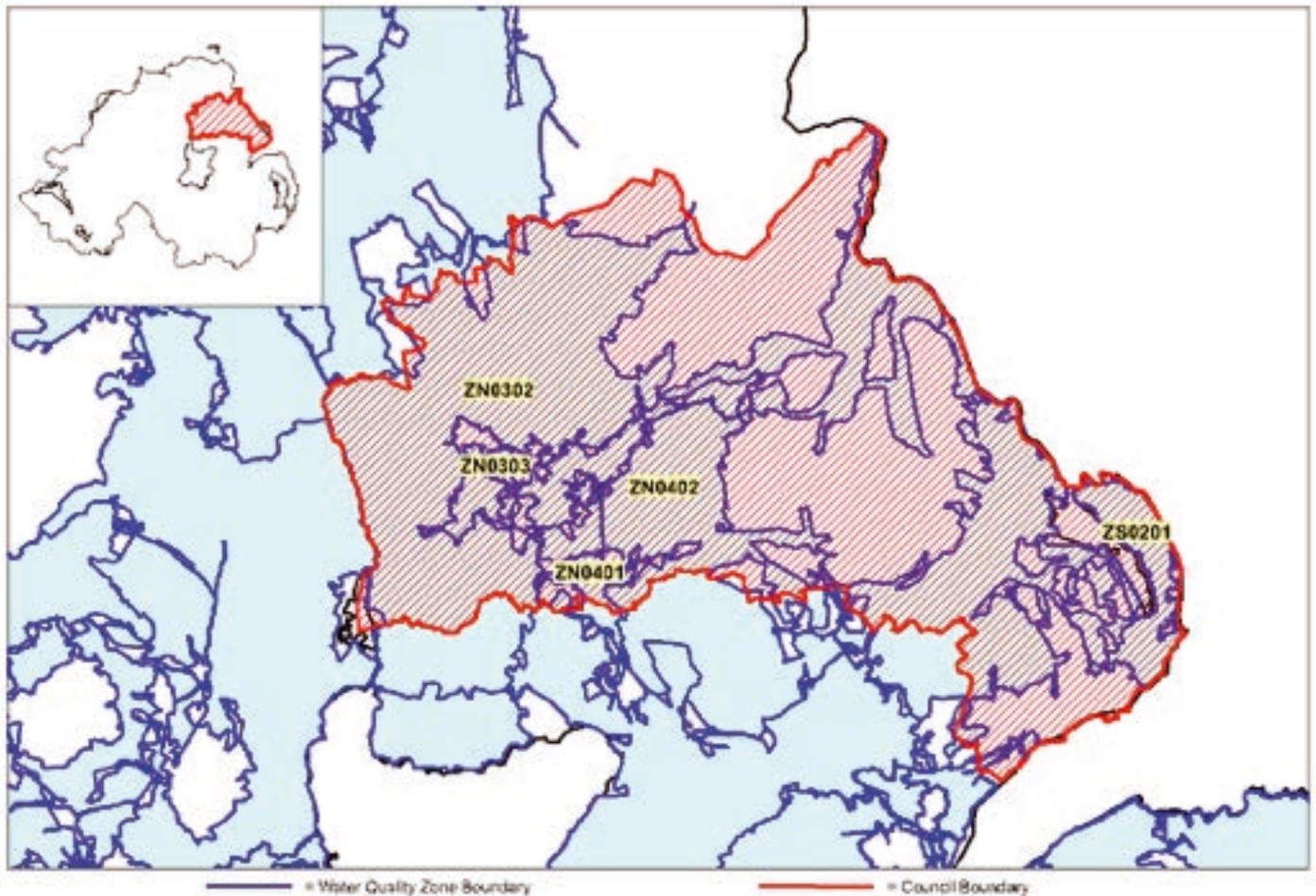
Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0502	Forked Bridge Dunmurry
ZS0103	Belfast Ballyhanwood	ZS0503	Forked Bridge Stoneyford
ZS0108	Belfast Purdysburn	ZS0601	Drumaroad Ballynahinch
ZS0111	Dunore Point HydePark	ZS0802	Castor Bay Lurgan
ZS0404	Drumaroad Ards	ZS0902	Fofanny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



## 2018 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP 2: Forked Bridge Dunmurry  
PC15 Watermains Rehabilitation WP1 - Fofanny/North Lisburn South  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Strategic Link - Castor Bay to Belfast  
Water Resource and Supply Resilience Plan  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services

## Mid and East Antrim Borough Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Mid & East Antrim Compliance	99.7%	99.8%	99.8%	99.8%	99.9%	99.9%

### 2018 water supply zones wholly or partially within the council area:

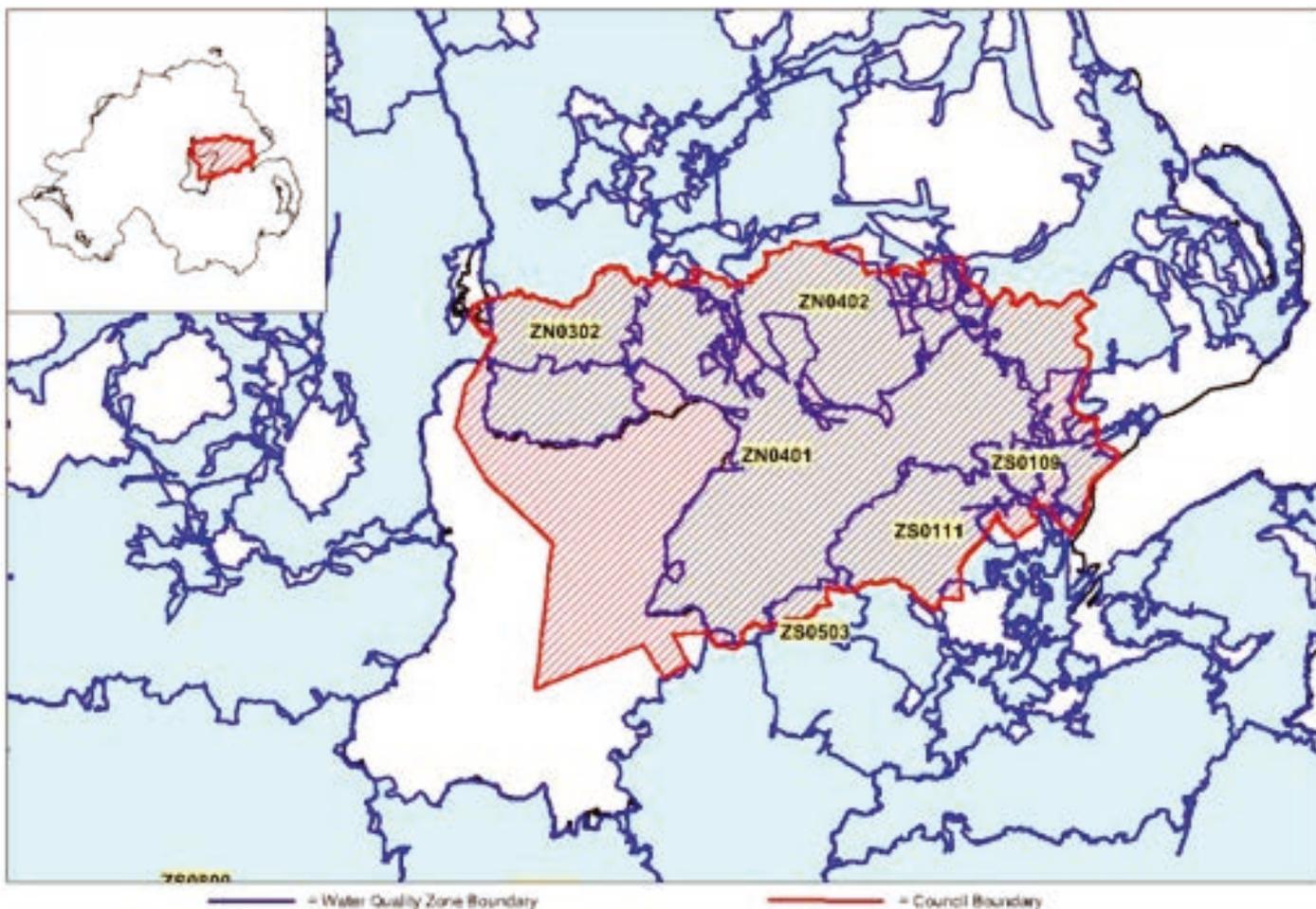
Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZN0402	Killylane Ballynure
ZN0303	Dunore Point Ballymena	ZS0109	Dorisland Whiteabbey
ZN0401	Dunore Point Antrim	ZS0201	Dorisland Carrick



## 2018 water quality Capital Works Programmes affecting the council area:

Antrim North WIIM 2.1 Work Package  
Carrickfergus Phase 3 Watermains Improvements  
Carrickfergus Road, Larne, Water Quality Schemes  
Carrickfergus Zone Watermain Improvements Phase 1  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Enhanced Site Security  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP 6: Dungonnell  
PC15 Watermains Rehabilitation WP 7: Carrickfergus  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
Southern Zone Resilience  
Tardree Zone Watermains Improvements  
Tully Rehab Work Packages.  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services

## Mid-Ulster District Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Mid-Ulster Compliance	99.7%	99.7%	99.8%	99.8%	99.9%	99.9%

### 2018 water supply zones wholly or partially within the council area:

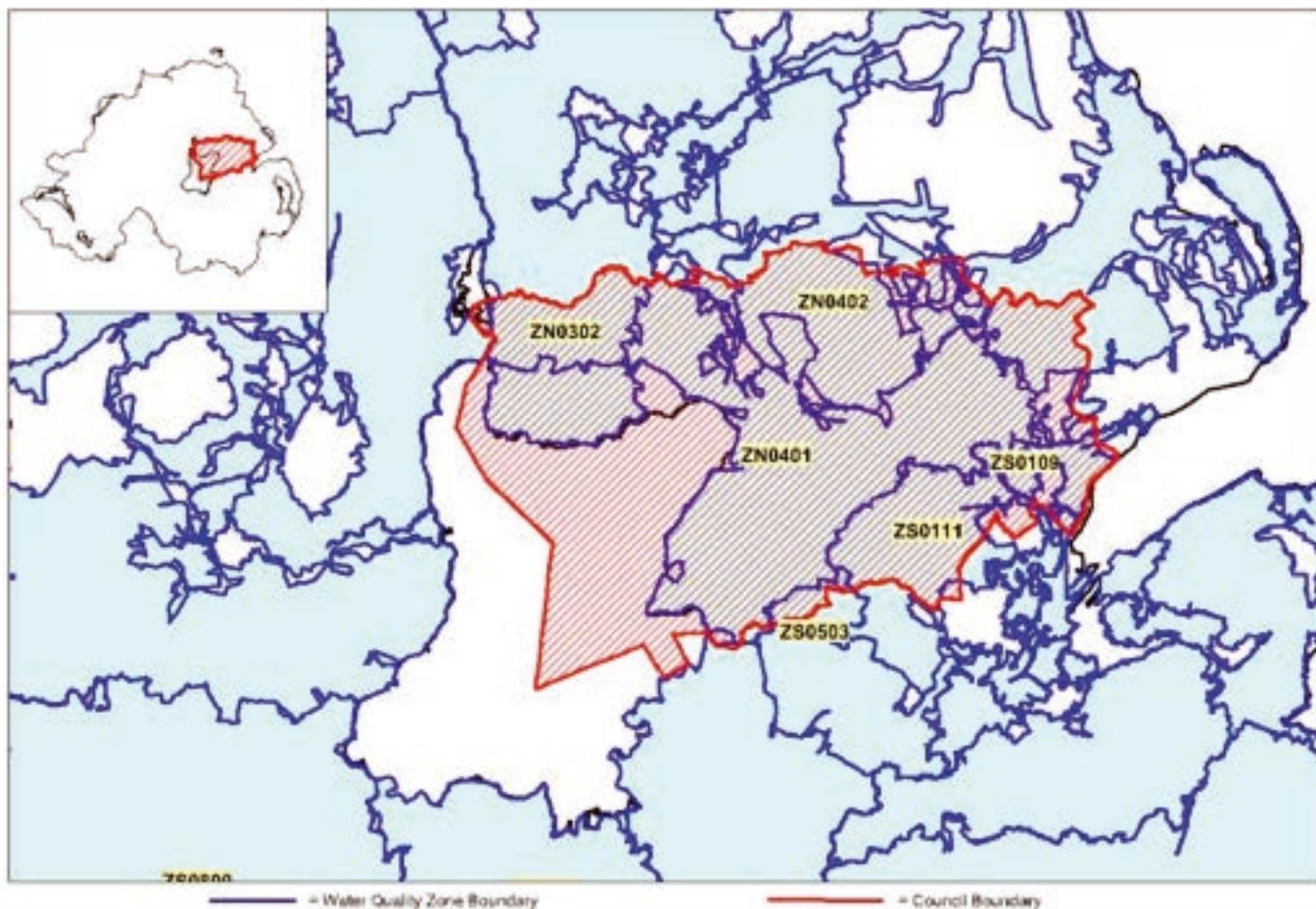
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0706	Lough Macrory Killyclogher
ZN0501	Moyola Magherafelt	ZN0802	Killyhevlín Enniskillen
ZN0502	Lough Fea Cookstown	ZN1102	Seagahan Armagh
ZN0504	Moyola Unagh Morneal	ZS0809	Castor Bay Dungannon
ZN0705	Lough Macrory Beragh		



## 2018 water quality Capital Works Programmes affecting the council area:

A6 Castledawson to Randalstown  
Antrim North WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Castor Bay to Dungannon Strategic Trunk Mains  
Central Zone Resilience  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Cookstown Phase 3 Watermain Improvements  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
Lough Fea CWB Capacity Increase  
NIW Historic Estate Condition Assessments  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
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  
Water Treatment Works Treatability Study  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WIIM Phase 2 Lough Fea WP  
WIIM Phase 2 Moyola Magherafelt WP

## Newry, Mourne and Down District Council



### % Compliance at Customer Tap (including Supply Points)

	Target	2014	2015	2016	2017	2018
Overall Northern Ireland Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%
Newry, Mourne & Down Compliance	99.7%	99.8%	99.7%	99.8%	99.9%	99.9%

### 2018 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	Camlough Newry West		



## 2018 water quality Capital Works Programmes affecting the council area:

Banbridge South Armagh WIIM 2.1 Work Package  
Castor Bay Outage Feasibility Studies  
Compiling Prioritised Lead Comms Pipe Workpackages Phase 2  
Enhanced Site Security  
Fofanny Drought Mitigation - Lough Shannagh to Fofanny Temporary Pipeline  
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)  
Killeavy Castle Water Distribution Improvements  
MIMP East (Major Incident Mitigation Project East Region) Freeze Thaw Improvements  
NIW Historic Estate Condition Assessments  
Northern Ireland Drought Mitigation  
PC15 Abstraction Monitoring  
PC15 Lead Communication Pipe Replacement Programme  
PC15 Service Reservoir Sample Taps  
PC15 Watermains Rehabilitation WP1 - Fofanny/North Lisburn South  
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites  
Professional Services Framework Watermains Network PC15  
Review benefits of UV Disinfection treatment within NIW clean water.  
SEMD Surveys PC10 Water  
Service Reservoir Security Phase 1  
South Down Zone Watermains Improvements  
Southern Zone Resilience  
Water Resource and Supply Resilience Plan  
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme  
Water Treatment Works Treatability Study  
Watermain Improvements, Newry, Phase 3  
Watermains Rehabilitation, New & Replacement Incorporating First Time Services  
WIIM 1 Phase 2 Carran Hill Crossmaglen WP  
WP101 Newry Phase2  
WP134 High Priority Water Mains Ph1

# Appendix 4

## Water Quality Events

### Major Drinking Water Quality Events in 2018

Date of Major Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Major Event	Associated Council Area(s)
12/06/18 - 02/07/18	Castor Bay WTW (415,293 population)	Algal bloom in Lough Neagh led to a major drinking water quality event with widespread taste and odour complaints. The treatment available at the time of this event was inadequate.	Armagh Banbridge Craigavon District; Belfast City; Lisburn & Castlereagh City; Mid-Ulster District; and Newry Mourne & Down District

### Serious Drinking Water Quality Events in 2018

Date of Major Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Major Event	Associated Council Area(s)
15/02/18 - 22/02/18	Drumaroad WTW (408,595 population)	Algal bloom in Lough Neagh led to a major drinking water quality event with widespread taste and odour complaints. The treatment available at the time of this event was inadequate.	Armagh Banbridge Craigavon District; Belfast City; Lisburn & Castlereagh City; Mid-Ulster District; and Newry Mourne & Down District
28/06/18 - 19/07/19	Northern Ireland (1.8m population)	A prolonged spell of hot weather resulted in significant increased demand on the water network throughout N. Ireland. Tankering was required to keep people on supply, and a hosepipe ban was in place for 3 weeks.	All council areas
29/07/18 - 07/08/18	Carn Road & Green Road, Meigh (43 properties)	Consumers experienced a significant hydrocarbon odour after the mains water was contaminated with oil.	Newry Mourne & Down District
13/12/18 - 16/12/18	Finaghy Area (16,603 population)	Consumer complaints of discoloured water were received following operational work by NI Water. There were also contraventions of the iron and manganese standards.	Belfast City

## Significant Drinking Water Quality Events in 2018

Date of Significant Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Major Event	Associated Council Area(s)
03/01/18 - 09/01/18	Lough Bradan WTW (48,158 population)	Contraventions of the aluminium and iron parameters occurred in the works final water following treatment difficulties. This event was related to the works not having fully returned to normal operation following the previous event in March and/or the CWT having been at a very low level.	Fermanagh & Omagh District
05/01/18	Killylane WTW (51,120 population)	Contraventions of the aluminium, iron, and turbidity standards occurred in the works final water. The most probable cause for this event was the use of a chemical past its recommended shelf life.	Mid & East Antrim Borough
16/01/18 - 21/01/18	Drumaroad WTW (556,706 population)	Contraventions of the aluminium parameter occurred in the works final water following treatment difficulties. The treatment difficulties were caused by a telecommunications failure. A CPEO has been issued by the Inspectorate.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough
19/01/18 - 26/01/18	Bleary Road, Portadown (2 properties)	Coliform bacteria contraventions led to "Boil Water before Use until Further Notice" advice being issued to two properties. NI Water's investigation was unable to determine a cause for the contraventions, and resamples were satisfactory.	Armagh City, Banbridge & Craigavon Borough
02/02/18 - Present	Friary Road, Armoy (6 properties)	Consumer complaints of discoloured water were received by NI Water. Samples taken in response to this event contravened the aluminium, iron and manganese standards and were above the Health Notification Values (HNVs).	Causeway Coast & Glens Borough
09/02/18 - 14/02/18	Killyglen SR (9,500 properties)	A large number of consumers complained about discoloured water following a burst main at the inlet to the reservoir. A contravention of the turbidity standard (above the HNV) was reported.	Mid & East Antrim Borough
28/02/18 - 09/03/18	Northern Ireland (1.8m population)	Severe weather event. Interruptions to water supply occurred over many areas of Northern Ireland primarily due to frozen and burst pipes, necessitating the use of alternative water supplies.	Most council areas

02/03/18	Drumaroad WTW (408,595 population)	Elevated aluminium levels occurred in the works final water following treatment difficulties. These were caused by a generator failure. A CPEO has been issued by the Inspectorate.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough
04/03/18	Lough Fea WTW (43,872 population)	Contraventions of the aluminium, iron and turbidity parameters occurred in the works final water following treatment difficulties. This event was related to the "Severe weather event" reported previously.	Mid Ulster District
06/03/18 - 11/03/18	Drumaroad WTW (457,036 population)	A Cryptosporidium oocyst was detected in the works final water and a further one detected in Sampsons Stone SR. A warning letter was issued by the Inspectorate in relation to this matter.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough
09/04/18	Lough Fea WTW (43,872 population)	Contraventions of the aluminium and iron parameters occurred in the works final water following treatment difficulties. This event was related to the works not having fully returned to normal operation following the previous event in March and/or the CWT having been at a very low level.	Mid Ulster District
23/04/18 - Present	Rathlin Island (2 properties)	The elevated level of bromoform (produced by the disinfection of the raw water which has a high bromide level) in the works final water led to trihalomethane (THM) contraventions and WHO Index values for THMs > 1. An enforcement notice was issued by the Inspectorate in relation to this matter.	Causeway Coast & Glens Borough
02/05/18 - 04/05/18	Edenaveys SR (34,941 properties)	Chlorine was overdosed due to a component failure in the chlorinator. Elevated chlorine levels were detected in the related supply area. There is now a critical alarm in place to prevent a recurrence.	Armagh City, Banbridge & Craigavon Borough and Newry Mourne & Down District
15/05/18 - Sept. 18	Ballinrees WTW (111,856 population)	Taste & Odour complaints in the area supplied by Ballinrees WTW.	Causeway Coast & Glens Borough and Derry City & Strabane
23/05/18 - Present	Derg WTW (38,989 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment. An enforcement notice was issued by the Inspectorate in relation to this matter.	Derry City & Strabane and Fermanagh & Omagh District
28/06/18 - 06/07/18	Killyhevlin Enniskillen (2,502 properties)	Consumer complaints of discoloured water were received in the Glenchuil SR supply area. Samples taken in response to this event contravened the aluminium, iron, manganese and turbidity standards. This event was related to the "high network demand event" reported previously.	Fermanagh & Omagh District
27/07/18 - 31/07/18	Unagh SR (2,432 properties)	E.coli were detected in the SR final water and in the related supply area. The chlorine levels were lower than normal at the time of these contraventions and all subsequent samples have been satisfactory.	Mid Ulster District
07/08/18 - 20/08/18	Glenelly Road, Plumbridge (6 properties)	E.coli and coliform bacteria contraventions led to "Boil Water before Use until Further Notice" advice being issued to three properties. NI Water's investigation was unable to specify a cause for the contraventions. Further resamples were satisfactory.	Derry City & Strabane

28/08/18	Drumaroad WTW (382,217 population)	Elevated aluminium levels occurred in the works final water following treatment difficulties caused by instrument failure. A CPEO has been issued by the Inspectorate.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough
04/09/18 - 18/09/18	Dungonnell WTW (Population 26,601)	A contravention of the trihalomethanes (THMs) parameter occurred in the works supply area after a period of sub-optimal treatment. Resamples were satisfactory.	Mid & East Antrim Borough
26/09/18 - 27/09/18	Carmony WTW (51,470 population)	A low chlorine event occurred following the leakage of some filter-cleaning reagent into the works final water.	Derry City & Strabane
15/10/18 - 19/10/18	Caugh Hill WTW (75,020 population)	Contraventions of the aluminium, iron and turbidity parameters occurred in the works final water and iron contraventions occurred in the related supply area following treatment difficulties.	Causeway Coast & Glens Borough and Derry City & Strabane
09/10/18 - Present	Rathlin Island (4 props)	The elevated level of bromoform (produced by the disinfection of the raw water which has a high bromide level) in the works final water led to trihalomethane (THM) contraventions and WHO Index values for THMs > 1. An enforcement notice was issued by the Inspectorate in relation to this matter.	Causeway Coast & Glens Borough
19/10/18 - 21/10/18	Altnahinch WTW (31,903 population)	Contraventions of the aluminium, hydrogen ion (pH) and turbidity parameters occurred in the works final water.	Causeway Coast & Glens Borough
23/10/18 - 26/10/18	Dungonnell WTW (Population 26,601)	Contraventions of the aluminium parameter occurred in the works final water following treatment difficulties.	Mid & East Antrim Borough
02/11/18 - 09/11/18	Drumaroad WTW (408,919 population)	Contraventions of the aluminium parameter occurred in the works final water and the related supply area following treatment difficulties. The treatment difficulties were caused by chemical dosing problems. A CPEO has been issued by the Inspectorate.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough
30/12/18 - 02/01/19	Drumaroad WTW (428,690 population)	A contraventions of the aluminium parameter occurred in the works final water. NI Water's investigation was unable to specify a cause for the contravention. A CPEO has been issued by the Inspectorate.	Belfast City; Lisburn & Castlereagh City; Newry Mourne & Down District; and North Down & Ards Borough

After investigations during the reporting period, there were also 8 events categorised by DWI as “Minor”, and 12 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 four customer facing water regulation inspectors across Northern Ireland, under the direct management of a Senior Engineer 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 taking into account national best practice as agreed between the UK water suppliers and the industry's representative organisation, Water Regulations Advisory 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, internal scientific services, network water teams and billing 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 2018 Annual Information Return (AIR) figures:

Description	Number
**Total number of connected properties	871,851
*Total number of new connections from 1st Jan 2018 - 31st Dec 2018	7,155
Up to and including 32mm dia.	7,111
Over 32mm dia.	44

\*\*Financial Year, \* Calendar Year

## Compliance Data

### Staff and Training

Number of staff involved in enforcement.

Description	Number
Spending more than 75% of time	5
Spending between 50% and 75% of time	1
Spending between 0% and 5% of time	1

All Water Fittings Regulation team members including line management 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)
- Criminal investigation procedures course

### Promotion of the Regulations

As a fully subscribing member of WRAS, NI Water has representation on the WRAS 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 can request advice from GB water suppliers and WRAS on the interpretation of the Regulations where unusual installations are discovered or a dispute arises with an installer/manufacturer regarding interpretation.

A Water Regulation page is available on the company web site ([www.niwater.com/water-fittings-regulations/](http://www.niwater.com/water-fittings-regulations/)) for designers, developers, installers as well as 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 application forms received between 1st Jan 2018 - 31st Dec 2018	10,252
<32mm	10,166
>32mm	86
*Total number of notifications relating to aspects of water fittings not relating to new connections between 1st Jan 2018 - 31st Dec 2018	81

\*Calendar year

\*\* Financial 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 03332079030 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 Approved Plumber in your area simply enter your postcode or town on their web site [www.needaplumber.org](http://www.needaplumber.org) 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)	2012	2013	2014	2015	2016	2017	2018
No of Approved Plumber members in Northern Ireland.	74	71	72	72	69	55	52
No. of Northern Ireland members who are members of WaterSafe and the Plumbing Industry Licensing Scheme	-	35	36	38	50	39	41
No of members in Northern Ireland who are Approved Plumbers but not registered with WaterSafe	9	9	9	14	15	10	11

## Inspections (Other than those arising from Notification)

Description	Number 2017	Number 2018
*Total number of Domestic and Non Domestic Inspections	1004	1115
*Total number of active Contraventions recorded in year	1128	1068
*Total number of closed Contraventions in year	1178	989
*Total Number of outstanding contraventions in year	50	89

\*2018 Calendar year

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;
- Non-compliant WC's and AUK1 dimensions. WC inlet valves
- 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);
- Rain Water Harvesting systems not being installed in compliance with British Standards and the Regulations; or
- Shallow service pipes providing insufficient protection from ground frost penetration.
- Failure to provide pipe identification labelling ISO14726.

### 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.

### Disputes

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

The NI Water solicitor paid a pre caution visit to three customers.

### Relaxations

None applied for.

## General Information

### Assessed number of high-risk premises connected to the NI Water distribution network (i.e. Class 4 and 5 Fluid Category (FC) 302)

There are Circa 49,000 FC4&5 premises across Northern Ireland.

NIW inspected 1115 premises in total across all risk categories – of those inspected, FC4&5 totalled 772 during the reporting year

### Number of Reactive Water Regulation inspections, was 373.

373 reactive inspections in year, 21 of which were associated with water quality incidents

Information 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 continues to consider options for the upgrade or replacement of the existing Connect 2 system, 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. The reactive inspections were carried out following requests for assistance from NI Water staff. The team also conducts occasional reactive inspections because of concerns or requests for assistance from customers and colleagues to confirm causes of metering queries or water quality problems. Educational visits are carried out to bring customers and contractors up to date with water (fittings) regulations.

## NI Water, example of High Level Inspections

Type of Premises	Type of Premises
Quarry Industry	Domestic Properties
Heavy Manufacturing Industry	Tourist Visitor Centre
Aerospace Industry	Power Generation – Digester plant
Food Production Factory	Industrial Units
Golf tournament	Petrol Filling Station
MOD/Police Establishment	Bar Restaurant
Animal Feed Storage Facilities	
Outdoor events	
Sporting Pavilion	
Harbour Terminal	

### 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 update, as required, the NI Water, Water Fittings Regulation web page and literature necessary for the compliance of the Regulations and customer compliance guidance
- Drafting and submission of specialist advice for inclusion in NI Water temporary events multi-agency guidance.
- Promoted compliance with the Water Fittings Regulations at every opportunity and attended conferences, trade shows and agricultural shows:
  - 72,000 leaflets "The Water Supply (Water Fittings) Regulations (NI) 2009" were issued to non-domestic customers with their annual bills
  - 3000 leaflets "Planning some plumbing work, Know the Law" were issued to and distributed by Environmental Health Offices to plumbing merchants
- Participated in water industry national working groups to further explore opportunities to promote regulatory consistency, customer notifications and performance standards reporting across the industry:
  - Ports and Harbours working group
  - Consistency measurers working group
  - Performance measurers working group
  - RPZ Measurers working group
  - Point of sale working group
  - WRAS annual conference in November 2018
  - WC compliance working group (review commenced following a number of contamination cases across the UK)
  - Recognition of Approval and Certification Schemes (RACS)
- 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:
  - Drinking Water Inspectorate (DWI)
  - Department for the Economy (DfE)
  - Environmental Health Officers
  - Trading Standards
  - DfI (Review of Sustainable Water – A Long Term Water Strategy for Northern Ireland)
- Reported to DfI (Regulator), along with other "stakeholders", on a quarterly/yearly basis.



Reviewed one market ready system potentially suitable to replace the existing Connect2 system. One further system was reviewed which isn't market ready and operates on a software platform not currently in use within NI Water.

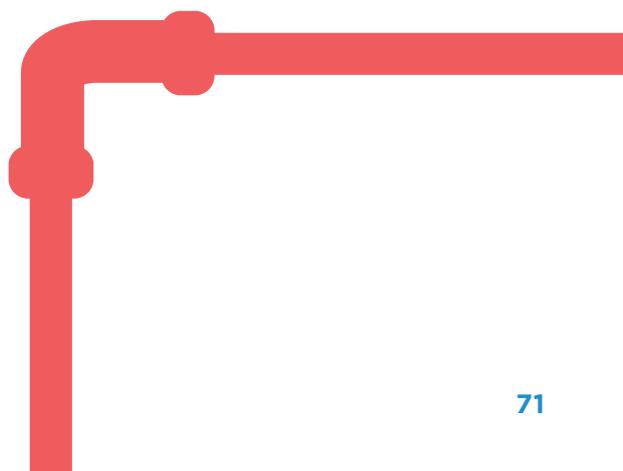
### Looking Forward

- A comprehensive business case setting out potential options for the replacement or upgrade of the existing Connect2 system will be developed. This will be influenced by an ongoing tendering process to update NI Waters' overarching corporate IT systems.
- NI Water will continue to participate with other GB water suppliers facilitated by WRAS in further refining and implementing the National Compliance Policy (Keeping Water Safe in Premises). NI Water will also chair a number of WRAS national working groups specifically looking at:

Recognition principles associated with new water fittings approval schemes demonstrating compliance with aspects of regulation 4.

The potential restructuring of WRAS given changes in the market place and new approval schemes.

Contamination risks identified and associated with some WC fill valves and non-compliant AUK1 air gaps in WC suites.

- 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:
    - Continue to develop and formalise meeting between the Fittings Regulations team and DWI.
    - Develop closer links and raise awareness of the Fittings Regulations with EHO's and the importance of water fittings product safety.
    - Implement proposals for changes to temporary event guidance in Northern Ireland and consideration by other relevant stakeholders.
  - Continue to participate in and benefit from the attendance at WRAS 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 WRAS 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 suppliers 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 Cryptosporidium.
<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 Cryptosporidium 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 obligations.
<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.

