

Drinking Water Quality Annual Report 2019



Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2019, 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 sampling results from 1 January 2019 to 31 December 2019 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.

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.

The great tasting, clean and safe drinking water we deliver to our customers underpins public health and the economy of Northern Ireland. In order to deliver the maximum level of customer service at the lowest sustainable cost, it is important that we assign expenditure in the most effective possible manner. Our recently submitted PC21 Business Plan outlines the investment required to sustainably fund NI Water over the next six-year price control period, commencing in 2021. This prioritises 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 2019, Drinking Water Quality in Northern Ireland was assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2017. The regulations incorporate the requirements of the European Commission's Drinking Water Directive 98/83/EC (the "Directive") relating to the quality of water intended for human consumption and, for certain parameters, more stringent UK national standards.

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

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

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

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

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

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

Monitoring Drinking Water Quality

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

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

Samples collected from customer taps are taken at random addresses in each water supply zone. A water supply zone is a designated area with a population of no more than 100,000 supplied

with water from one water treatment works or blended water from several works. The number and boundaries of water supply zones are subject to change according to operational requirements as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis, 51 water supply zones were monitored during the period of this report.

The parameters for which samples are tested include-

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

Compliance with the drinking water standards is determined by comparing the results of laboratory analysis of water samples with the relevant Prescribed Concentrations or Values (PCV). Where monitoring indicates that a standard has not been met, appropriate immediate investigation and remedial action is undertaken to ensure that the water supply does not present any public health risk. Sampling programmes are adjusted and increased testing may be scheduled in the water supply zone for the parameter involved. NI Water will 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	2015	2016	2017	2018	2019
% Overall compliance with drinking water regulations	99.83%	99.86%	99.88%	99.90%	99.90%
% Compliance at customer tap (including supply points)	99.75%	99.77%	99.81%	99.83%	99.84%
% Iron compliance at customer tap	98.40%	98.66%	98.85%	98.94%	98.89%
% Service Reservoirs with coliforms in >5% samples	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/

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 5 years, NI Water has replaced approximately 9,000 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 customer.

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

The Water Industry has adopted the DWSP approach to risk management from the raw water

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

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

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



Environmental Management System (EMS) and ISO14001

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

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

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

Mains Rehabilitation

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

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

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

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

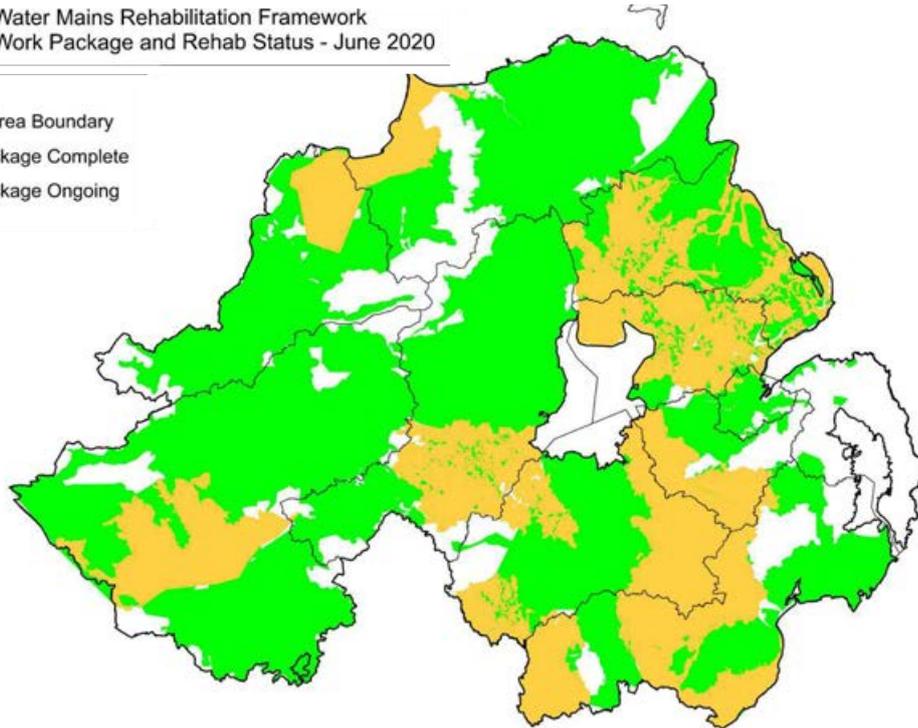
and the Consumer Council Northern Ireland, NI Water developed the Water mains Infrastructure Investment Model (WIIM). Building on the basis of the previous Zonal Studies approach, which utilised the analysis of structural and water quality issues, the revised approach draws on corporate data, focusing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

The Water Mains Rehabilitation programme delivered 449km of mains in the PC13 period (2013 - 2015) and if fully funded, should deliver approximately 815km 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.

northern ireland water Water Mains Rehabilitation Framework
Work Package and Rehab Status - June 2020

key
— Council Area Boundary
■ Work Package Complete
■ Work Package Ongoing



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

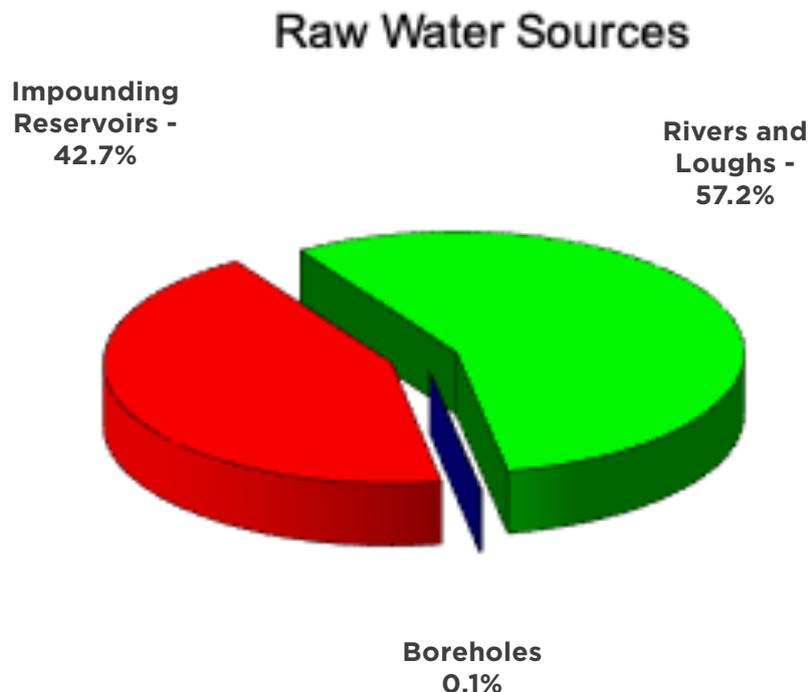
Approximately 863,000 domestic, agricultural, commercial, and business properties in Northern Ireland are connected to the public water supply – this equates to around 99.9% of the total population. This entailed supplying an average of about 576 million litres of high quality drinking water to customers every day during 2019. 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 WR&SR Plan has been completed and is due to be published in 2020.

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



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 2019, the technical audit inspection programme included:

- An audit of Drumaroad WTW
- An audit of Lough Fea WTW
- An audit of Seagahan WTW
- An audit of Sampling Procedures
- An audit of the Laboratory Information Management System (LIMS)

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

Water Quality Events

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

A list of all Water Quality Events which were Significant or above that occurred during 2019 is detailed in Appendix 4.

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.

Regulatory Enforcement

During 2019, DWI issued three Regulation 31(4) Notices on NI Water:

- Regulation 31(4) Notice 01/19 - to seek remedial measures relating to contraventions of the pesticide MCPA (2-methyl-4-chlorophenoxyacetic acid), in water supplied from Derg WTW. This was issued on 12 March 2019, following the revocation of the previous Provisional Enforcement Order PEO/16/01 on the same date. The Notice requires NI Water to introduce Powdered Activated Carbon (PAC) to the treatment process to mitigate against MCPA contraventions by the 30 June 2020.
- Regulation 31(4) Notice 02/19 - to seek remedial measures relating to contraventions of THMs (Trihalomethanes: Total) in water supplied from Rathlin WTW. This was issued on 12 March 2019, following the revocation of the previous Consideration of Provisional Enforcement Order CPEO/18/02 on the same date. The required remedial measures were completed in November 2019 and the Notice revoked in December 2019.

- Regulation 31(4) Notice 03/19 - to seek remedial measures relating to contraventions of the pesticide MCPA (2-methyl-4-chlorophenoxyacetic acid), from water supplied from Ballinrees WTW. This was issued on 12 April 2019, following the revocation of the previous Consideration of Provisional Enforcement Order CPEO/17/01 on the same date. The Notice requires NI Water to introduce Powdered Activated Carbon (PAC) to the treatment process to mitigate against MCPA contraventions by the 18 December 2020.

DWI monitored the progress of one Provisional Enforcement Order PEO/18/01 during 2019:

- PEO/18/01 - to seek remedial measures relating to contraventions of the odour standard from water supplied from Castor Bay WTW was issued on 25/06/18. Undertakings were scheduled for completion in March 2021. The Undertakings were completed on 16/04/20 and the PEO closed on 14 May 2020.

DWI closed two Consideration of Provisional Enforcement Orders CPEO/18/01 and CPEO/18/03 following the successful completion of Undertakings.

- 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 WTW was issued on the 31/01/2018. The associated Undertakings were completed in February 2019.
- CPEO/18/03 - to seek remedial measures relating to contraventions of aluminium in water supplied from Drumaroad WTW was issued on 30/11/18. The associated Undertakings were completed in December 2019.

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 2019, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	24
Service Reservoirs	288
Water Supply Zones	51
Authorised Supply Points (see glossary)	24

Overall Water Quality Testing

During 2019, 99,371 microbiological, physical, and chemical tests were carried out for mandatory and indicator consented parameters on water samples taken from water treatment works, service reservoirs and customer taps. Of these, 99,271 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	6,252	44,000	18,992
Service Reservoir	14,923	89,538	29,846
Zone (including Authorised Supply Point)	5,544	65,989	50,533
Overall	26,719	199,527	99,371

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

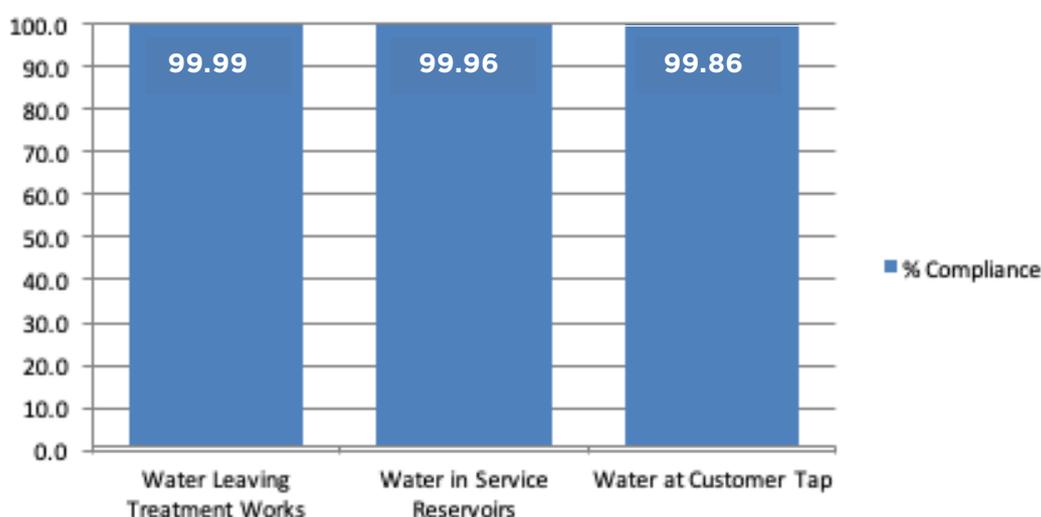
Water leaving water treatment works is disinfected with chlorine to safeguard public health by destroying microorganisms. This is the most important part of the water treatment process. NI Water has developed a disinfection policy for water treatment and individual disinfection statements for each water 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 2019 is given below.

Overall Microbiological Water Quality



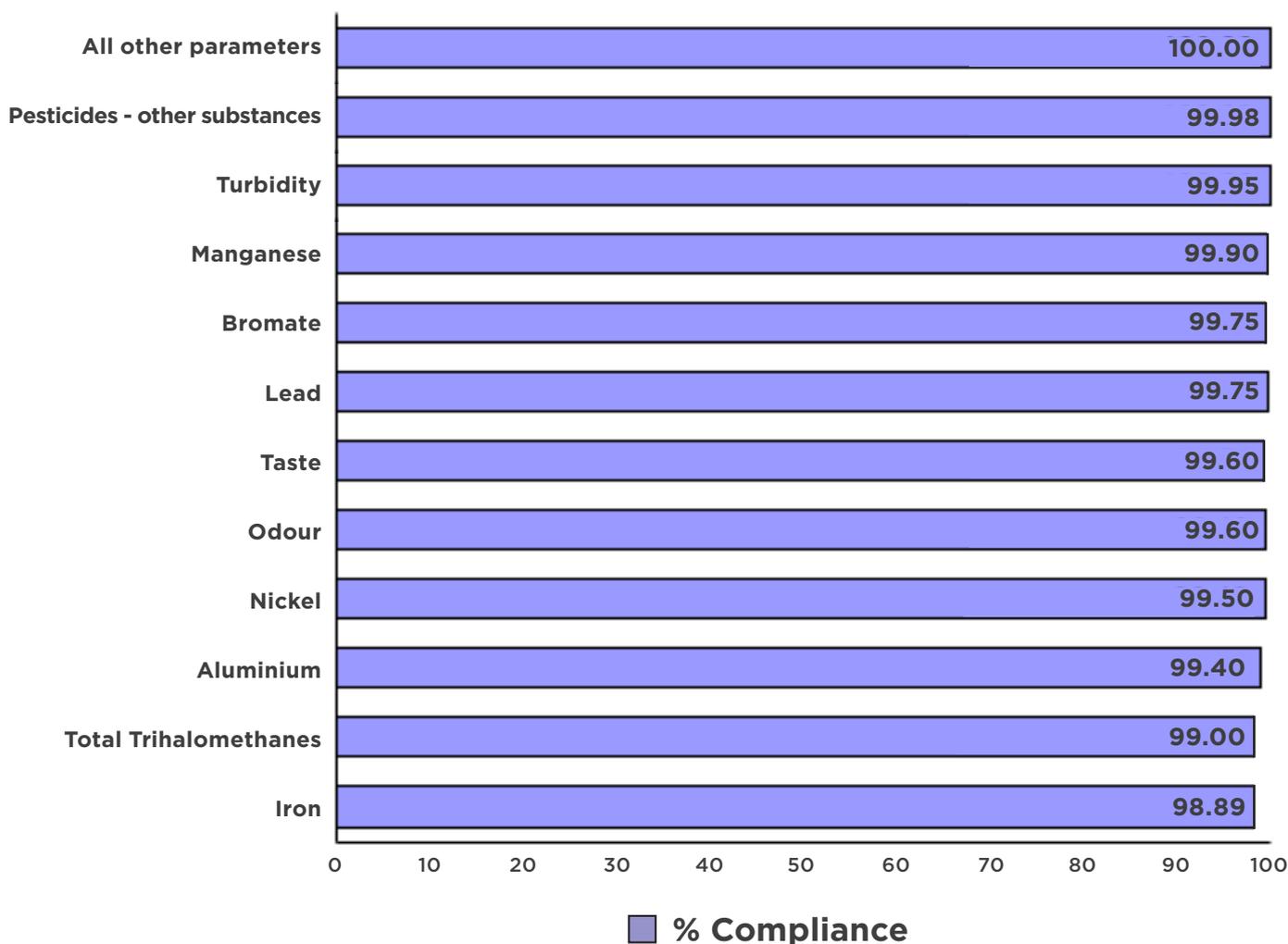
Physical and Chemical Quality at Customer tap

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 2019, 38,809 physical and chemical tests were assessed against their consent for water samples taken at customer taps or authorised supply points. Of these, 38,746 tests complied with the regulatory standards giving a compliance of 99.84% for physical and chemical tests.

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

Percentage Compliance by Chemical Parameter



Overall Water Quality

Overall Water Quality			
	Number of Analytical Tests	Number of Tests Exceeding PCV	% Compliance with Regulatory Standards
Water Leaving Treatment Works			
Bacteriological Analysis	12,504	1	99.99
Indicator parameters	6,488	7	99.89
Total	18,992	8	99.96
Water in Service Reservoirs			
Bacteriological Analysis	29,846	13	99.96
Total	29,846	13	99.96
Water at Customers' Taps or Authorised Supply Points			
Bacteriological Anal. inc Coliforms	11,724	16	99.86
Zone Chemical Analysis	22,577	61	99.73
Supply Point Chemical Analysis	9,432	2	99.98
Indicator parameters	6,800	0	100.00
Total	50,533	79	99.84
Total Mandatory Parameters	86,083	93	99.89
Total Indicator Parameters	13,288	7	99.95
Overall Water Quality Total	99,371	100	99.90

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 2019, 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 25Qg/l to the current limit of 10Qg/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.

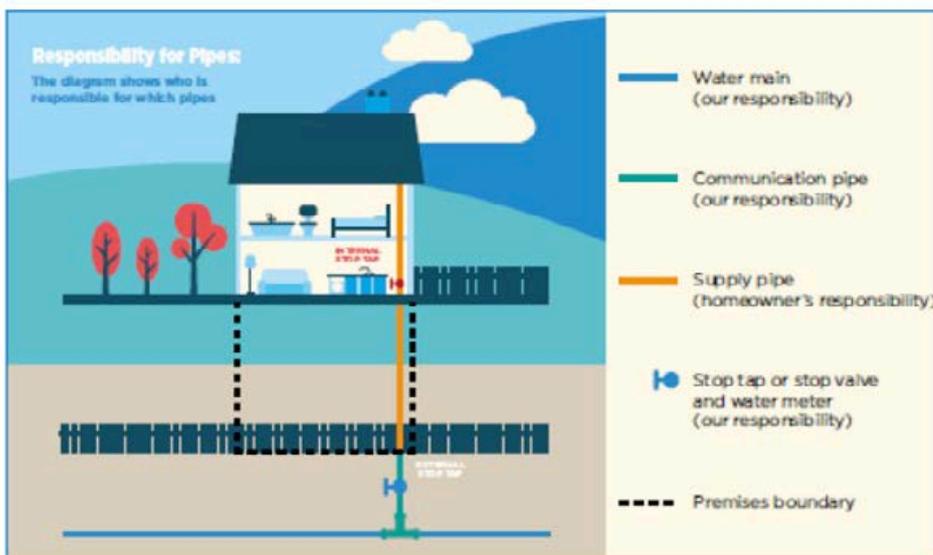
% Lead Exceedances against the revised 10µg/l Standard



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

www.niwater.com/about-your-water

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



Manganese

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

Nickel

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

Pesticides

Pesticides include insecticides, herbicides, fungicides, and 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 38 individual pesticides during 2019. NI Water liaises with other regulatory bodies in Northern Ireland such as the Northern Ireland Environment Agency (NIEA) regarding the control of pesticide usage.

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

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

Total Trihalomethanes (THMs)

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

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

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

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

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

Turbidity

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

Summary

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

Further information

Various information leaflets giving more details of water information may be found at www.niwater.com/about-your-water

The Water Supply (Water Fittings) Regulations (NI) 2009

Water Regulation Background

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

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

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

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

of the regulations. Advance notice must be given, in most cases, of proposed installations, so architects, building developers and plumbers have to follow the Regulations on behalf of future owners or occupiers.

For the purpose of this return:

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

Government codes known as the Standard Industrial Classification (SIC) of economic activity are used by NI Water to generate fluid categories, which 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.	774
• Revisit Inspection.	505
• Drawings Inspection.	10
Total number of all Inspections	1289
*Number of Premises/Bodies visited	1279
*Number of Contraventions Active recorded	1144
*Number of Contraventions Closed	896
*Number of Outstanding Contraventions	248
*Number of Inspections with outstanding contraventions > 3 months passed to NI Water Legal Department	2

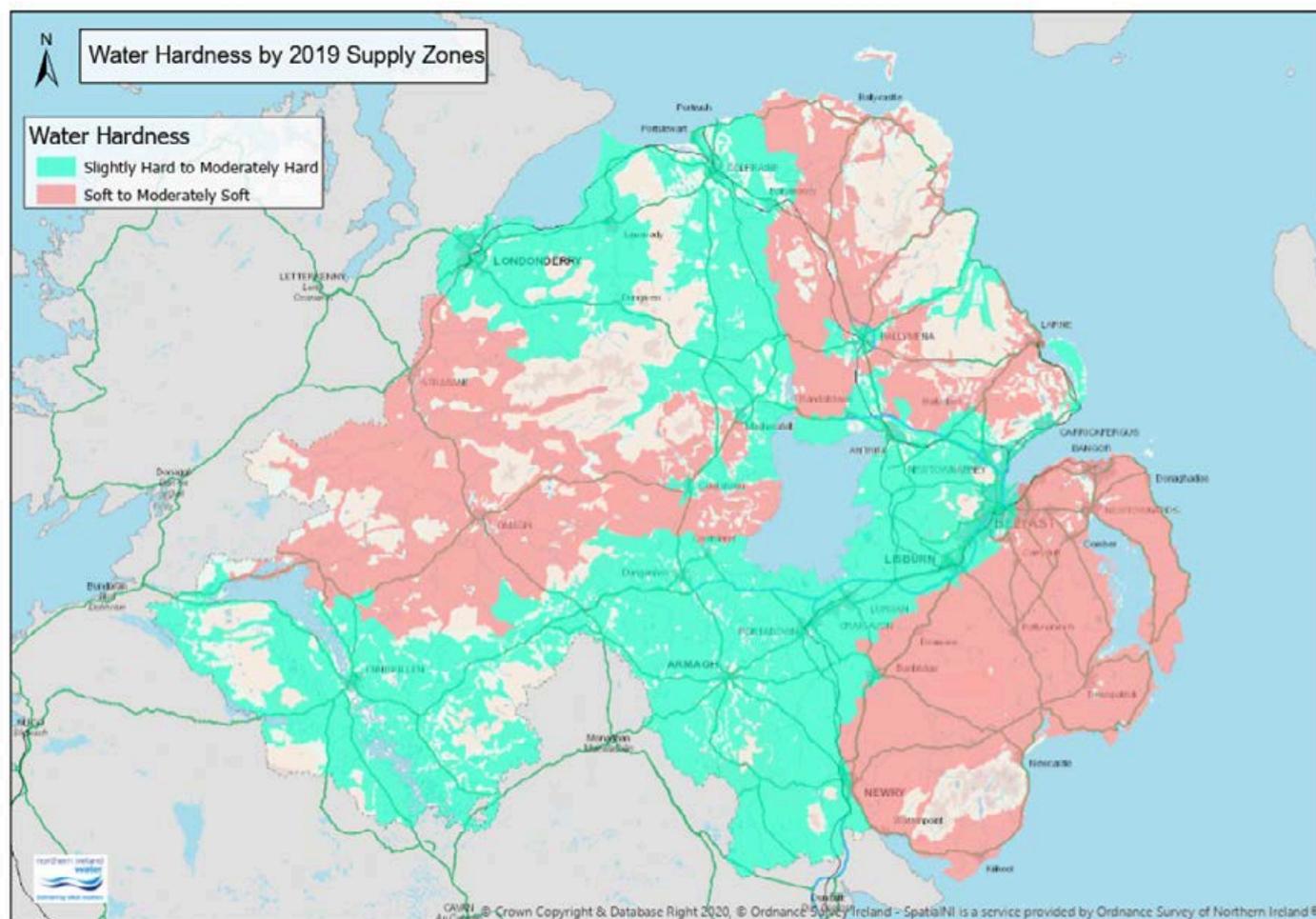
*2019 Calendar year

Public Information

Drinking Water Register

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

Water Hardness Map



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

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

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

Customers can contact the Customer Relations Centre on our Waterline:

03457 440088

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

03457 440088

Social Media

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

Facebook



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

YouTube



NI Water has its own YouTube channel <http://www.youtube.com/northernirelandwater> that hosts NI Water videos such as “How to protect your pipes”, “Saving water in the home” or “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 <https://twitter.com/niwnews>

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

Customers may also contact Customer Services by email on:

waterline@niwater.com

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

<http://www.niwater.com>

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

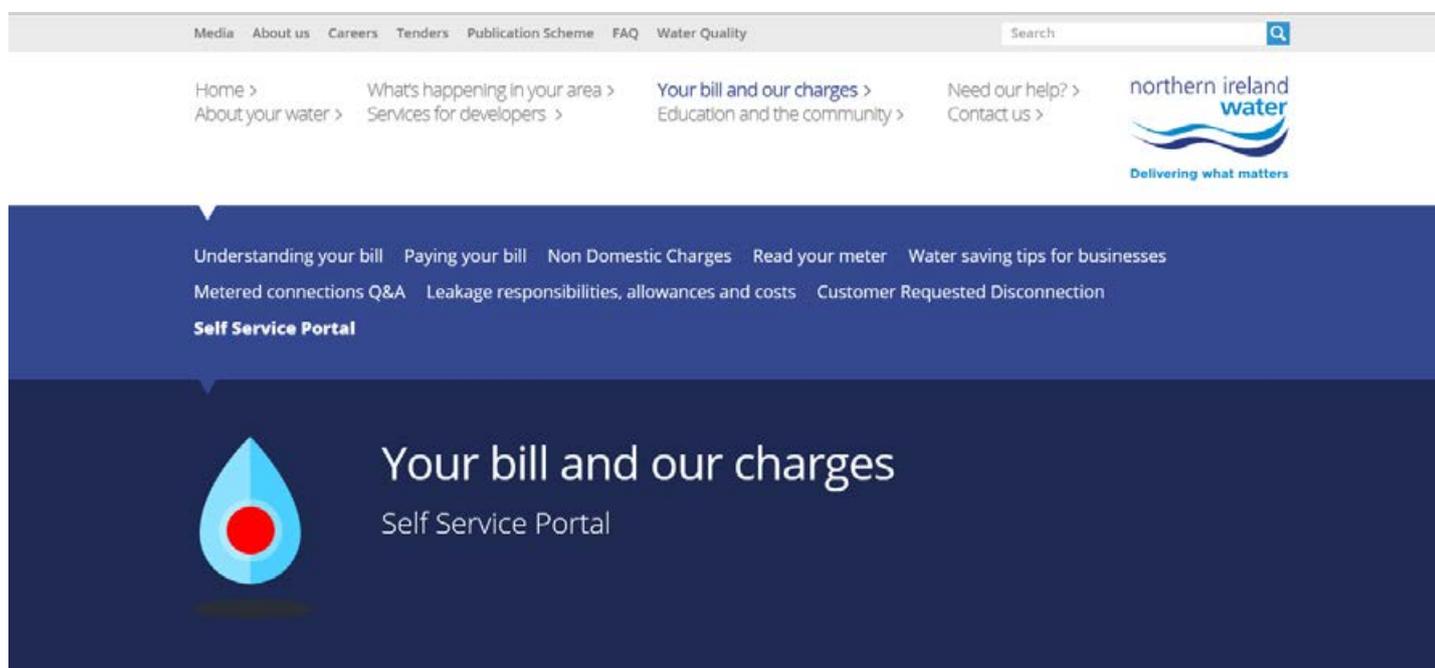
Customer Services

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

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

Self Service Portal

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



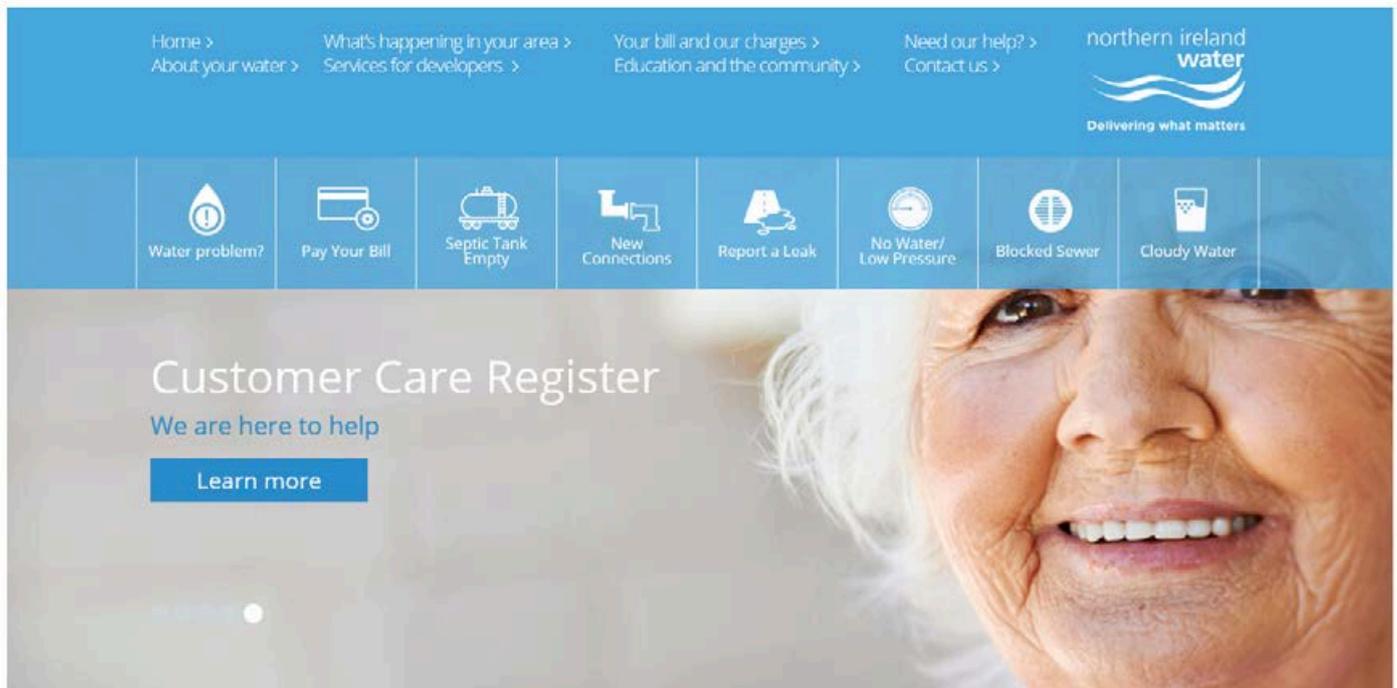
Once registered, customers are able to:

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

This web portal is found at:

<https://selfservice.niwater.com>

Customer Care Register



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

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

You need to join our Customer Care Register at <https://www.niwater.com/customer-care-register/#ccr-form> to get the extra free services you or anyone in your household would like to receive.

Alternatively, telephone Waterline on **03457 440088**

Doorstep Service

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

Password scheme

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

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

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

Carers Contact Service

You can name a carer or relative who:

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

Major Incident Information

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

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

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

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

Major Incident and Major Emergency Website

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

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

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

Information available includes:

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

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

Appendix 1

Drinking Water Quality Standards

Water Supply (Water Quality) Regulations (Northern Ireland) 2017 Schedule 1

Prescribed Concentrations And Values

Table A.

Microbiological Parameters

Part I: Directive Requirements

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

Table B.

Chemical Parameters

Part I: Directive requirements

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

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

Notes:

(i) The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.

(ii) Total Pesticides: means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

(iii) The specified compounds are:

- benzo(b)fluoranthene
- benzo(k)fluoranthene
- benzo(ghi)perylene
- Indeno (1,2,3-cd) pyrene.

(iv) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

(v) The specified compounds are:

- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane

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

Part II: National Requirements

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

Schedule 2 Indicator Parameters

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

Notes:

- (i) The Water Should Not Be Aggressive.
 (ii) Excluding Tritium, Potassium-40, Radon And Radon Decay Products.

* May Be Monitored From Samples Of Water Leaving Treatment Works Or Other Supply Point, As No Significant Change During Distribution.

Explanatory Notes

Measurement Units:

Milligram Per Litre (mg/l) Means One Part In A Million.
 Microgram Per Litre (µg/l) Means One Part In A Thousand Million.

Parameter:

A Parameter Refers To Any Substance, Organism Or Property Listed Above.

Appendix 2

Water Quality Report for Water Supply Zones

Schedule 1 parameters	Units	2019 Samples	No > PCV	% > PCV
Enterococci	No./100ml	400	0	0.00%
E. coli	No./100ml	5544	1	0.02%
1,2 Dichloroethane	µg/l	400	0	0.00%
Aluminium	µg Al/l	1984	12	0.60%
Antimony	µg Sb/l	400	0	0.00%
Arsenic	µg As/l	400	0	0.00%
Benzene	µg/l	400	0	0.00%
Benzo(a)pyrene	ng/l	400	0	0.00%
Boron	µg B/l	400	0	0.00%
Bromate	µg/l	400	1	0.25%
Cadmium	µg Cd/l	400	0	0.00%
Chromium	µg Cr/l	400	0	0.00%
Colour	mg/l Pt/Co	1984	0	0.00%
Copper	mg Cu/l	400	0	0.00%
Fluoride	mg F/l	400	0	0.00%
Iron	µg Fe/l	1984	22	1.11%
Lead	µg Pb/l	400	1	0.25%
Manganese	µg Mn/l	1984	2	0.10%
Mercury	µg Hg/l	289	0	0.00%
Nickel	µg Ni/l	400	2	0.50%
Nitrate	mg NO ₃ /l	400	0	0.00%
Nitrite	mg NO ₂ /l	400	0	0.00%
Odour	dilution No	1984	8	0.40%
Selenium	µg Se/l	400	0	0.00%
Sodium	mg Na/l	400	0	0.00%
Taste	dilution No	1984	8	0.40%
PAH - Sum of four substances	µg/l	400	0	0.00%
Tetrachloroethene/Trichloroethene - Sum	µg/l	400	0	0.00%
Tetrachloromethane	µg/l	400	0	0.00%
Total Trihalomethanes	µg/l	400	4	1.00%
Turbidity	FTU	1984	1	0.05%

Indicator 1 parameters	Units	2019 Samples	No > SPEC	% > SPEC
Coliform bacteria	No./100ml	5544	13	0.23%
Total - Residual disinfectant	mg Cl/l	5544	-	-
Free - Residual disinfectant	mg Cl/l	5544	-	-
Colony Counts 37 (48hrs)	No./1 ml	1984	-	-
Colony Counts 22	No./1 ml	1984	-	-
Total Organic Carbon	mg C/l	400	-	-
Ammonium	mg NH ₄ /l	1984	0	0.00%
Chloride	mg Cl/l	400	0	0.00%
Hydrogen Ion	pH value	1984	0	0.00%
Conductivity	uS/cm 20	1984	0	0.00%
Sulphate	mg SO ₄ /l	400	0	0.00%

Water Quality Report for Authorised Supply Points

Schedule 1 parameters	Units	2019 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	8960	2	0.02%

Indicator 1 parameters	Units	2019 Samples	No > SPEC	% > SPEC
Clostridium perfringens (sulph red)	No./100ml	236	1	0.85%
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	2019 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	6252	2	0.02%
E. coli	No./100ml	6252	0	0.00%
Nitrite	mg NO ₂ /l	236	0	0.00%

Indicator 1 parameters	Units	2019 Samples	No > SPEC	% > SPEC
Turbidity	FTU	6252	7	0.11%
Total - Residual disinfectant	mg Cl/l	6252	-	-
Free - Residual disinfectant	mg Cl/l	6252	-	-
Colony Counts 37 (48hrs)	No./1 ml	6252	-	-
Colony Counts 22	No./1 ml	6252	-	-

Water Quality Report for Service Reservoirs

Schedule 1 parameters	Units	2019 Samples	No > PCV	% > PCV
Coliform bacteria	No./100ml	14923	13	0.09%
E. coli	No./100ml	14923	0	0.00%

Indicator 1 parameters	Units	2019 Samples	No > SPEC	% > SPEC
Colony Counts 37 (48hrs)	No./1 ml	14923	-	-
Colony Counts 22	No./1 ml	14923	-	-
Total - Residual disinfectant	mg Cl/l	14923	-	-
Free - Residual disinfectant	mg Cl/l	14923	-	-

Appendix 3

Water Quality by Northern Ireland Council Area

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

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

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

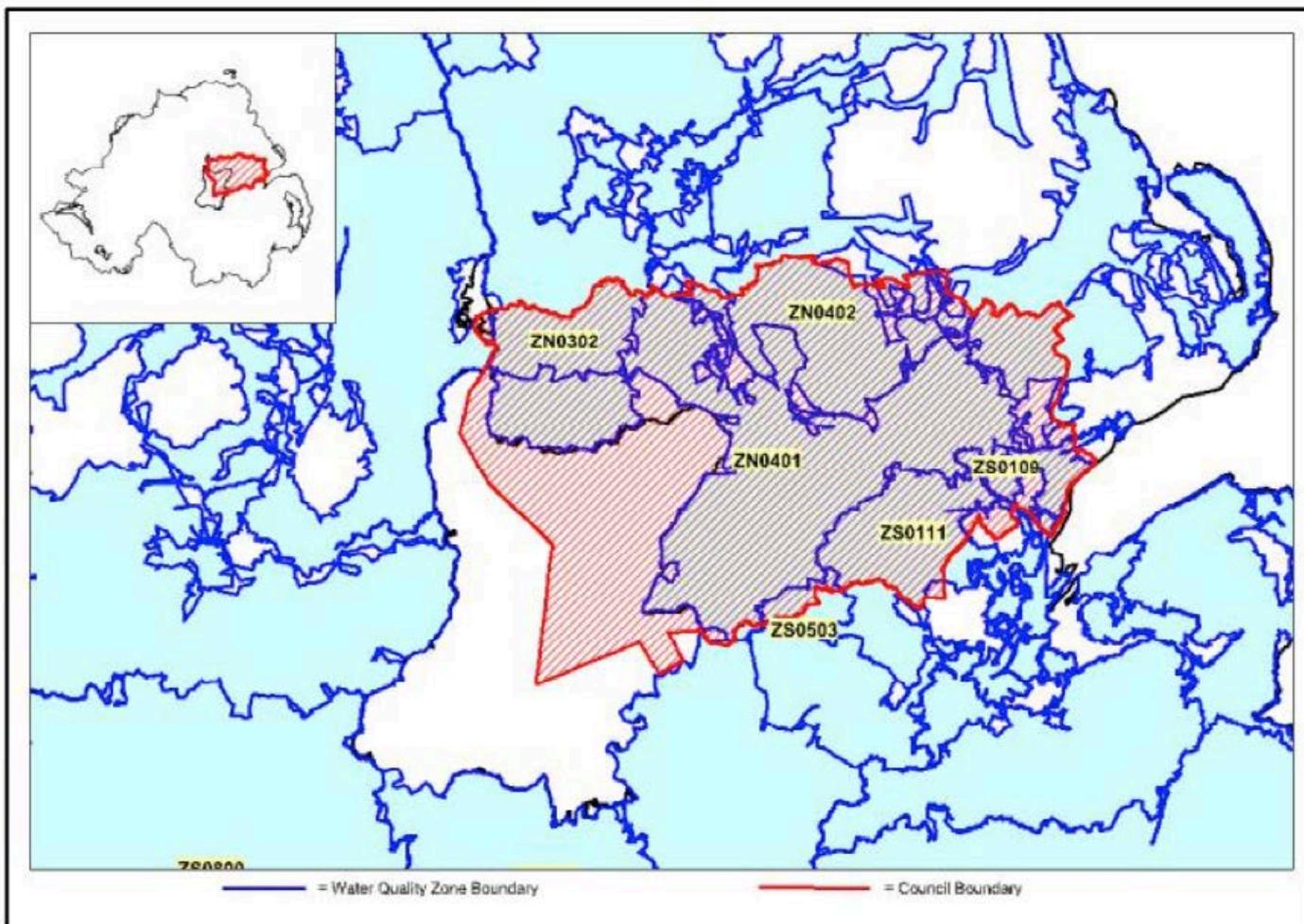
from customer taps in each water supply zone and from planned samples at authorised supply points. Due to the nature of random sampling, there may be fluctuations in water quality across the water supply zones.

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

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

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

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



% Compliance at Customer Tap (including Supply Points)

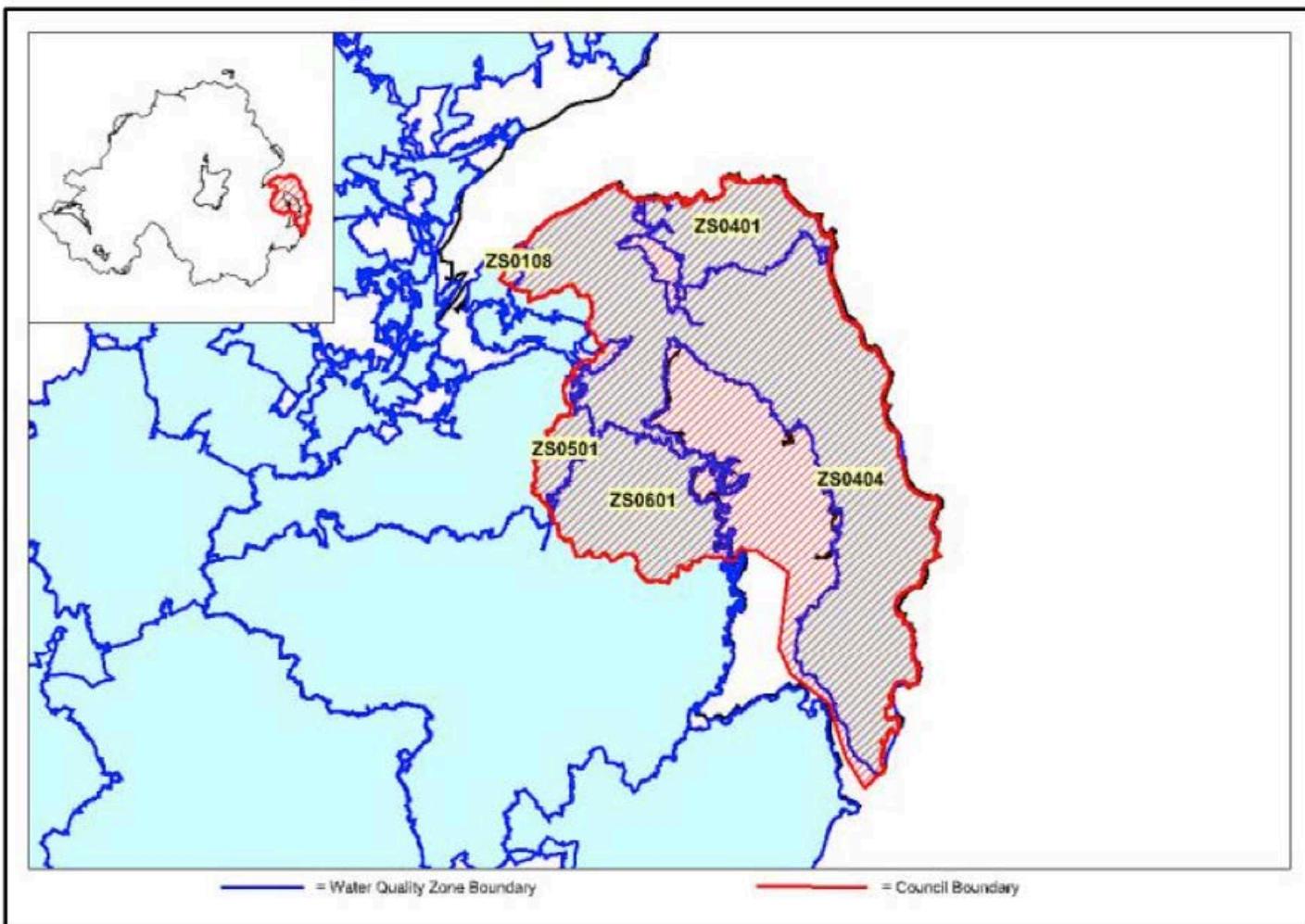
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Antrim and Newtownabbey Compliance	99.7%	99.8%	99.7%	99.9%	99.9%	99.8%

2019 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

2019 water quality Capital Works Programmes affecting the council area:

Ballyclare Road Glengormley Watermain Upgrade
Ballywonard Zone Watermain Improvements
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Major Incident Mitigation Project Region Freeze Thaw Improvements
Newtownabbey Zone Watermain Improvements
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Belfast North
PC15 Watermain Rehabilitation - Dungonnell
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Infrastructure Investment Model - Antrim South
Water Infrastructure Investment Model - Dunore East
Water Infrastructure Investment Model - Dunore Point
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

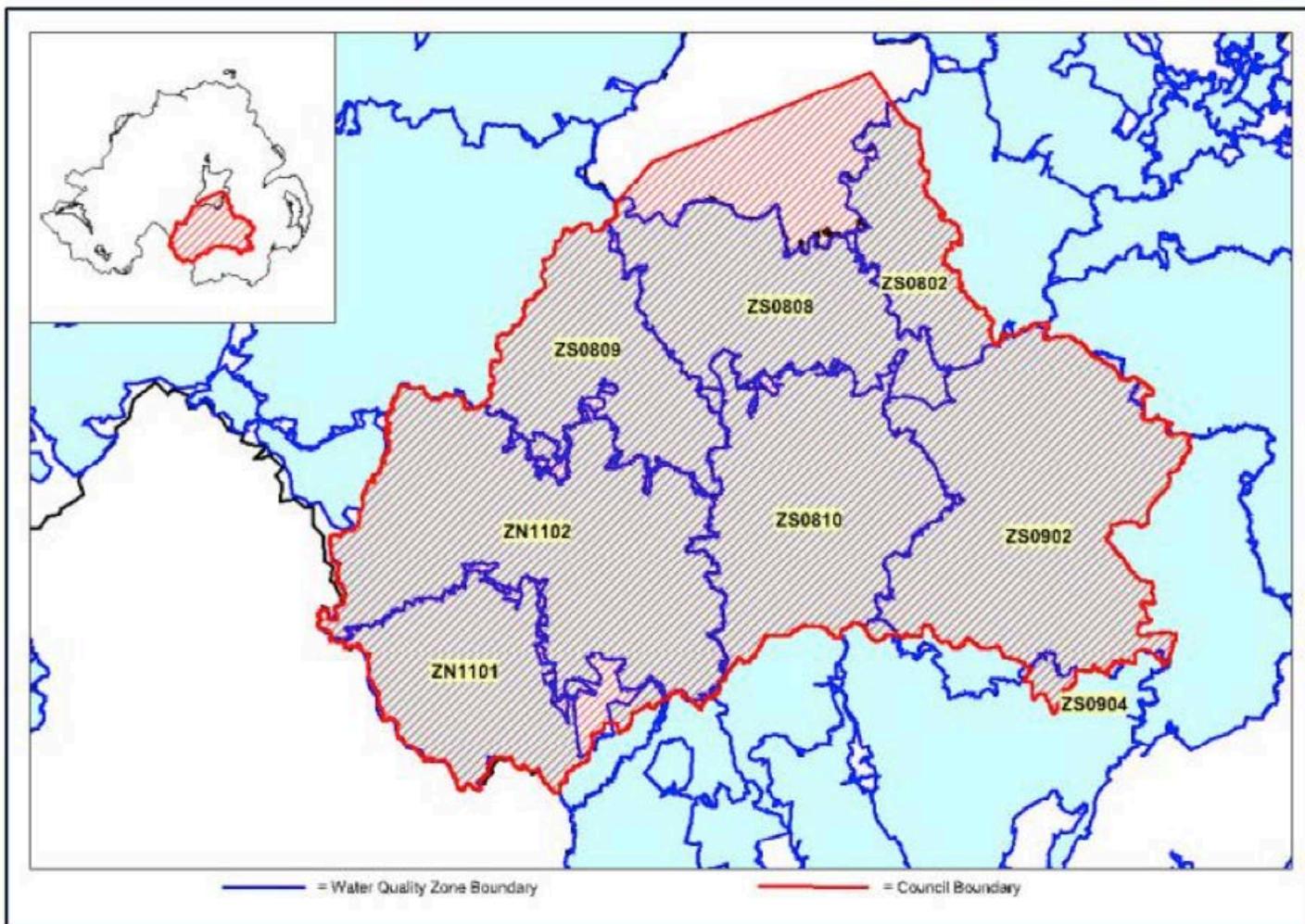
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Ards and North Down Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%

2019 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		

2019 water quality Capital Works Programmes affecting the council area:

Ballyreagh Rd Ards Watermain Extension
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Major Incident Mitigation Project Region Freeze Thaw Improvements
North Down, Bangor - Watermain Improvements
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Replacement Watermain 2014/15 - Reactive, Bundle 2
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

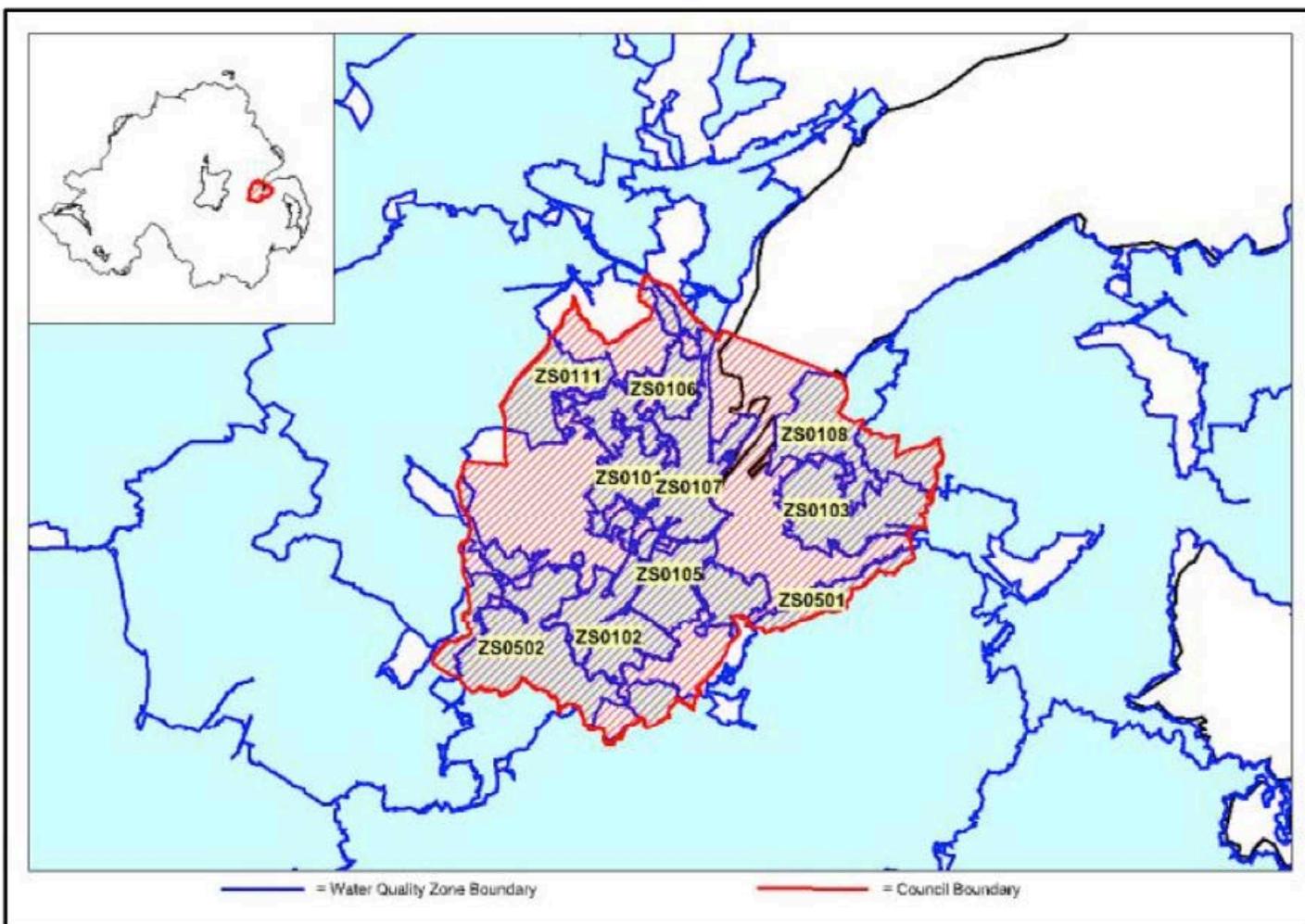
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Armagh, Banbridge & Craigavon Compliance	99.7%	99.8%	99.7%	99.9%	99.9%	99.9%

2019 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

2019 water quality Capital Works Programmes affecting the council area:

Alpha WTW Treatability Studies
Castor Bay to Dungannon Strategic Trunk Mains
Castor Bay WTW to Ballydougan SR Upgrade
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Fofanny Banbridge Zone Watermain Improvements
Major Incident Mitigation Project Region Freeze Thaw Improvements
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Fofanny/North Lisburn South
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Infrastructure Investment Model - Banbridge South Armagh
Water Infrastructure Investment Model - Carran Hill Crossmaglen
Water Infrastructure Investment Model - Clay Lake Keady
Water Infrastructure Investment Model - Craigavon
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

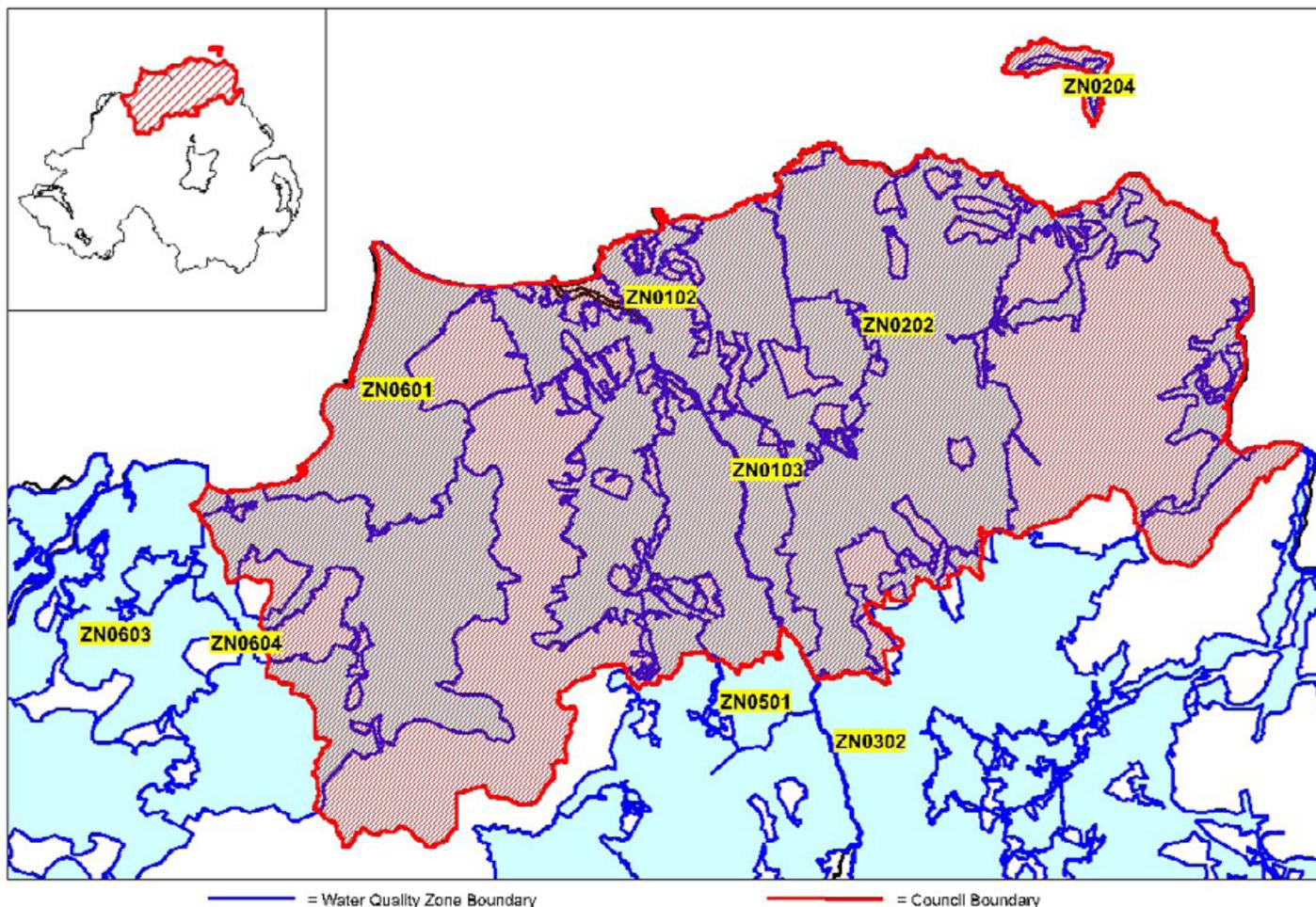
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Belfast Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%

2019 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

2019 water quality Capital Works Programmes affecting the council area:

Ballygomartin North Watermain Improvements
Ballygomartin South Watermain Improvements
Ballysillan Zone Watermain Improvements
Ballywonard Zone Watermain Improvements
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Kyle Street NIR Crossing, Watermain
Major Incident Mitigation Project Region Freeze Thaw Improvements
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Belfast North
PC15 Watermain Rehabilitation - Belfast South
PC15 Watermain Rehabilitation - Forked Bridge Dunmurry
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Infrastructure Investment Model - Belfast Ballygomartin North
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

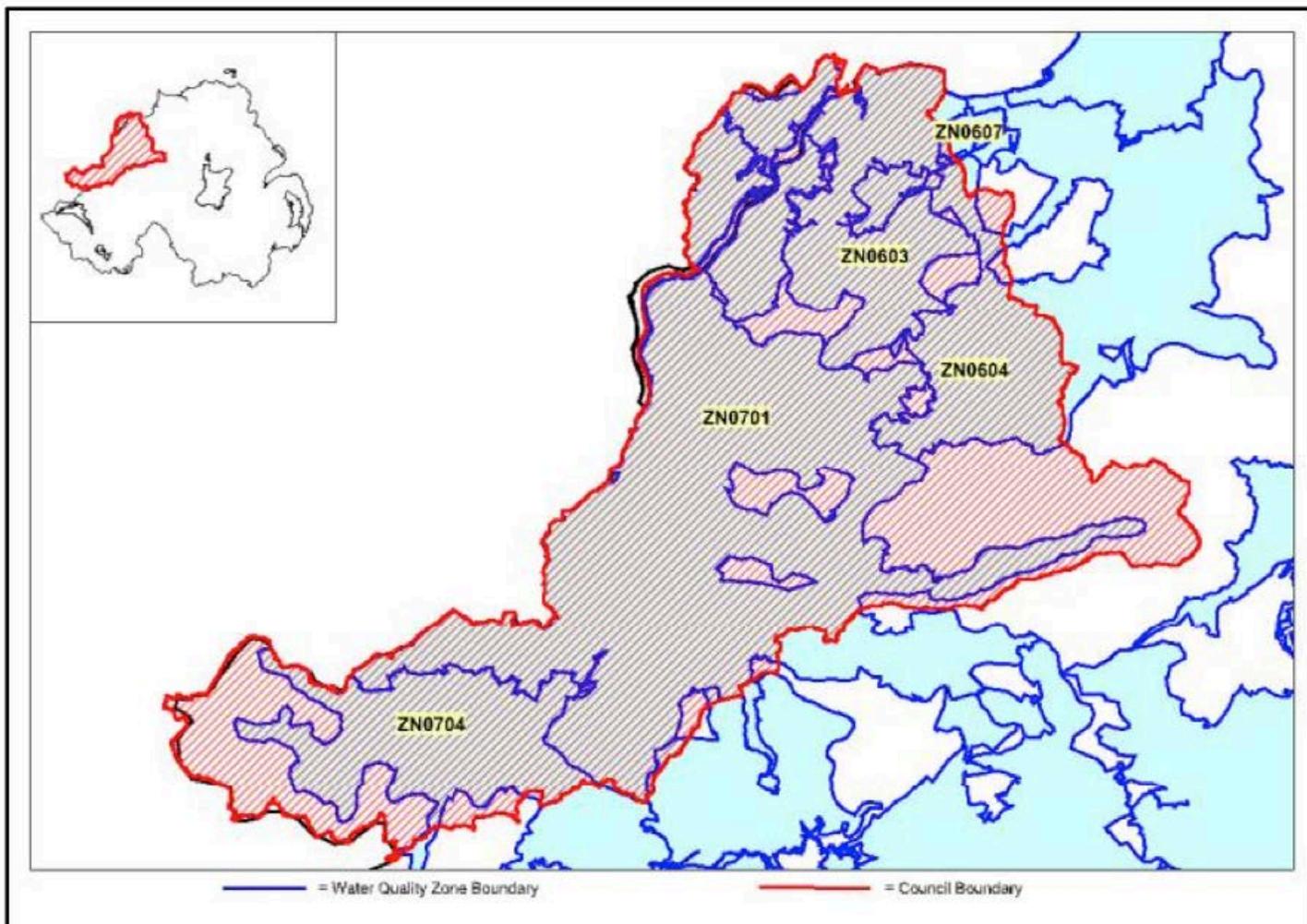
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Causeway Coast and Glens Compliance	99.7%	99.7%	99.8%	99.9%	99.8%	99.8%

2019 water supply zones wholly or partially within the council area:

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

2019 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe
Ballinrees WTW, MCPA treatment investigations
Caugh Hill WTW Treatability Appraisal
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Gortycavan WPS to Sconce Hill SR Watermain
Kilraughts Road Ballymoney Watermain Replacement
Northern Zone Resilience
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Royal Portrush - Open 2019 Watermain
Service Reservoir Security
Southern Zone Resilience
Water Infrastructure Investment Model - Altnahinch Bushmills
Water Infrastructure Investment Model - Altnahinch Bushmills 2
Water Infrastructure Investment Model - Antrim North
Water Infrastructure Investment Model - Ballinrees Limavady
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

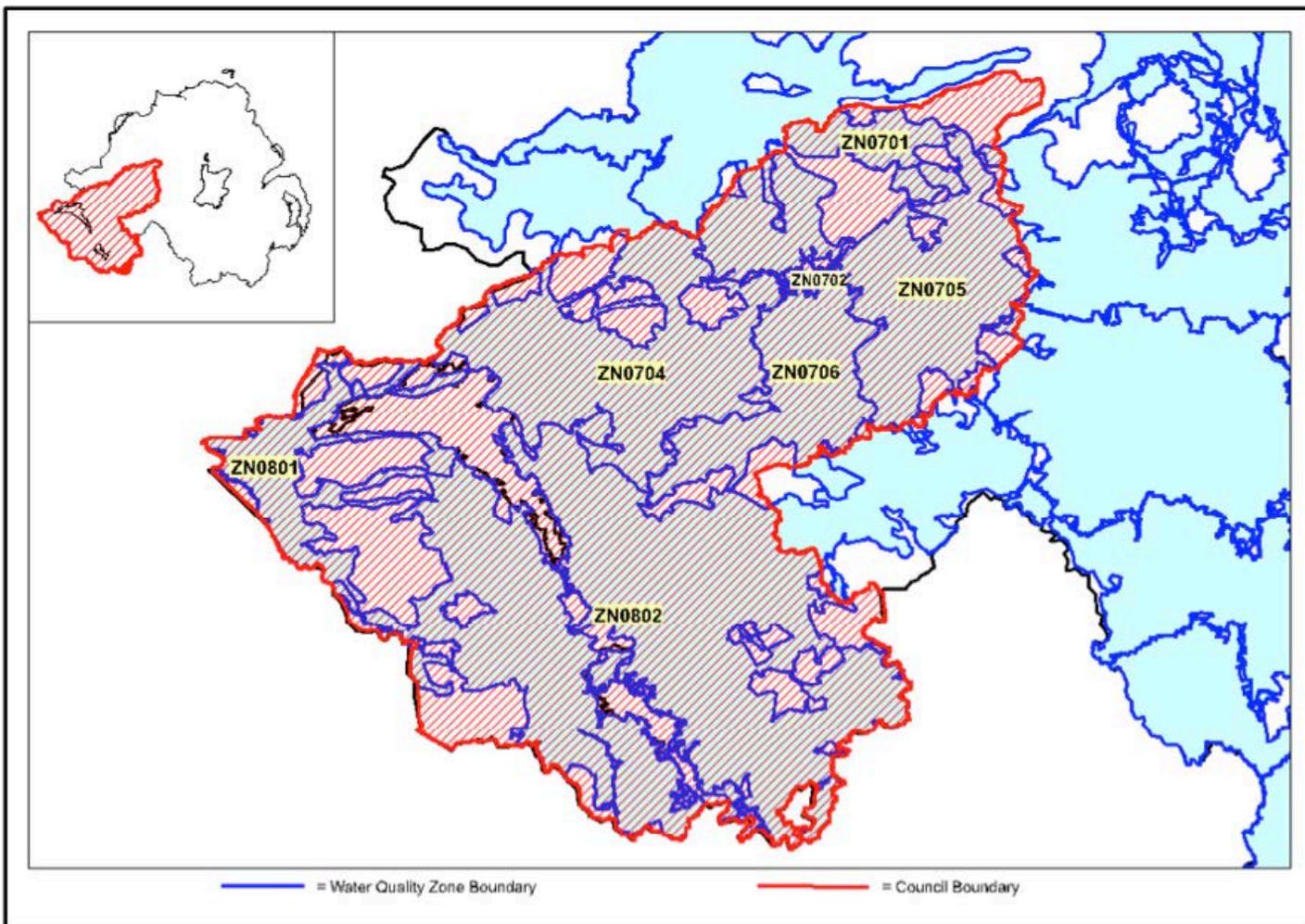
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Derry City & Strabane Compliance	99.7%	99.8%	99.6%	99.9%	99.8%	99.8%

2019 water supply zones wholly or partially within the council area:

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

2019 water quality Capital Works Programmes affecting the council area:

A6 Dungiven Drumahoe
Alpha WTW Treatability Studies
Ballinrees WTW, MCPA treatment investigations
Buncrana Road / Skeoge Link Trunk Main
Compiling Prioritised Lead Comms Pipe Work Packages
Crescent Link Trunk Main
Ebrington Square Limavady Road, Londonderry Watermain Extension
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Major Incident Mitigation Project Region Freeze Thaw Improvements
Northern Zone Resilience
Omagh - Watermain Rehab
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

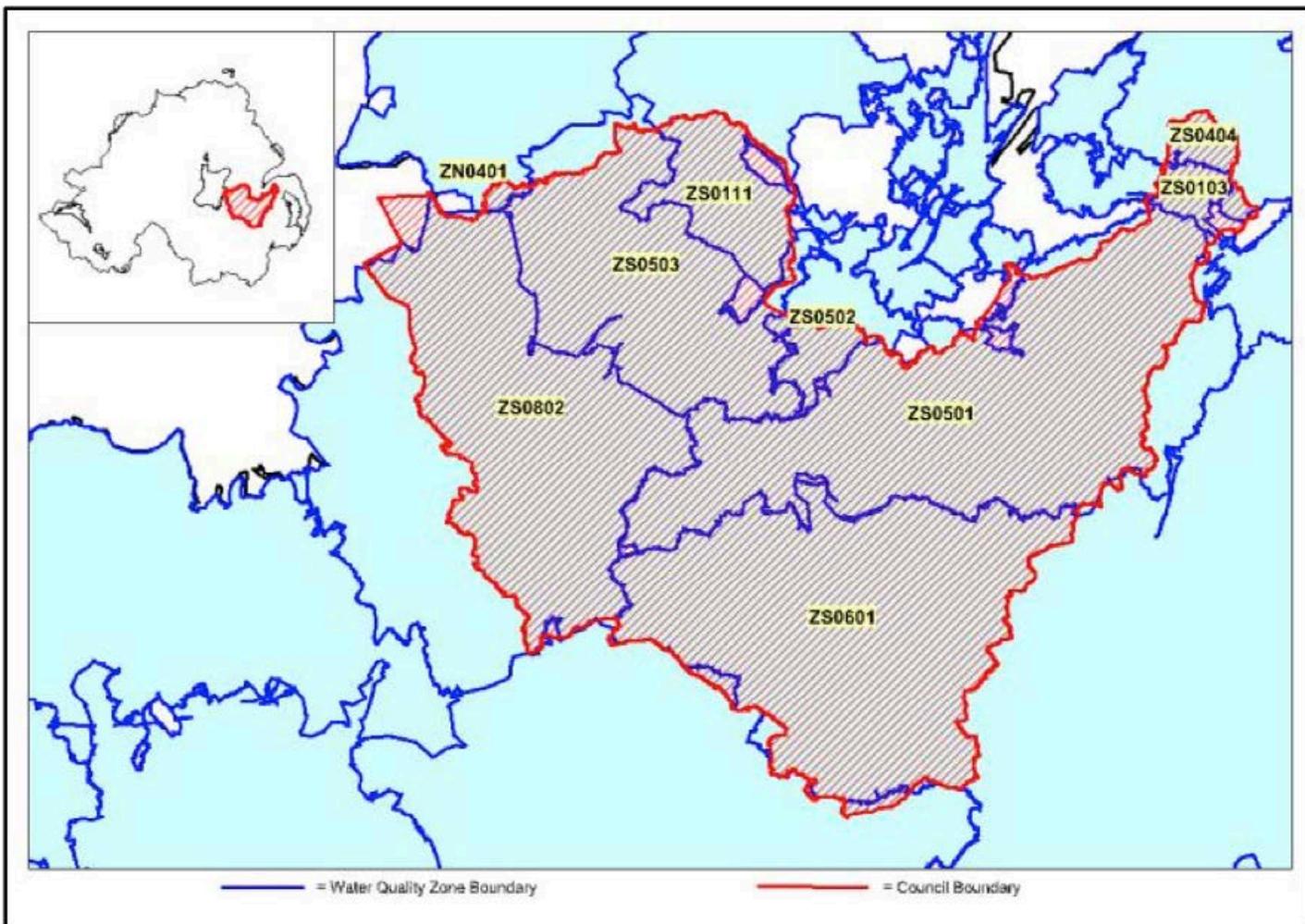
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Fermanagh & Omagh Compliance	99.7%	99.9%	99.8%	99.9%	99.8%	99.9%

2019 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	Killyhevin Enniskillen
ZN0705	Lough Macrory Beragh		

2019 water quality Capital Works Programmes affecting the council area:

Alleyhill to Doochrock Watermain
Compiling Prioritised Lead Comms Pipe Work Packages
Derg WTW - Upgrade of Filters and Chemical Dosing
Derg WTW MCPA PEO Undertakings
Doochrock to Drumkeeran Watermain Upgrades
Facilities Management Review
Glenhordial to Killybrack TM
Killyhevlin Clear Water Tank
Killyhevlin Outlet Mains Replacement
Major Incident Mitigation Project Region Freeze Thaw Improvements
Old Coach Road/Sessiagh Lane Watermain replacement
Omagh - Watermain Rehab
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
South / South East Zonal Study South
South / South East Zonal Study South East
Southern Zone Resilience
Swanlinbar Road Watermain Rehab
Upgrade of Killyhevlin WTW's
Water Infrastructure Investment Model - Fermanagh North
Water Infrastructure Investment Model - Lough Braden Drumquin
Water Infrastructure Investment Model - Lough Macrory
Water Infrastructure Investment Model - Tyrone North
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation
Western Zone Resilience



% Compliance at Customer Tap (including Supply Points)

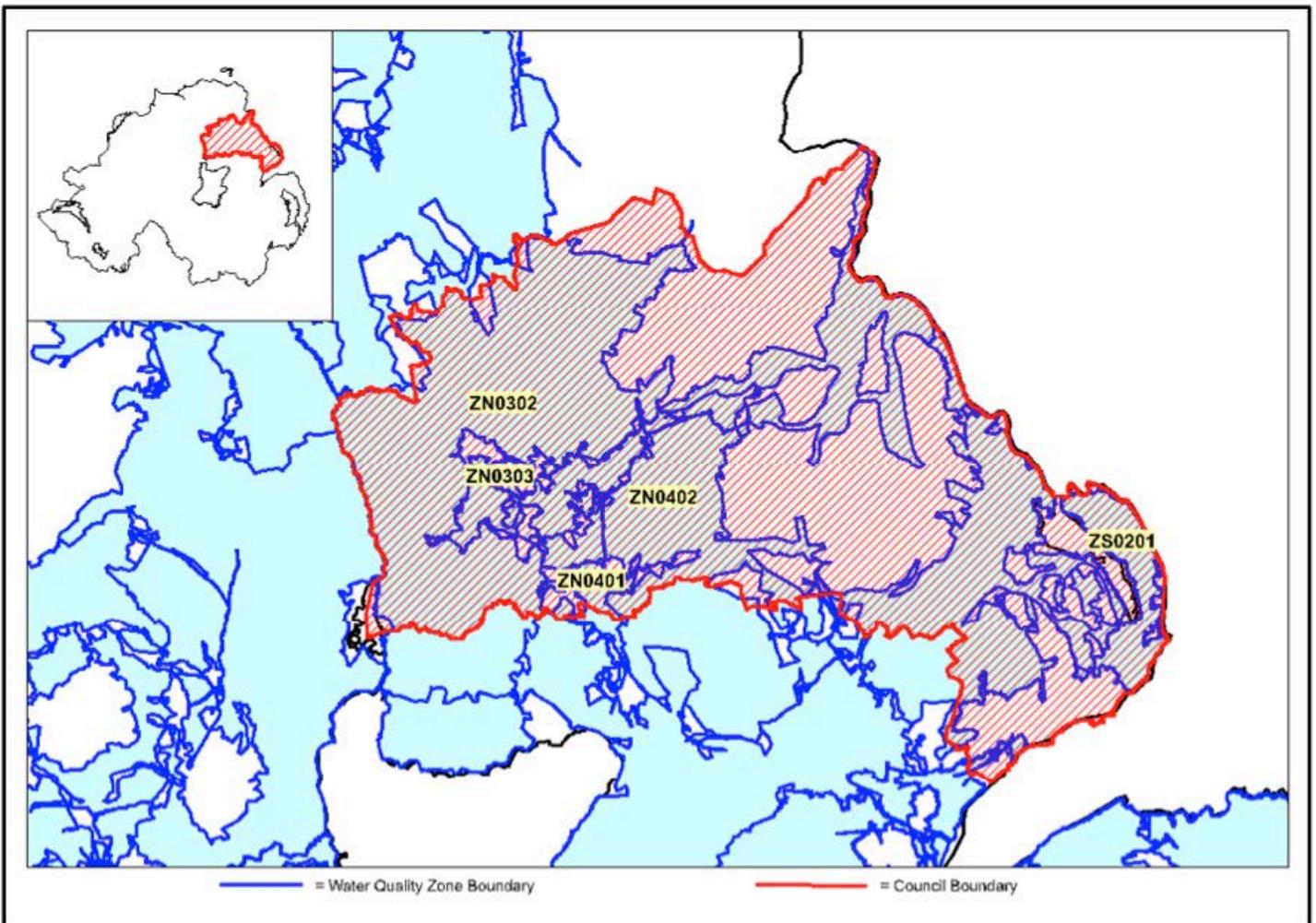
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Lisburn & Castlereagh Compliance	99.7%	99.8%	99.9%	99.9%	99.9%	99.9%

2019 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		

2019 water quality Capital Works Programmes affecting the council area:

Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Lisburn North Rural - Watermain Improvements
Major Incident Mitigation Project Region Freeze Thaw Improvements
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Fofanny/North Lisburn South
PC15 Watermain Rehabilitation - Forked Bridge Dunmurry
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

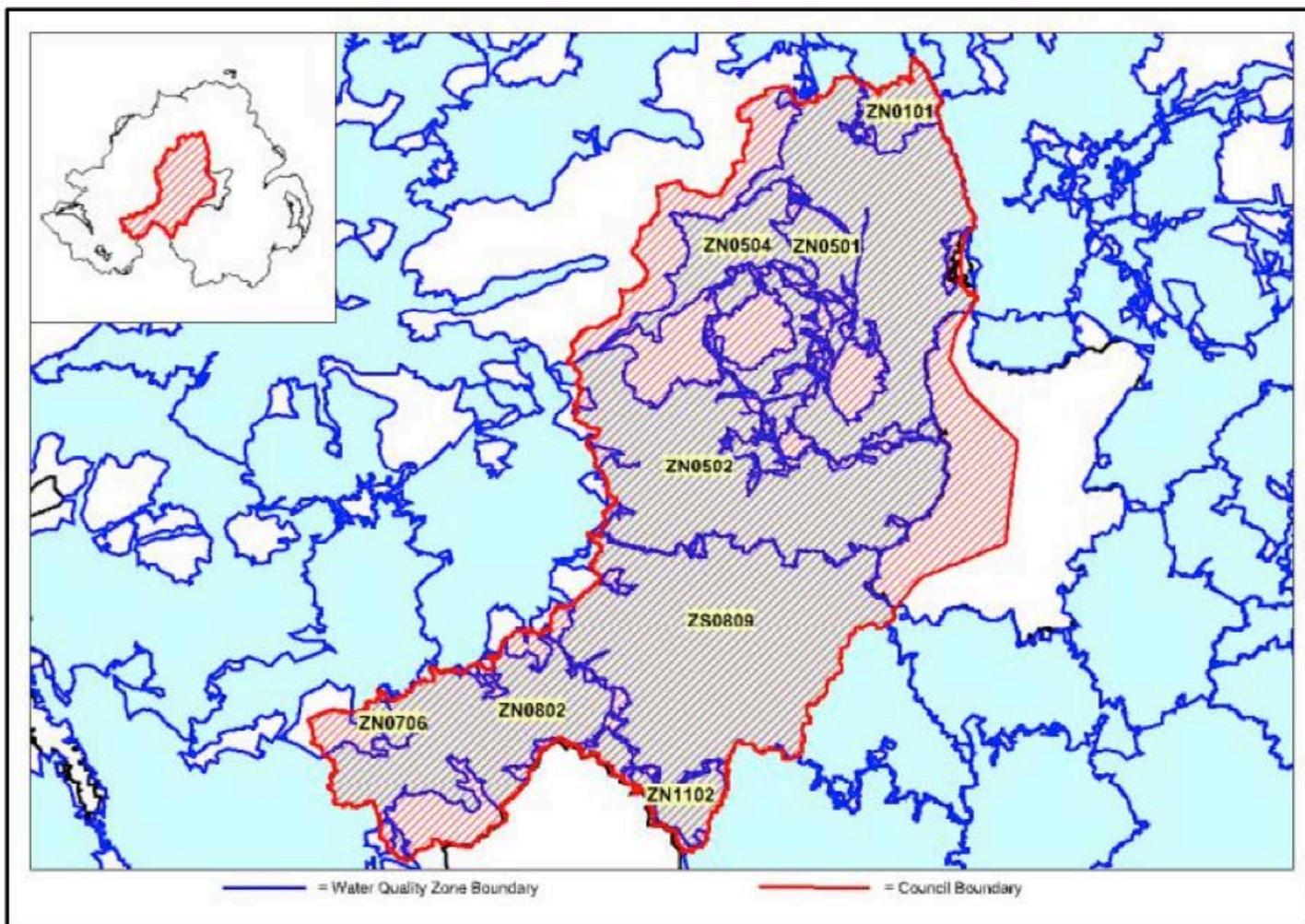
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Mid & East Antrim Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.8%

2019 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

2019 water quality Capital Works Programmes affecting the council area:

Alpha WTW Treatability Studies
Carrickfergus Watermain Improvements
Castor Bay to Dungannon Strategic Trunk Mains
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Major Incident Mitigation Project Region Freeze Thaw Improvements
McCrae's Brae Whitehead Watermain Extension
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Ballymena
PC15 Watermain Rehabilitation - Carrickfergus
PC15 Watermain Rehabilitation - Dungonnell
PC15 Watermain Rehabilitation - Killylane
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Replacement Watermain 2014/15 - Reactive, Bundle 2
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Tully Rehabilitation
Water Infrastructure Investment Model - Antrim North
Water Infrastructure Investment Model - Antrim South
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

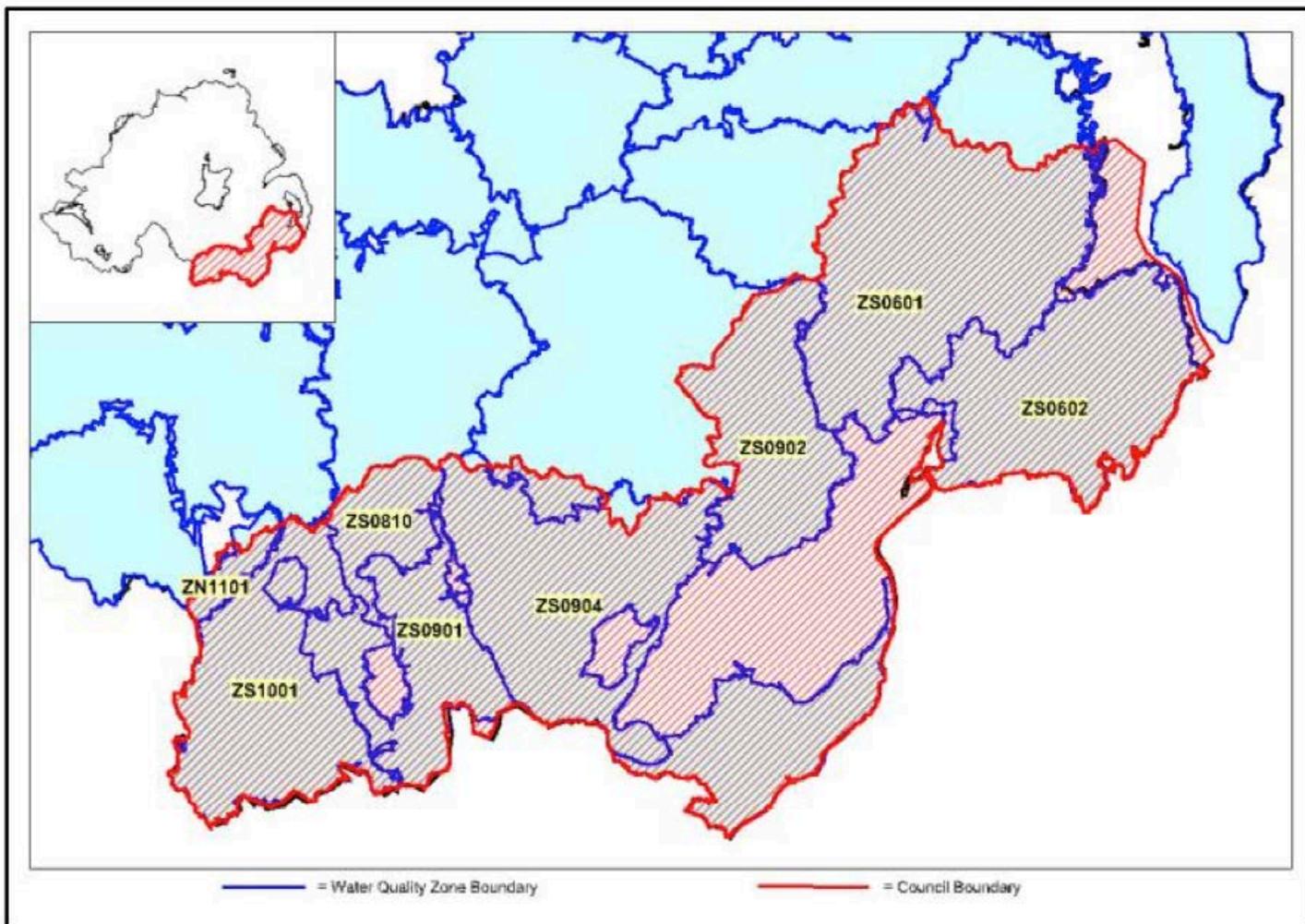
	Target	2015	2016	2017	2018	2019
Northern Ireland Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%
Mid-Ulster Compliance	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%

2019 water supply zones wholly or partially within the council area:

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

2019 water quality Capital Works Programmes affecting the council area:

A6 Castledawson to Randalstown
Altmore - Watermain Rehabilitation
Central Zone Resilience
Compiling Prioritised Lead Comms Pipe Work Packages
Cookstown - Watermain Improvements
Cookstown Watermain Improvements
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Granville Dungannon Invest NI Watermain Extension
Lough Fea Clear Water Basin Capacity Increase
Major Incident Mitigation Project Region Freeze Thaw Improvements
Omagh - Watermain Rehab
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Belfast South
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Replacement Watermain 2014/15 - Reactive, Bundle 2
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
Southern Zone Resilience
Water Infrastructure Investment Model - Antrim North
Water Infrastructure Investment Model - Moyola Magherafelt
Water Infrastructure Investment Model - Tyrone North
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Rehabilitation



% Compliance at Customer Tap (including Supply Points)

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

2019 water supply zones wholly or partially within the council area:

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

2019 water quality Capital Works Programmes affecting the council area:

A24 Ballynahinch Bypass
Ballintemple Zone Watermain Improvements
Ballymageogh Road, Kilkeel, Watermain Replacement
Compiling Prioritised Lead Comms Pipe Work Packages
Facilities Management Review
Feasibility Study for using Groundwater Abstraction
Fofanny Banbridge Zone Watermain Improvements
Killeavy Castle Water Distribution Improvements
Major Incident Mitigation Project Region Freeze Thaw Improvements
Newline, Hilltown, Watermain Replacement
PC10 Security and Emergency Measures Surveys
PC15 Lead Communication Pipe Replacement Programme
PC15 Professional Services Framework Watermain Network
PC15 Service Reservoir Sample Taps
PC15 Watermain Rehabilitation - Fofanny/North Lisburn South
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
Review benefits of UV Disinfection treatment within NIW clean water
Service Reservoir Security
South Down Zone WM Imps
Southern Zone Resilience
Sustainable Land Management in the Mourne Catchment Area
Water Infrastructure Investment Model - Banbridge South Armagh
Water Infrastructure Investment Model - Carran Hill Crossmaglen
Water Infrastructure Investment Model - Fofanny South
Water Resource and Supply Resilience Plan
Water Treatment Works Effluent Quality
Watermain Improvements, Newry
Watermain Rehabilitation

Appendix 4

Water Quality Events

Serious Drinking Water Quality Events in 2019

Date of Serious Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
08/01/19 – 16/01/19	Drumaroad WTW (427,990 Population)	A <i>Cryptosporidium</i> oocyst was detected in the works final water. Further oocysts were detected at Conlig Low, Lisnabreeny, and Russells Quarter SRs. The most probable cause of this event was <i>Cryptosporidium</i> oocysts in the raw water were not removed by the treatment process.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
09/01/19 – 16/01/19	Dunore Point WTW (669,761 Population)	A <i>Cryptosporidium</i> oocyst was detected in the works final water. Further oocysts were detected in the works final water and at Westland SR. The most probable cause of this event was <i>Cryptosporidium</i> oocysts in the raw water were not removed by the treatment process.	Antrim & Newtownabbey Borough; Belfast City; Lisburn & Castlereagh City; and Mid & East Antrim Borough.

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
20/01/19 – 15/02/19	Drumaroad WTW (427,990 population)	Elevated levels of aluminium occurred in the works final water due to treatment difficulties. An enforcement notice was already in place at the time of this event.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
04/02/19 – 07/02/19	Drumaroad WTW (427,990 population)	<i>Clostridium perfringens</i> were detected in the works final water and Ballykine SR. There were treatment issues at Drumaroad WTW at the time of these contraventions. Further samples taken in relation to this event were satisfactory.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
09/02/19 – 10/02/19	Castor Bay WTW (406,556 population)	A contravention of the turbidity standard occurred in the final water at Forked Bridge WTW. The elevated turbidity was caused by treatment difficulties at Castor Bay WTW which supplies Forked Bridge final water.	Armagh Banbridge Craigavon District; Belfast City; Lisburn & Castlereagh City;

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
29/04/19 – 23/09/19	Derg WTW (38,989 population)	<p>Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment to remove the elevated levels of MCPA in the raw water. MCPA is present in the raw water due to use of pesticide products containing MCPA for weed control within the catchment area for the River Derg and River Strule. An Interreg VA funded Source to Tap project commenced in 2017. The reduction of MCPA within the drinking water catchment is a focus for the project.</p> <p>The Project is led by NI Water and delivered in partnership with Irish Water, Agri-Food and Biosciences Institute, East Border Region, Ulster University and The Rivers Trust. The Project will run for 5 years, 2017- 2021.</p> <p>There is an ongoing enforcement notice issued by the Inspectorate in relation to this matter.</p>	Derry City & Strabane and Fermanagh & Omagh District.
04/05/19 – 11/05/19	Killymore SR (1066 properties)	Following a burst on the Tullywhisker to Rathkelly trunk main, there were difficulties achieving a permanent repair. Tankering was required over a number of days to maintain supply from Rathkelly and Killymore SRs. Bottled water was provided to customers who were unable to be kept on supply.	Derry City & Strabane.
15/05/19 – 16/12/19	Rathlin WTW (296 population)	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 closed by the Inspectorate in December 2019 following completion of the required remediation measures.	Causeway Coast & Glens Borough.
28/05/19 – 03/06/19	Ballybogey Road, Ballymoney (2 properties)	Coliform bacteria contraventions led to “Boil Water before Use until Further Notice” advice being issued to two properties. The contraventions occurred following a burst main caused by a third party contractor.	Antrim & Newtownabbey Borough; Belfast City; and Mid & East Antrim Borough.
29/05/20 – 01/06/19	Dorisland WTW (137,571 population)	A <i>Cryptosporidium</i> oocyst was detected in the works final water. All subsequent samples were satisfactory.	Causeway Coast & Glens Borough.

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
04/06/19 – 06/06/19	Ballybracken Drumdarragh SR (384 properties)	Following a burst at the inlet to Ballybracken Drumdarragh SR, tankering into the SR was required to increase storage levels and maintain the supply to customers.	Mid & East Antrim Borough.
05/06/19 – 07/06/19	Killylane WTW (54,597 population)	Contraventions of the aluminium parameter occurred in the works final water due to treatment issues caused by operational work at the site.	Mid & East Antrim Borough.
11/06/19 – 02/07/19	Ballinrees WTW (181,270 population)	Odour contraventions occurred in the works final water and related supply area following issues with the treatment process.	Causeway Coast & Glens Borough and Derry City & Strabane.
18/06/19 – 23/06/19	Clooney Road & Carnamuff Road, Ballykelly (2 properties)	Coliform bacteria contraventions following operational work led to “Boil Water before Use until Further Notice” advice being issued to two properties.	Causeway Coast & Glens Borough.
27/06/19 – Present	Mill Road, Kilcoo (4 properties)	Samples taken in response to customer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains.	Newry Mourne & Down District.
01/07/19 – 12/09/19	Seafin Road, Ballyronee (8 properties)	Samples taken in response to customer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains. The main was replaced in September 2019 and samples are now satisfactory.	Newry Mourne & Down District.
11/07/19 – 12/07/19	Rathlin WTW (296 population)	A turbidity contravention occurred in the works final water following excavation work relating to a new treatment process on the site.	Causeway Coast & Glens Borough.
18/07/19 – 15/08/19	Seagahan WTW (37,940 population)	Contraventions of the aluminium and turbidity parameters (above the Health Notification Values) occurred in the works final water following treatment difficulties. DWI has since audited this works.	Armagh Banbridge Craigavon District.
06/08/19 – 14/08/19	Glenhordial WTW (12,040 population)	A Contravention of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment to remove the elevated levels of MCPA in the raw water. MCPA is present in the raw water due to use of pesticide products containing MCPA for weed control within the catchment area for Glenhordial.	Fermanagh & Omagh District.

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
22/08/19 – 30/08/19	Kennaught Terrace, Limavady (26 properties)	<i>E.coli</i> and coliform bacteria contraventions led to “Boil Water before Use until Further Notice” advice being issued to 26 properties. The contraventions were probably caused by local contamination.	Causeway Coast & Glens Borough.
19/08/19 – Present	Ballymageough Road, Kilkeel (5 properties)	Samples taken in response to customer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains.	Newry Mourne & Down District.
23/08/19 – 26/08/19	Drumroad WTW (427,990 population)	Elevated levels of aluminium occurred in the works final water due to treatment difficulties. An enforcement notice was already in place at the time of this event.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
31/08/19 – 08/09/19	Killylane WTW (54,597 population)	Elevated aluminium levels occurred in the works final water following treatment difficulties.	Mid & East Antrim Borough.
03/09/19 – 04/09/19	Ballinrees WTW (181,270 population)	Contraventions of the aluminium and turbidity standards occurred in the works final water, and in the related distribution system. This was caused by treatment process difficulties.	Causeway Coast & Glens Borough and Derry City & Strabane.
04/09/19 – 17/09/19	Park View, Cloughoge, Newry (8 properties)	Contamination of the mains water supply occurred following a burst main caused by a third party contractor. The contractor was involved in a clean-up operation following a fire. There were taste, odour, and appearance complaints from customers.	Newry Mourne & Down District.
23/09/19 – 11/11/19	Caugh Hill WTW (79,029 population)	Contraventions of the trihalomethanes (THMs) parameter occurred in the works final water and related supply area following treatment difficulties.	Causeway Coast & Glens Borough and Derry City & Strabane.
27/10/19 – 15/11/20	Killylane WTW (54,597 population)	A contravention of the aluminium parameter occurred in the works final water. Following an investigation, NI Water were unable to identify the cause of the contravention.	Mid & East Antrim Borough.
28/10/19 – 29/10/19	Altnahinch WTW (33,310 population)	A contravention of the turbidity parameter occurred in the works final water following operational work to clean the Clear Water Tank.	Causeway Coast & Glens Borough.

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Serious Event	Associated Council Area(s)
30/10/19 – 15/11/19	Killyhevlin WTW (80,001 population)	<i>Cryptosporidium oocysts</i> were detected in the works final water. Following an investigation, NI Water were unable to identify the cause of the contraventions.	Fermanagh & Omagh District.
30/10/19 – 08/04/20	Stewarts Road, Annalong (5 properties)	Samples taken in response to customer complaints contravened the iron standard due to the condition of the iron mains. The main was replaced in March 2020 and the iron level is now satisfactory.	Newry Mourne & Down District.
05/11/19 – 06/11/19	Altnahinch WTW (33,310 population)	A contravention of the turbidity parameter occurred in the works final water following operational work to clean the Clear Water Tank.	Causeway Coast & Glens Borough.
18/11/19 – 20/12/19	Rathlin WTW (296 population)	Salty/astringent tastes were detected in the works final water. NI Water were unable to identify the cause of the tastes.	Causeway Coast & Glens Borough.

After investigations during the reporting period, there were also eight events categorised by DWI as “Minor”, and twelve 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 customers' 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 - (<https://www.watersafe.org.uk/>). An online resource has been published on the NI Water website (<https://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). The simplest way for customers to source their local AP is to use the WaterSafe online directory (<https://www.watersafe.org.uk/>) and input their postcode. This online resource contains lists of plumbers who are members of all seven recognised AP schemes operating across the UK.

NI Water employs an operational Field Manager, supported by a team of five customer facing water regulation inspectors across Northern Ireland, under the direct management of a Senior Engineer who oversees all activities.

NI Water has allocated the majority of customers 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 industries representative organisation, the 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 2019 Annual Information Return (AIR) figures:

Description	Number
*Total number of connected premises	881,939
*Total number of new connections completed	8845

* Calendar Year

Compliance Data

Staff and Training

Number of staff involved in enforcement.

Description	Number
Spending more than 95% of time	5
Spending between 70 and 80% of time	1
Spending between 0% and 20% 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
- Criminal investigation procedures course

Promotion of the Regulations

As a funding member of WRAS, NI Water has representation on the WRAS Board, Technical Committee and Technical Support Group national forums, which each meet between three and 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 (<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

Notifications

Description	Number
*Total No. of new water connection applications received	881,939
<32mm	2498 Applications: 8752 Connections
>32mm	82 Applications: 93 Connections
*Total number of Regulation 5 notifications received and not relating to new service applications and connections.	269

* Calendar Year

In most cases, customers must notify NI Water in advance of installing or making changes to the water plumbing systems within their premises. Owners, occupiers, and plumbing installers must obtain approval from NI Water by giving advance notice in writing of their intentions. Advance notification forms can be obtained from the NI Water website, completed, and returned to the address detailed on the form. The list of work that cannot commence without advance notification can be obtained by referring to the 2009 Regulations and is detailed under Regulation 5. NI Water will not unreasonably withhold consent for any work, but it may be granted subject to conditions that 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 always use an approved plumbing contractor when installing, altering or repairing plumbing systems, water fittings, and water-using appliances.

NI Water distributed 70,000 water (fittings) leaflets to raise customer awareness of the regulations with bills to all non-domestic customers in 2019.

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 schemes across the UK. WaterSafe can be contacted by telephoning 03332 079030 or by referring to 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 or contact SNIPEF on 01315 560600. The majority of SNIPEF plumbers are also registered through the WaterSafe search facility.

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)	2014	2015	2016	2017	2018	2019
No of Approved Plumber firms in Northern Ireland.	72	72	69	55	52	52 (69)
No of individual plumbers in brackets						

Inspections (Other than those arising from Notification)

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

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; (Water taps & nickel exceedances)
- 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
- Shallow service pipes providing insufficient protection from ground frost penetration
- Failure to provide pipe identification labelling ISO14726

Disputes

No formal disputes were referred to arbitration in the reporting year. The NI Water senior solicitor completed three visits to customer's premises as pre-caution visits.

Relaxations

None applied for.

Compliance Actions

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

General Information

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

- There are Circa 49,000 FC 4&5 premises across Northern Ireland
- NIW inspected 1279 premises in total across all risk categories
- Of those inspected, FC 4&5 totalled 1031 during the reporting year
- Number of Reactive Water Regulation inspections, was 278
- Water quality inspections in year totalled nine, two of which were associated with nickel failures from water taps not compliant with the requirements of Regulation 4

Water Regulations requested assistance	Number
Water Quality	9
Dedicated email	269
DG, Billing & Revenue, Metering etc	14
Approved Plumbers Fluid Category 4 Installations/ Re-Certifications Renewable heating notifications	29 220
Educational, Colleges, Shows etc	6

NI Water, example of high level & high profile Inspections

Type of Premises	Type of Premises
Quarry Industry	Domestic Properties
Heavy Manufacturing Industry	Tourist Visitor Centre
Aerospace Industry	Power Generation - Anaerobic Digester plants
Food Production Factory	Industrial Units
Golf tournament - The 148th British Open (Royal Portrush GC)	Petrol Filling Station
MOD/Police Establishment	Bar Restaurant
Animal Feed Storage Facilities	Temporary Events
Outdoor events	British Open camping/glamping villages & Helicopter pads
Sporting Pavilions	British Open park and ride facilities
Harbour Terminals	

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. The existing Connect 2 system is built on now de-supported IT platforms and is now in urgent need of replacement. NI Water completed a detailed draft business case for the upgrade or replacement of the existing Connect 2 system, at the time of this report the various options are still under consideration.

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.

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.
- Finalised and published 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.
- WC compliance working group (NI Water chaired this national group) – Outputs from this group based on concerns about non-compliant WC inlet valves and general dimensions can be found by referring to www.wras.co.uk

- Participated in water industry national working groups to further explore opportunities to promote regulatory consistency, customer notifications and performance standards reporting across the industry:
 - o Ports and Harbours working group
 - o Consistency measurers working group
 - o Performance measurers working group
 - o RPZ Measurers working group
 - o Point of sale working group
 - o Recognition of Approval and Certification Schemes (RACS)
- Continue to promote the benefits of becoming an Approved Plumber in Northern Ireland. NI Water commenced a promotion and recruitment drive to attract more qualified plumbers to register with WaterSafe. This involved a promotion campaign across all social media platforms with support from the Drinking Water regulator and CCNI.
- The regulation team has participated in a number of meetings with other key stakeholders to promote the Regulations and how these interact with other Northern Ireland statutory bodies such as;
 - o Drinking Water Inspectorate (DWI)
 - o Department for the Economy (DfE)
 - o Environmental Health Officers
 - o DfI (Long Term Water Resource Strategy)
- Reported to DfI (Regulator), along with other “stakeholders”, on a quarterly/yearly basis.

NI Water completed a detailed draft business case for the upgrade or replacement of the existing Connect 2 system, at the time of this report the various options were still under consideration by senior management.

Looking Forward

- 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).
 - o The potential restructuring of WRAS given changes in the market place and new approval/recognition schemes
 - o 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.
- Continuation of the campaign to increase the number of Approved Plumbers in Northern Ireland using all social media channels and by running training courses for appropriately qualified plumbers to become WaterSafe registered.
- 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 supplies to ensure consistency of reporting definitions.

Appendix 6

Glossary of Technical Terms

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

Investment programme	Investment in improvement works to water treatment works and distribution systems.
LIMS	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.
Mains rehabilitation	Restoration or replacement of water mains pipework to a proper condition.
MCPA	MCPA is a selective hormone-type herbicide, which is absorbed by the leaves and to some degree the roots.
Mean Zonal Compliance	The former assessment of water quality at a parameter level based on water supply zones.
Microbiological	Associated with the study of microbes.
m³/d	Cubic metres per day.
mg/l	Milligrams per litre.
µg/l	Micrograms per litre.
ml	Millilitre.
MI/d	Megalitres per day (one MI/d is equivalent to 1,000 m ³ /d or 220,000 gallon/d).
Oocyst	The resistant form in which <i>Cryptosporidium</i> occurs in the environment, and which is capable of causing infection.
Orthophosphoric acid	A chemical dosed in low concentrations at water treatment works to minimise the uptake of lead from old pipework into customer water.
PAHs	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,
Parameter	A parameter is any substance, organism or property listed in the regulations.
Pathogen	An organism that causes disease.
PCV	See ‘Prescribed concentration or value’.
PEO	‘Provisional Enforcement Order’ – second stage in DWI enforcement process.
Pesticides	Any fungicide, herbicide or insecticide or related product (excluding medicines) used for the control of pests or diseases.
PHA	The Public Health Agency works to initiate, stimulate, develop and support health promotion.
Plumbosolvency	The tendency for lead to dissolve in water.
Prescribed Concentration or Value	The numerical value assigned to water quality standards (PCV), defining the maximum or minimum legal concentration or value of a parameter.
Protozoan parasites	A single celled organism that can only survive by infecting a host.
Public register	The information made available by NI Water to the public as required by regulation 34 in the Regulations.
Regulations	The Water Supply (Water Quality) Regulations (Northern Ireland) 2017.

Remedial action	Action taken to improve a situation.
RPZs	Reduced Pressurised Zone Valve – a type of backflow prevention device.
SCaMP NI	Sustainable Catchment Management Planning Northern Ireland.
Service reservoir (SR)	A water tower, tank or other reservoir used for the storage of treated water within the distribution system.
SIC Code	Standard Industrial Classification Code – used for Water Fittings Regulations.
Springs	Groundwater appearing at the surface at the outcrop of the junction of an impermeable stratum.
Surface water	Water from rivers, impounding reservoirs or other surface water sources.
Technical audit	The means of checking by the DWI that NI Water is complying with its statutory obligations.
Toxicology	The study of the health effects of substances.
Treated water	Water treated for use for domestic purposes as defined in the Regulations.
Trihalomethanes (THMs)	A group of organic substances comprising, for the purposes of the Regulations, four substances: trichloromethane (also known as chloroform), dichlorobromomethane, dibromochloromethane and tribromomethane.
UKAS	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.
Utility Regulator	The Northern Ireland Authority for Utility Regulation (NIAUR).
WDPD	DfI Water and Drainage Policy Division. Deemed to be the Regulator for all activities associated with the Water Supply (Water Fittings) Regulations (NI) 2009.
WRAS	The Water Regulation Advisory Scheme. A list of Standard Industrial Classification codes with related fluid categories used to define categories of non-domestic properties.
Water Regulations	The Water Supply (Water Fittings) Regulations (NI) 2009.
Water Safety Plan	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.
Water supply zone (Zone)	The basic unit of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.
Website	Location of information on the Internet. NI Water’s website is: www.niwater.com
Weed-wiping	Weed treatment method wiping the top of weeds using a roller or wicks infused with pesticide.
Wholesomeness	A concept of water quality that is defined by reference to standards and other requirements set out in the Regulations.

