Drinking Water Quality
Annual Report 2013

northern ireland water

Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2013. I am delighted to report that our water quality results have improved and continue their upward trend and we are proud to deliver a very high drinking water quality to our customers.

As a provider of one of Northern Irelands most essential services we put the needs of our customers, both existing and future, at the heart of all that we do. With this in mind we are committed to providing high quality drinking water in a cost effective manner. By doing this we contribute to the health and wellbeing of the community and the needs of commercial customers in a sustainable way.

Drinking water is carefully monitored and tested for quality. This report summarises NI Water's results from 1 January 2013 to 31 December 2013 to meet the requirements of the Regulations under which we operate. During this reporting period, 99.85% of all tests carried out on samples taken from customers' taps and authorised supply points, complied with the regulatory standards assessed using the Mean Zonal Compliance (MZC) method of assessment. This assessment demonstrates that NI Water produced the best ever drinking water quality in 2013.

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

At the same time as producing the best ever quality of drinking water for our customers, NI Water also returned the highest ever quality of treated wastewater safely back to the environment.

Our ongoing investments in water treatment, storage and watermains have maintained regulatory compliance and improved our quality of service. Whilst we continue to make progress, we need to continue to invest for the future to meet the lower regulatory compliance level for lead in 2014 onwards.

During 2013 we detected elevated levels of pesticides in our catchments, largely caused by wash-off from farm land during the very wet weather events we experienced. We are liaising closely with the farming community and other stakeholders through the Water Catchment Partnership and the SCaMP NI programme to try and minimise the chances of reoccurrence of this in the future.

Our capital investment programme for the reporting period to maintain and safeguard water quality is detailed by council area in Appendix 3.

We are committed to overcome the challenges presented to us and will continue to work closely with our economic and environmental regulators, the Consumer Council and other stakeholders throughout this process.

I trust you will find this report informative and relevant to your needs. You can be assured of our commitment to maintaining and where possible improving the quality of the drinking water delivered to our customers. NI Water exceeds the targets placed upon it to comply with regulatory water quality standards, and will continue to improve our service to customers in the future.

Sara Venning
Chief Executive Officer

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Drinking Water Quality

Water Quality Standards

During 2013 Drinking Water Quality in Northern Ireland was assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as appended by the 2010 updated regulations. 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; and
- the provision and publication of information.

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

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

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

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

Mean Zonal Compliance (MZC)

Assessment of the quality of water supplied to NI Water's customers is currently monitored using a measurement known as "Mean Zonal Compliance".

This is the average water quality supplied to our customers and is based on 37 specified individual or combined parameters measured at either customers' taps or authorised supply points. These parameters are specified by the Drinking Water Inspectorate (DWI).

This method provides a simple means of summarising drinking water compliance and comparing year on year performance, and gives a consistent method of comparing water quality across the UK.

Drinking Water Quality Summary – Year on Year

Compliance assessed against the "Water Supply (Water Quality) Regulations (Northern Ireland) 2010"

Reporting Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mean Zonal Compliance (average water quality at customer tap at parameter level)	99.02%	99.34%	99.32%	99.50%	99.76%	99.82%	99.83%	99.80%	99.85%
Water Treatment Works Water Quality	99.89%	99.90%	99.92%	99.95%	99.92%	99.99%	100.00%	99.98%	99.93%
Overall Quality at all NI Water Sites and Customer Taps	99.49%	99.64%	99.60%	99.69%	99.80%	99.87%	99.84%	99.77%	99.81%

Protecting Our Customers

Drinking Water and Health

The safety of drinking water is a paramount public health concern. 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 Liaison Group (DWLG) is a multi-agency group which 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, Social Services and Public Safety, the Public Health Agency, the Drinking Water Inspectorate, the Northern Ireland Public Health Laboratory, the Chief Environmental Health Officers' Group 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 will be regularly reviewed and updated.

The guidance document can be found at:

www.niwater.com/drinking-water-guidance

Lead Monitoring for Vulnerable Customers

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

Primary Schools in Northern Ireland have been prioritised based on the age of the school and dates of any building modification and sampled as part of this programme. Any school where lead levels were found to be above the future 10µg/l standard has been investigated and the lead pipework replaced by NI Water and the Education Authorities, as appropriate. During 2013, 2 primary schools had this plumbing replaced.

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

Source to Tap

Drinking Water Safety Plans

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

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

The Water Industry has adopted the DWSP approach to risk management from the raw water source, through water treatment, distribution and to our customer's taps. NI Water has put in place systems to identify hazards, assess risks and implement mitigation measures, which could potentially threaten each stage of the water supply process. NI Water works with the Northern Ireland Environment Agency (NIEA), the Drinking Water Inspectorate, 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.

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

Sustainable Catchment Management Planning Northern Ireland (SCaMP NI)

SCaMP NI is an approach to sustainable land management within drinking water catchments, NI Water land and that of others,

to increase the benefits gained and minimise risks from the environment. Water catchments are designed to be the first stage of a multiple barrier approach to water treatment.

NI Water owns approximately 94km^2 of land in Northern Ireland and has an active interest in many times this area of land within drinking water catchments that are owned by others. NI Water has a number of objectives associated with its land holdings that it is working to meet. These add value to the lands primary function as a drinking water catchment, and offers benefits and opportunities to the wider community of Northern Ireland.

The objective is to improve the quality and reliability of the raw water received at NI Water's raw water abstraction points through sustainable catchment based solutions that focus on protecting the natural environment through achieving favourable condition and habitat improvement.

The SCAMP Policy formalises NI Water's approach to meeting a number of legislative drivers as well as internal and external objectives.

Solution Types

The solutions can be based on capital interventions (which result in the maintenance or creation of assets) or operational solutions (which provide a service such as the provision of guidance on land use). These solutions can either be on NI Water land or private land so long as it can be shown that NI Water receives benefits against a primary driver over a period of time. It is therefore necessary to be able to assess the benefits.

Approach

A Steering Group has been set up with representation from a wide range of environmental stakeholders. The aim of the group is to ensure that SCaMP NI actions are aligned with best practice and the aims and objectives of all stakeholders, therefore contributing holistically to sustainable catchment management.

NI Water will seek to develop:

- Solutions that focus on addressing the source of the problem, rather than dealing with the consequences.
- Win-win solutions, that offers benefits under as many of the primary and secondary drivers as possible.

Opportunities to work with other governments departments, non-government organisations and environmental stakeholders to attain solutions that provide shared goals and benefits and allow increased leverage of investments made through positive gearing.

Future plans

- To liaise with DARD to influence agricultural policy to minimise pesticide issue.
- To liaise with University of Ulster & QUB to explore opportunities for collaboration on research projects.
- Catchment studies in every drinking water catchment in N Ireland to identify catchment actions to be carried out in PC15 period.
- Roll out The Water Catchment Partnership to address pesticide problems across N Ireland.
- Establish links with Irish Water for liaison on cross border catchment issues.
- Further develop relationships with stakeholders to identify concerns and opportunities.

SCaMP NI Example Project - Garron Plateau Blanket Bog Restoration

NI Water has been working with the assistance of the RSPB and NIEA to protect and restore 2,000 hectares of peatland at the Garron Plateau, within the catchment area of Dungonnell WTW in the Antrim Hills. The largest expanse of intact blanket bog in Northern Ireland is found on the Garron Plateau and it is home to protected birds of prey and rare plants such as marsh saxifrage and bog orchid.

Over the years there has been overgrazing by livestock on the plateau and the site was damaged during the 1960s and 1970s when drainage ditches were dug through the bog. Both of these activities gave rise to exposed peat which then became susceptible to erosion. This resulted in the reduced quality of raw water to Dungonnell Reservoir which was more expensive to treat and also the natural hydrology of the bog was damaged.

In order to reverse the damage, a landscape scale approach has been taken, ensuring that the whole catchment is managed sustainably. NI Water has worked with tenant farmers to reduce the grazing pressure, thus allowing the natural bog vegetation to recover. Also work has been done to restore the natural hydrological conditions by blocking drains to raise the water table by creating peat, stone and sheet dams. This will result in the raising of the water table and the "re-wetting" of the bog, promoting colonisation by Sphagnum moss, an essential component of a functioning bog. The creation of these peat dams will reduce water velocity in the drains and allow more settlement time, thus reducing runoff and improving raw water quality and reliability through improved regulation of supply through the retention effects by the bog. This will result in cost savings at the treatment works as the requirement for chemical treatment to remove colour from the raw water will be reduced. The reduced energy requirements for treating water will contribute to our Climate Change Strategy and our aims to reduce our carbon footprint and greenhouse gas emissions.

BEFORE… Erosion, runoff, dried out vegetation & poor raw water quality

AFTER… Saturated peat, enhanced habitat for wildlife & improved raw water quality

Control of Pesticides

Unfortunately on occasion the incorrect use and disposal of pesticides has led to higher than normal levels of pesticides in raw water supplies.

To address the issue, the Water Catchment Partnership has been established. This is a working partnership established with representatives from NI Water, Ulster Farmers Union, Northern Ireland Environment Agency, The Voluntary Initiative and DARD's College of Agriculture, Food and Rural Enterprise. The aim is to deliver one message incorporating the ethos from all organisations to effectively tackle the problem of pesticides in the water environment, particularly in drinking water catchments.

The Water Catchment Partnership aim is to proactively work together to promote and raise awareness of best practice when using pesticides in the garden or on the farm, through a voluntary approach to improve water quality. Pesticides include herbicides, weedkillers, fungicides and insecticides. The initial focus is in the Derg WTW catchment area and if the project is successful the scheme will be rolled out to other drinking water catchments.

To better educate the community, NI Water has been liaising with the other environmental stakeholders including:

- Department of Agriculture and Rural Development
- Loughs Agency
- Northern Ireland Environment Agency
- Rivers Agency
- Ulster Farmers Union

This liaison has resulted in the production of an educational leaflet which it is hoped will reduce the possibilities of contamination from pesticides.

Environmental Management System (EMS) ISO 14001

NI Water's Environmental Management System (EMS) has been certified to ISO 14001 and externally accredited since 2003. The EMS greatly assists NI Water in maintaining environmental compliance and continual improvements at its over 3,500 sites whilst providing high quality water and sewerage services to customers.

Mains Rehabilitation

NI Water has identified the need to deliver a significant programme 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. It is also to ensure adequate levels of water quality and customer supply.

In delivering these objectives, NI Water's delivery mechanism is the Water Mains Rehabilitation Framework. This consists of two Contractors and has delivered over 1000km of new water mains in the past three years. The current investment cycle is Price Control 13 (PC13), which will deliver 445km of water main infrastructure over the next two years. The rehabilitation framework delivers water mains across Northern Ireland as identified by the programme of work from zonal studies.

The drivers for this programme of work are the maintenance of the systems, pressure management, reduction in interruption to supplies, better water quality, reduction in levels of leakage and allowance for growth in demand. NI Water considers a range of techniques for the installation of the rehabilitated mains. These include relining of the existing asset through online replacement by pipe insertion or pipe bursting, to off line replacement by directional drilling or open cut techniques.

Where possible, cost effective, trenchless technologies are used to replace or rehabilitate water mains to reduce the disruption caused by open-cut trench construction. Likely construction methods include pipe-bursting, slip-lining, directional drilling, spray lining and open cut. The most appropriate technology is selected for the various work packages and associated ground and traffic conditions.

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 customers' 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 which do not change in the supply watermain 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 which 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 customers' 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 by one treatment works or blended water from several works. The number and boundaries of water supply zones are subject to change according to operational requirements as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis 50 water supply zones were monitored during the period of this report.

The parameters for which samples are tested include:

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

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

Sufficiency of Supply

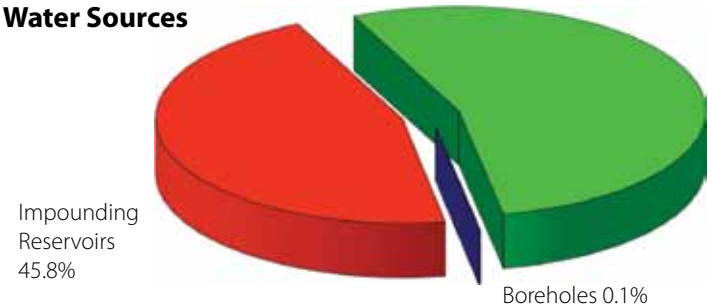
Approximately 818,000 domestic, agricultural, commercial and business properties in Northern Ireland are connected to the public water supply – this equates to around 99.9% of the total population. This entailed supplying an average of about 563 million litres of high quality drinking water to customers every day during 2013. For this NI Water utilised approximately 34 sources which include upland Impounding Reservoirs, Boreholes, Rivers and Loughs.

The Water and Sewerage Services (Northern Ireland) Order 2006 requires NI Water to prepare and maintain a water resources management plan to indicate how water resources will be developed and managed to enable the undertaker to meet its obligations. The Order requires NI Water to review the plan on an annual basis and prepare a revised plan every 5 years or when there is a material change in circumstances.

NI Water recently completed a Water Resource Management Plan to meet this obligation and published this in March 2013.

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

Raw Water Sources



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 customers' taps;
- a compliance assessment of this information against the regulatory standards; and
- carrying out an inspection programme which examines the sampling, analytical, reporting, water treatment, distribution policies and relevant procedures.

In 2013, the technical audit inspection programme included:

- an audit of Derg Water Treatment Works;
- an audit of Deehommed SR;
- an audit of Magheraliskmisk SR
- an audit of Rathkeel SR;
- an audit of the Laboratory Information Management System (LIMS); and
- progress reporting on agreed follow-up action including non-trivial parameter contraventions.

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 full list of all Water Quality Events notified to the DWI during 2013 is detailed in Appendix 4.

Example Events

1. During March 2013 NI Water had to deploy alternative water supplies. This was due to heavy snowfalls/ice/high winds which had affected the electricity supply to several Service Reservoirs (SRs) through-out Northern Ireland.

These adverse weather conditions resulted in a Category-3 incident response regime being set-up. This consisted of a Silver Response team and a Bronze Incident team established at Ballykeel Depot, Ballymena to monitor and manage the situation.

Only 1 tanker was required to be deployed. This was located in Straid village in County Antrim from the 24th to 26th March as Slimero SR was out of service because a generator could not be deployed on site due to the weather. A population of approximately 2,500 was affected. Other affected customers received bottled water.

Through-out the Event our stakeholders the DWI, Public Health Agency (PHA) and Environmental Health Officers (EHO) were kept updated on the situation.

This Event was declared by DWI to be a "Not Significant Event" as alternative supplies were provided and the water quality results for these were satisfactory.

2. On 28th May 2013 an Aluminium exceedance was detected in a weekly operational sample of Dorisland WTW final water.

An investigation carried out by the Water Quality Scientist for the area concluded that elevated aluminium levels on 28th May were due to a temporary overdosing of FAS (Ferric Aluminium Sulphate) coagulant which occurred from around noon on Monday 27th May to early the following morning. This was due to a fault with the automatic coagulation unit.

The automatic coagulation unit was taken out of service on the morning of 28th May 2013 and coagulation control was switched to flow-proportional. Meanwhile resamples were taken at the WTW and downstream to monitor water quality. The fault with the automatic coagulation unit was repaired by 5th June 2013.

This was declared by DWI to be a "Significant Event".

Lessons learnt from this Event included introducing a maximum pump stroke so that this level of FAS overdosing cannot occur again which was noted by the DWI in their Event Closure Letter.

Regulatory Enforcement

DWI put in place four "Consideration of Provisional Enforcement Orders" (CPEOs) and one "Provisional Enforcement Order" PEO during 2013.

- CPEO 13/01 – to seek remedial measures relating to iron contraventions for properties at Gelvin Road, Dungiven, within Brishey District Metered Area (DMA) in Caugh Hill water supply zone. CPEO closed 18/10/2013.
- CPEO 13/02 – to seek remedial measures relating to iron contraventions for properties at Glenvale Road, Newry, within Aughnagon District Metered Area (DMA) in Fofanny Mourne water supply zone. CPEO closed 18/10/2013.
- CPEO 13/03 – to seek remedial measures relating to MCPA contraventions from Clay Lake WTWs.
- CPEO 13/04 – to seek remedial measures relating to microbiological contraventions within the water distribution system supplied from Dunore WTWs.
- PEO 13/01 – to require remedial measures to be put in place relating to MCPA contraventions from Dorisland WTWs. PEO closed 11/06/2013.

Three CPEOs and one PEO issued during 2012 were closed during 2013.

- CPEO 12/02 – Caugh Hill WTWs contraventions of aluminium, iron, pH, THMs, and turbidity standards. Closed 11/07/2013 following completion of undertakings.
- CPEO 12/01 – Dorisland WTWs contraventions of pesticide MCPA standard. Closed 07/03/2013 following completion of undertakings.
- CPEO 12/03 – Lough Bradan contraventions of THMs standard. Closed 6/12/2013 following completion of undertakings.
- PEO 12/03 – Caugh Hill WTWs contraventions of THMs standard. Closed 5/03/2013 following completion of undertakings.

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 and have been awarded United Kingdom Accreditation Service (UKAS) accreditation. UKAS auditors carry out an annual audit of the laboratories' quality system.

In order to rapidly detect Cryptosporidium oocysts NI Water has a Cryptosporidium Analytical Unit at its Altnagelvin Laboratory. This Unit has Drinking Water Inspectorate approval and is instrumental in the development of new accredited methods for the water industry. This unit has also been awarded United Kingdom Accreditation Service (UKAS) accreditation.

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

Use of Technology

To assist in its ability to audit its sampling programme, NI Water has put in place a Personal Digital Assistant (PDA) based system to produce an enhanced audit trail and to eliminate data transcription errors.

The system uses ruggedised PDAs which incorporate mobile phone technology 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 location fix and time for each sample as it is collected. As 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 is currently being 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 gives an enhanced audit trail.

Water Quality Summary

NI Water Sites in Service

During 2013, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	25
Service Reservoirs	316
Water Supply Zones	50
Authorised Supply Points (see glossary)	25

Overall Water Quality

99,567 microbiological, physical and chemical tests were carried out for mandatory and indicator parameters on water samples taken from water treatment works, service reservoirs and customers' taps in the year 2013. 99,381 of these tests complied with the regulatory standards giving an overall percentage compliance of 99.81%. Under the Regulations a subset of these parameters is used to assess Mean Zonal Compliance at customer tap (as set out in Appendix 2).

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 total coliforms and faecal coliforms (E. coli) at water treatment works, service reservoirs and in the distribution system at customers' 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 customers' 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.

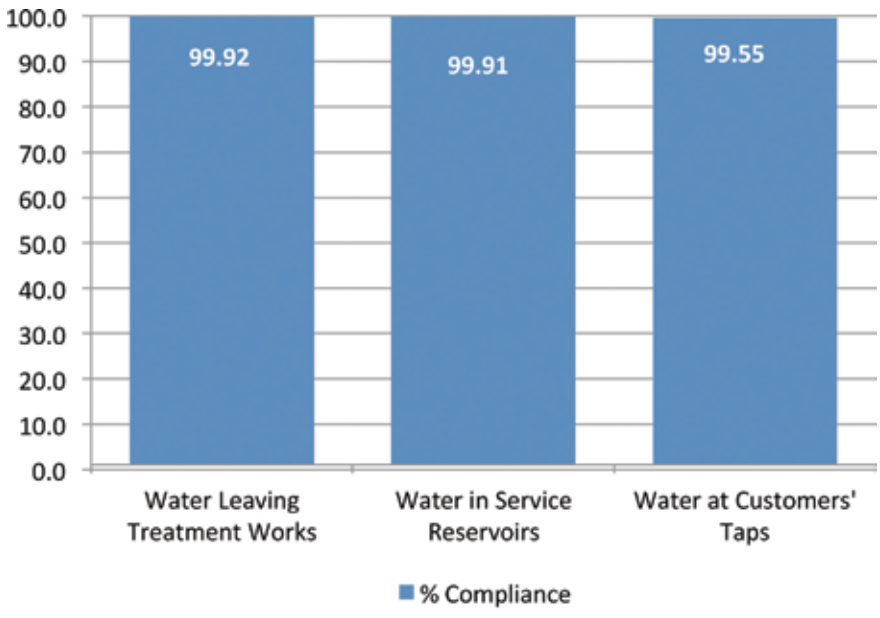
A summary of the microbiological quality of water supplied in 2013 is given below.

Physical and Chemical Quality at Customer tap

Physical and chemical quality standards apply to water supplied at customers' 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.

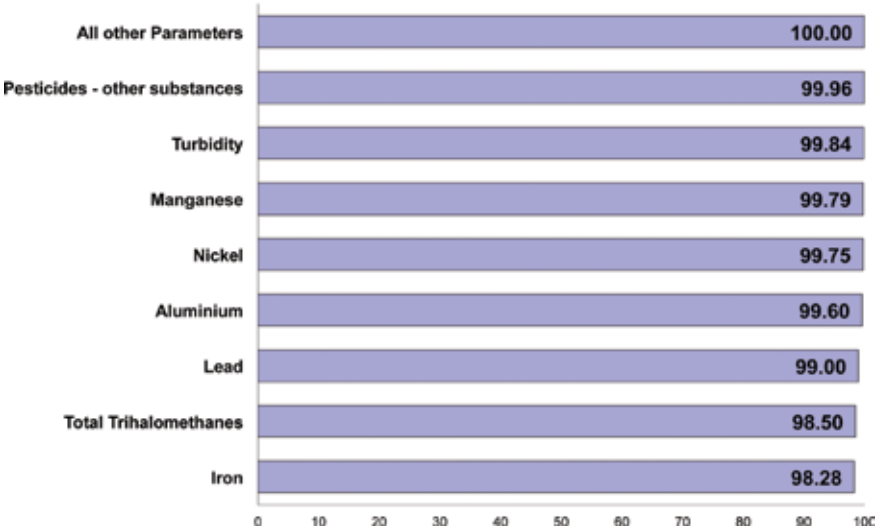
- 34,431 physical and chemical tests were assessed against their consent for water samples taken at customers' taps or authorised supply points in the year 2013. 34,362 of these tests complied with the regulatory standards giving a compliance of 99.80% for physical and chemical tests.

Overall Microbiological Water Quality



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 on the basis of 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. Appendix 2 also shows the Mean Zonal Compliance achieved by NI Water for 2013.

Mean Zonal Compliance by Chemical Parameter



Overall Water Quality

Overall Water Quality					
	Number of Analytical Tests	**Number of Tests Exceeding PCV**	**% Compliance with Regulatory Standards**	**Number of Tests Exceeding PCV or Authorised Departures**	**% Compliance with Regulatory Standards including Authorised Departures**
Water Leaving Treatment Works					
Bacteriological Analysis	13,234	10	99.92	10	99.92
Indicator parameters	6,617	18	99.73	18	99.73
Total	**19,851**	**28**	**99.86**	**28**	**99.86**
Water in Service Reservoirs					
Bacteriological Analysis	32,236	30	99.91	30	99.91
Total	**32,236**	**30**	**99.91**	**30**	**99.91**
Water at Customers' Taps or Authorised Supply Points					
Bacteriological Anal inc Coliforms	13,049	59	99.55	59	99.55
Zone Chemical Analysis	17,696	65	99.63	65	99.63
Supply Point Chemical Analysis	10,208	3	99.97	3	99.97
Indicator parameters	6,527	1	99.98	1	99.98
Total	**47,480**	**128**	**99.73**	**128**	**99.73**
Total Mandatory Parameters	**86,423**	**167**	**99.81**	**167**	**99.81**
Total Indicator Parameters	**13,144**	**19**	**99.86**	**19**	**99.86**
Overall Water Quality Total	**99,567**	**186**	**99.81**	**186**	**99.81**

Explanatory notes of exceedances of the microbiological and chemical quality standards with less than 100% compliance are provided in the following section.

(Taste & Odour have been removed from the overall compliance assessment as data validation for these parameters is still ongoing. All the required regulatory samples were scheduled and collected for analysis.)

Water Quality Issues

During 2013 the following main parameters exceeded their prescribed concentration or value.

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 watermains. 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) and 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 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 watermain and the kitchen tap or in domestic plumbing, there may be a risk of concentrations at the customers' tap exceeding the lead standard.

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

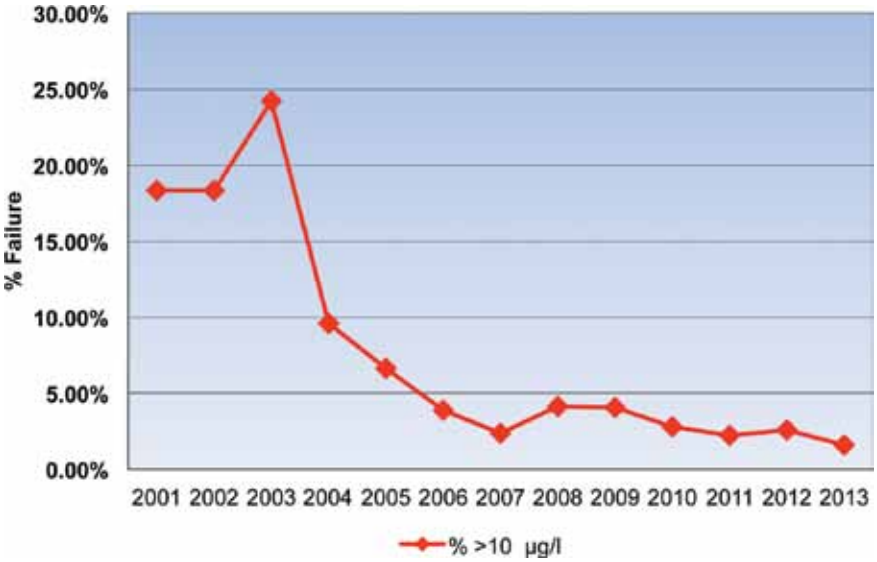
NI Water will also replace free of charge, any of its lead pipes supplying a property, if it receives a written request from a customer who has replaced the portion of lead service pipe for which the householder is responsible.

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

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

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 Exceedance against New Regulations

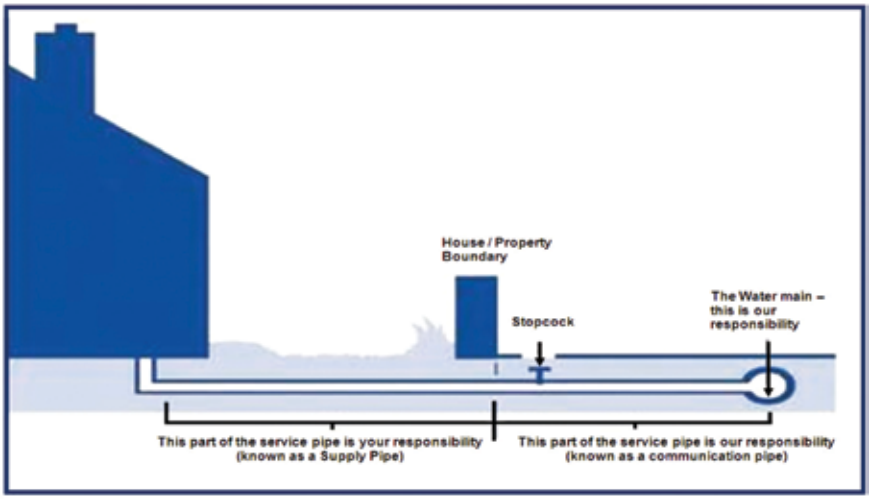


A leaflet on lead in drinking water is available from the NI Water website at **www.niwater.com/about-your-water**

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

Responsibility for Pipes

The diagram below shows who is responsible for which pipes.



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

A single exceedance was noted for nickel. This was investigated, and no repeat exceedance was recorded. Nickel exceedances are often found to be due to the customer tap and chrome/nickel plating.

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 currently analyses samples for 47 individual pesticides. 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.

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

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.

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**

Investing for the Future

Asset Management

In May 2010 the Minister for Regional Development provided Social and Environmental Guidance which outlined the priorities for investment for NI Water for the period 2010 to 2013 (PC10). The guidance set a Mean Zonal Compliance target of not less than 99.7% for water quality during this period. This guidance (and target) has subsequently been extended to cover the period 2013 to 2015 (PC13). NI Water has developed business plans (PC10 & PC13) to deliver or exceed this target through appropriate investment. These are largely a continuation of the investment plans made during the period 2007 to 2010. The water quality section of the PC13 plan includes laying 445km of new or renewed watermains and the upgrading of water treatment works, service reservoirs and pumping stations. We are part way through the PC13 period and are on target to deliver the planned drinking water capital investment. NI Water has also prepared a further Business Plan (PC15) to cover the 6 year regulatory period 2015 to 2021. This is based on new draft Social and Environmental Guidance and builds upon the improvements made during PC10 and PC13.

These investments will seek to maintain and locally improve our water quality compliance as well as improving levels of service to customers, for example, for customers suffering low water pressure. In addition to the investment targeted at improving the quality of service, capital investment is also targeted at maintaining the serviceability of our assets, now and in the future.

NI Water operates an integrated asset management system to ensure that investment is properly targeted and prioritised.

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

Research, Development and Innovation

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

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

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

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

Through the RDI section NI Water collaborates with, and supports local and UK university research. NI Water is a member of Queens University Environmental Science and Technology Research Centre (QUESTOR) which is an international environmental research organisation based at Queens University Belfast.

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

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

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

Description	2013 Number
*Total number of Domestic and Non-Domestic Inspections	1076
*Total number of Contraventions recorded	2762
*Total number of Contraventions rectified	1538
*Total Number of outstanding contraventions	1224

***calender year**

For the purpose of this return:

- NI Water is obliged to enforce the requirements of the Regulations and DRD Water Policy and Shareholder Division (WPSD) is deemed to be the Regulator of this activity: NI Water and WPSD meet quarterly to discuss issues arising under the Regulations, enforcement activities and contraventions.
- The Water Regulation Advisory Scheme (WRAS) list of Standard Industrial Classification (SIC) codes with related fluid categories shall be used to define categories of non-domestic properties.

NI Water's implementation of these regulations is detailed at Appendix 5. Detailed below are the numbers of inspections completed, contraventions observed and contraventions awaiting customer resolutions.

Public Information

Drinking Water Register

A Drinking Water Register is produced on request showing detailed water quality results for each water supply zone.

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 alternatively contact the Customer Relations Centre on our Waterline:
08457 440088

Customers who have hearing difficulties can also contact us via type talk on:
08457 440088

Calls to these numbers are charged at the local rate.

Customers may also contact Customer Services by email on:
waterline@niwater.com
or via Twitter: **@niwnews**

Further information for customers may be obtained at the following website:
www.niwater.com

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

With the introduction of the new Self Service web portal the Drinking Water Register will soon be available there, but in a more user friendly form. The user will be able to insert their post code and obtain details of the water quality for that location as well as details of water hardness. Although the web site is live this functionality will be available at a later date. The website address is:
https://selfservice.niwater.com

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 that will investigate the matter and resolve the problem as quickly as possible.

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

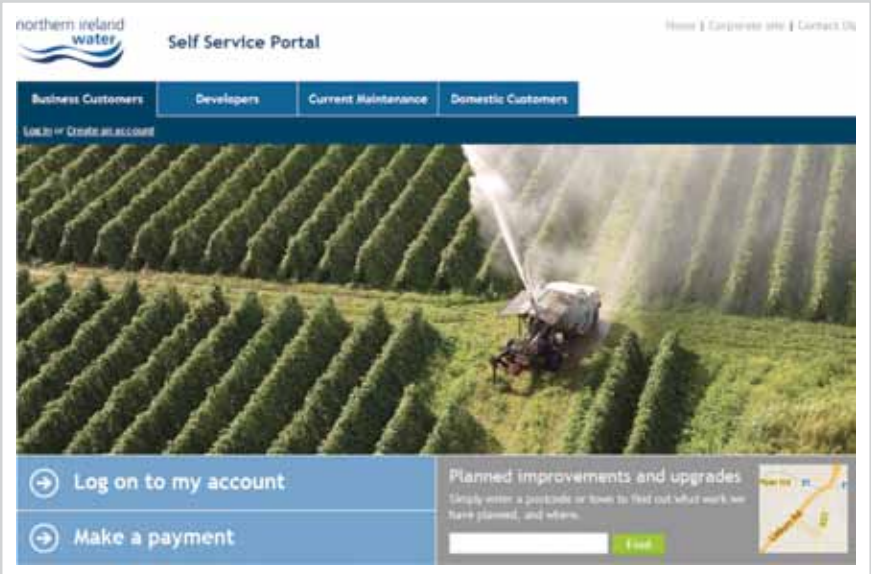
New Self Service Platform

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

Once registered, customers will be able to:

- view the 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; and
- manage account details.

This web portal will be found at:
https://selfservice.niwater.com



Major Incident Information

In a major incident or emergency situation (such as the sudden flooding following heavy rainfall in June 2012) NI Water can experience a massive increase in demand for information by our customers which would overwhelm the normal systems in place. In response to these scenarios NI Water has additionally put in place the following methods of passing information to customers:

HVCA (High Volume Call Answering)

Until recently NI Water has been limited in how many telephone callers can be answered and how much information it can provide when customers were trying to contact us in a major incident. To increase the number of calls answered and the quality of information provided, NI Water has recently installed a High Volume Call Answering (HVCA) system. This is an "always on" service which 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 Great Britain.

Major Incident and Major Emergency Website

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

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

Information available includes:

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

The site support and throughput has been enhanced and allows in excess of 200,000 visits / hour by customers.

Social Media

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

Facebook

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

YouTube

NI Water has its own YouTube channel which hosts NI Water videos such as "How to protect your pipes", "Saving water in the home" or "Protect from Bogus Callers". It can also be used to host video messages for customers during a major incident.

Twitter

NI Water's twitter account is routinely used to respond directly to customers queries at **@niwnews**

Appendix 1

Drinking Water Quality Standards

Water Supply (Water Quality) Regulations (Northern Ireland) 2010

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 **(i)**

TABLE B.
CHEMICAL PARAMETERS

Part I: Directive requirements

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Acrylamide	0.10	µg/l	(ii)
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*
Fluoride	1.5	mg F/l	Customers' taps
Lead	(a) 25, from 25th December 2003 until immediately before 25th December 2013 (b) 10, on and after 25th December 2013	µg Pb/l µg Pb/l	Customers' taps Customers' taps
Mercury	1	µg Hg/l	Customers' taps
Nickel	20	µg Ni/l	Customers' taps

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

Notes:

(i) NI Water, with the agreement of the Drinking Water Inspectorate, includes Total Coliforms within the Part I: Directive Requirements table for statistical purposes.

(ii) 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.

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

(iv) The specified compounds are:
- benzo(b)fluoranthene
- benzo(k)fluoranthene
- benzo(ghi)perylene
- Indeno (1,2,3-cd) pyrene.

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

(vi) 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
Sodium	200	mg Na/l	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, service reservoirs and treatment works
Conductivity **(i)**	2500	µS/cm at 20°C	Supply point*
Hydrogen ion	9.5	pH value	Customers' taps
	6.5 (minimum)	pH value	
Sulphate **(i)**	250	mg SO_4/l	Supply point*
Total indicative dose (for radioactivity) **(ii)**	0.1	mSv/year	Supply point*
Total organic carbon (TOC)	No abnormal change	mg C/l	Supply point*
Tritium (for radioactivity)	100	Bq/l	Supply point*
Turbidity	1	NTU	Treatment works

Notes:

(i) The water should not be aggressive.

(ii) Excluding tritium, potassium-40, radon and radon decay products.

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

Explanatory Notes

Measurement Units:
milli gramme per litre (mg/l) means one part in a million.
micro gramme 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	2013 Samples	No > PCV	% > PCV
Enterococci	396	0	0.00%
E. coli	5196	7	0.13%
1,2 Dichloroethane	396	0	0.00%
Aluminium	1876	9	0.48%
Antimony	396	0	0.00%
Arsenic	396	0	0.00%
Benzene	396	0	0.00%
Benzo(a)pyrene	396	0	0.00%
Boron	396	0	0.00%
Bromate	396	0	0.00%
Cadmium	396	0	0.00%
Chromium	396	0	0.00%
Colour	1876	0	0.00%
Copper	396	0	0.00%
Iron	1876	36	1.92%
Lead	396	4	1.01%
Manganese	1876	5	0.27%
Mercury	396	0	0.00%
Nickel	396	1	0.25%
Nitrate	396	0	0.00%
Nitrite	396	0	0.00%
Selenium	396	0	0.00%
Sodium	396	0	0.00%
PAH - Sum of four substances	396	0	0.00%
Tetrachloroethene/Trichloroethene - Sum	396	0	0.00%
Tetrachloromethane	396	0	0.00%
Total Trihalomethanes	396	6	1.52%
Turbidity	1876	4	0.21%

Indicator parameters	2013 Samples	No > SPEC	% > SPEC
Total coliforms	5196	50	0.96%
Total - Residual disinfectant	5196	0	0.00%
Free - Residual disinfectant	5196	0	0.00%
Colony Counts 37 (48hrs)	1876	0	0.00%
Colony Counts 22	1876	0	0.00%
Ammonium	1876	0	0.00%
Hydrogen Ion	1876	1	0.05%

Water Quality Report for Authorised Supply Points

Schedule 1 parameters	2013 Samples	No > PCV	% > PCV
Cyanide	232	0	0.00%
Fluoride	232	0	0.00%
Aldrin	232	0	0.00%
Dieldrin	232	0	0.00%
Heptachlor	232	0	0.00%
Heptachlor Epoxide	232	0	0.00%
Pesticides - Total Substances	232	0	0.00%
All other analysed Pesticides	8584	3	0.03%

Indicator parameters	2013 Samples	No > SPEC	% > SPEC
Clostridium perfringens (sulph red)	2261	2	0.09%
Chloride	232	0	0.00%
Conductivity	2261	0	0.00%
Sulphate	232	0	0.00%
Total Organic Carbon	232	0	0.00%
Total Indicative Dose	25	0	0.00%
Tritium	25	0	0.00%

Water Quality Report for Water Treatment Works

Schedule 1 parameters	2013 Samples	No > PCV	% > PCV
Total Coliforms	6617	7	0.11%
E. coli	6617	3	0.05%
Nitrite	232	0	0.00%

Indicator parameters	2013 Samples	No > SPEC	% > SPEC
Turbidity	6617	18	0.27%
Total - Residual disinfectant	6617	0	0.00%
Free - Residual disinfectant	6617	0	0.00%
Colony Counts 37 (48hrs)	6617	0	0.00%
Colony Counts 22	6617	0	0.00%

Water Quality Report for Service Reservoirs

Schedule 1 parameters	2013 Samples	No > PCV	% > PCV
Total Coliforms	16118	26	0.16%
E. coli	16118	4	0.02%

Indicator parameters	2013 Samples	No > SPEC	% > SPEC
Colony Counts 37 (48hrs)	16118	0	0.00%
Colony Counts 22	16118	0	0.00%
Total - Residual disinfectant	16118	0	0.00%
Free - Residual disinfectant	16118	0	0.00%

2013 Mean Zonal Compliance

Parameter	Number of Samples	No of fails at zone / supply point	No of zones / supply points with fails	% Zonal Compliance
Colour	1876	0	0	100.00
Turbidity	1876	4	4	99.84
Sodium	396	0	0	100.00
Nitrate	396	0	0	100.00
Nitrite	396	0	0	100.00
Nitrite/Nitrate Formula	396	0	0	100.00
Aluminium	1876	9	8	99.60
Iron	1876	36	20	98.28
Manganese	1876	5	5	99.79
Copper	396	0	0	100.00
Fluoride	232	0	0	100.00
Arsenic	396	0	0	100.00
Cadmium	396	0	0	100.00
Cyanide	232	0	0	100.00
Chromium	396	0	0	100.00
Mercury	396	0	0	100.00
Nickel	396	1	1	99.75
Lead	396	4	4	99.00
Antimony	396	0	0	100.00
Selenium	396	0	0	100.00
Total Pesticides	232	0	0	100.00
PAH - Sum of four substances	396	0	0	100.00
E. coli	5196	7	7	99.86
Enterococci	396	0	0	100.00
Boron	396	0	0	100.00
Benzo(a)pyrene	396	0	0	100.00
Tetrachloromethane	396	0	0	100.00
Tetrachloroethene/Trichloroethene - Sum	396	0	0	100.00
Total Trihalomethanes	396	6	6	98.50
1,2 dichloroethane	396	0	0	100.00
Benzene	396	0	0	100.00
Bromate	396	0	0	100.00
Aldrin	232	0	0	100.00
Dieldrin	232	0	0	100.00
Heptachlor	232	0	0	100.00
Heptachlor epoxide	232	0	0	100.00
Pesticides - other substances (P999)*	8584	3	3	99.96
Total Number of Samples / Fails	**37644**	**82**		
Mean Zonal Compliance %				**99.85**

(Taste & Odour have been removed from the Mean Zonal Compliance assessment as data validation for these parameters is still ongoing. All the required regulatory samples were scheduled and collected for analysis.)

Appendix 3

Water Quality by Northern Ireland Local Council Area

This section of the Drinking Water Quality Report is designed to demonstrate water quality by individual council area based on the Mean Zonal Compliance (MZC) 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 99.6% of Northern Ireland's population receive public water supplies.

In a number of cases water supply zones overlap district council boundaries. The council reports indicate which water supply zones are wholly or partially contained within the council areas, including those zones which 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 MZC 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 MZC.
The information is based on samples taken randomly from customers' 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.

NI Water has identified the need to deliver a significant volume of watermains 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 Watermains Rehabilitation Framework, within which it has appointed two contractors to undertake work on a Northern Ireland wide basis as identified by the zonal study programme of work.

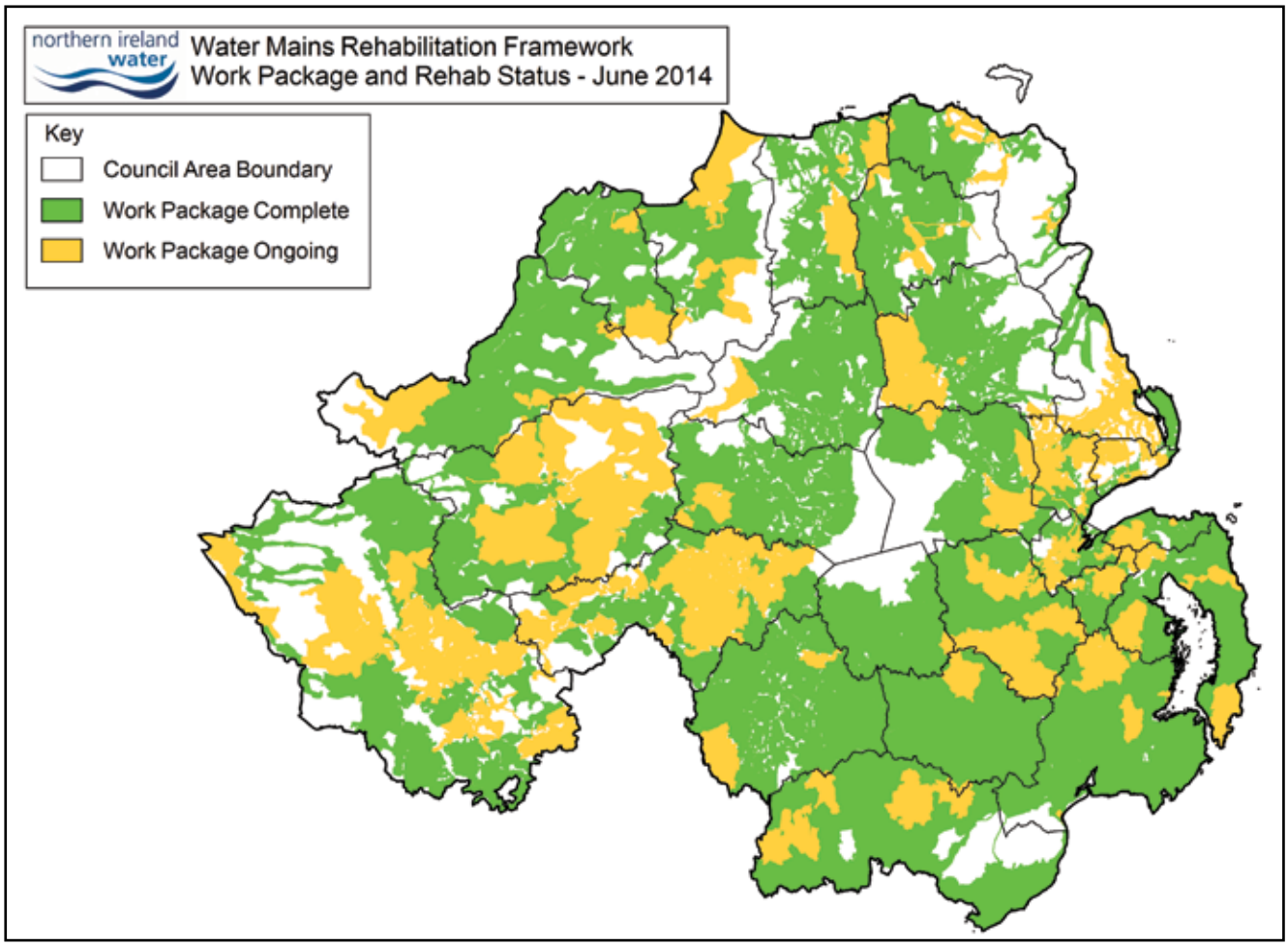
Following the removal of some small water supply sources, NI Water reassessed its water supply zones for 2011 onwards. This led to the removal of some small zones along with the merging of other zones. As the MZC calculation is based on the number o f zones in a particular council area, this has changed the factors used in the calculation and may lead to a perception of a change in water quality.

Overall, the quality of water supplied to our customers over the last period has improved rising from a Mean Zonal Compliance of 99.50% in 2008 to 99.85% in 2013 measured against our Social and Environmental Guidance target of 99.70%.

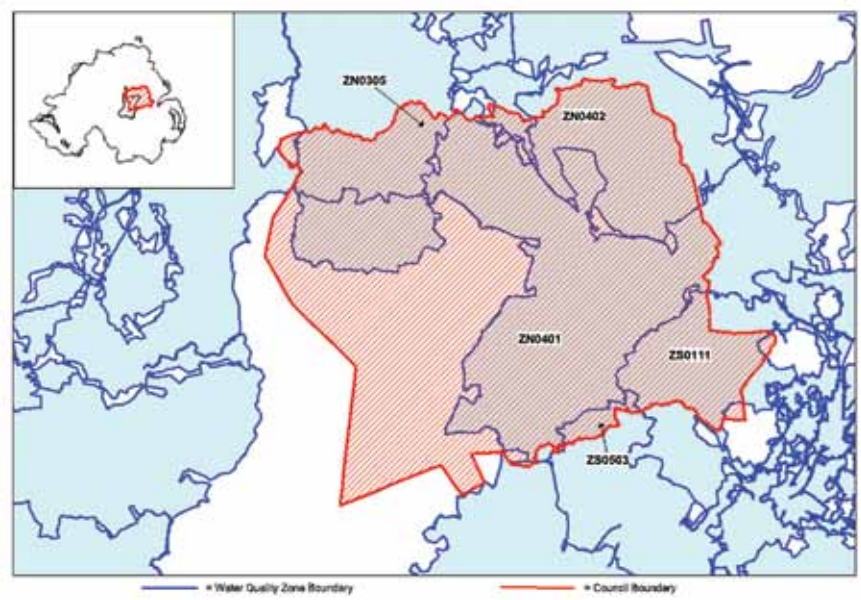
Watermains Rehabilitation Framework

Current Work Package Status

The map below shows the extent of the current Watermains 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 which do not receive public water supply.



Antrim Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Antrim Council MZC	99.7%	99.9%	99.9%	99.9%

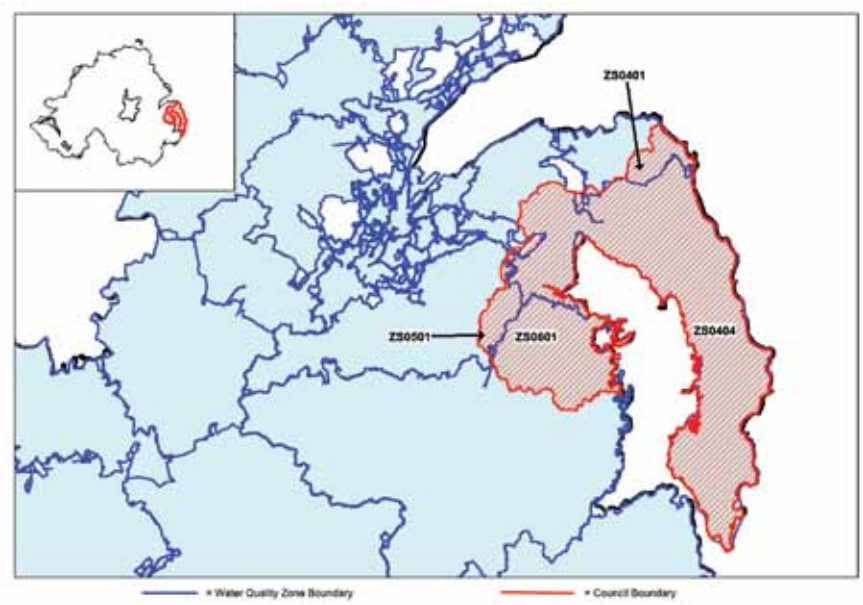
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0305	Dungonnell Ahoghill	ZS0111	Dunore Point Hydepark
ZN0401	Dunore Point Antrim	ZS0503	Forked Bridge Stoneyford
ZN0402	Killylane Ballynure		

2013 water quality Capital Works Programmes affecting the council area:

Dunore West Zone Watermain Improvements
High Priority Watermains Phase 2 Work Package
Killylane Dunore East Phase 1
Lurgan Road, Glenavy, Watermain Extension
Major Incident Mitigation Project Central Region Freeze Thaw Improvements
Niblock Road, Antrim, Watermain Extension
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Tardree Zone Watermain Improvements
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Ards Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Ards Council MZC	99.7%	99.9%	99.9%	99.8%

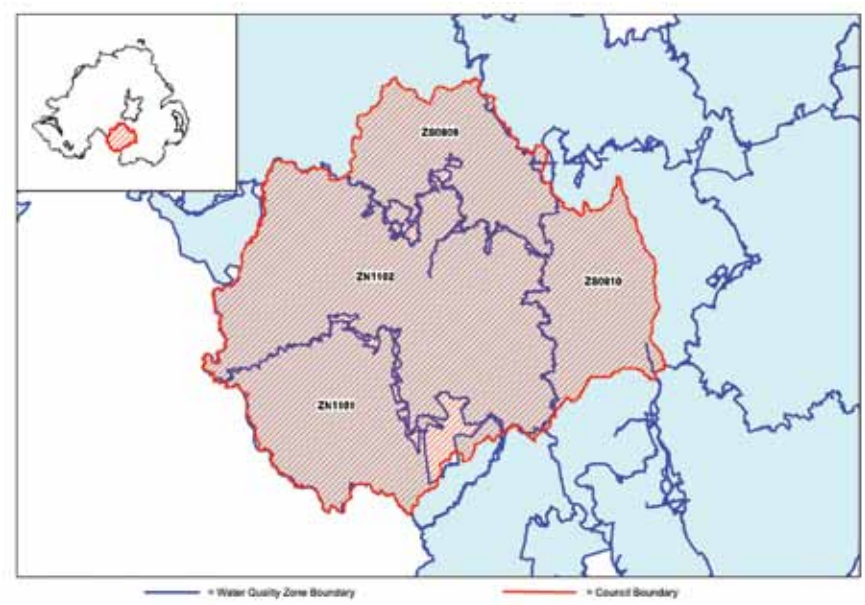
2013 water supply zones wholly or partially within the council area:

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

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
North Down Strategic Trunk Watermains
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Armagh City & District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Armagh City & Council MZC	99.7%	99.9%	99.9%	99.9%

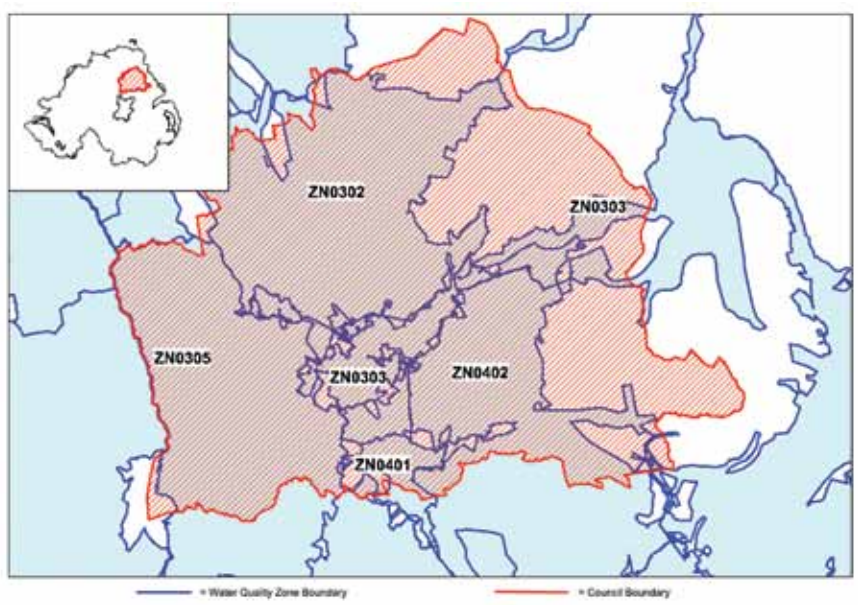
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN1101	Clay Lake Keady	ZS0809	Castor Bay Dungannon
ZN1102	Seagahan Armagh	ZS0810	Castor Bay Tandragee
ZS0808	Castor Bay Craigavon		

2013 water quality Capital Works Programmes affecting the council area:

Castor Bay to Dungannon Strategic Trunk Mains
High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project South Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WP134 High Priority Water Mains Phase 1
WTW Effluent Quality

Ballymena Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Ballymena Council MZC	99.7%	99.9%	99.9%	99.8%

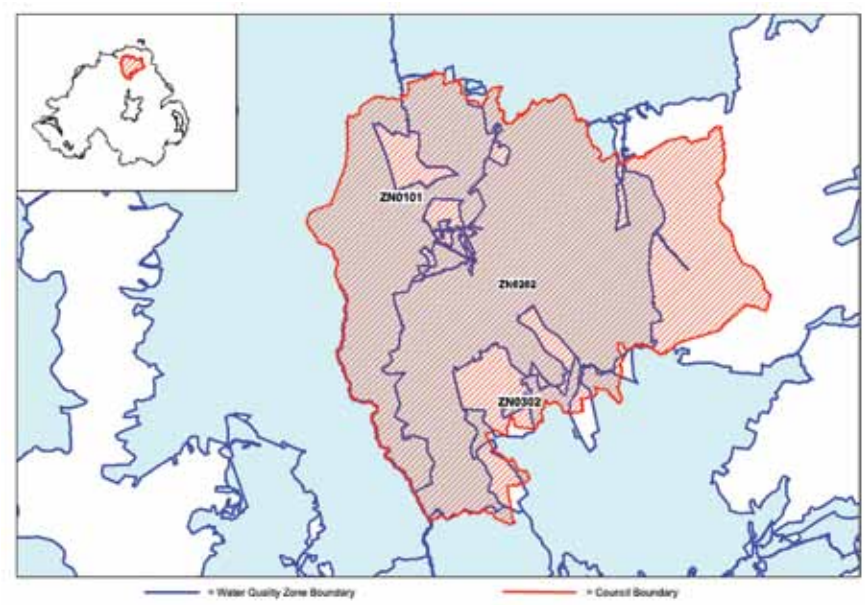
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZN0401	Dunore Point Antrim
ZN0303	Dunore Point Ballymena	ZN0402	Killylane Ballynure
ZN0305	Dungonnell Ahoghill		

2013 water quality Capital Works Programmes affecting the council area:

Dungonnell Zone Watermain Improvements
High Priority Watermains Phase 2 Work Package
Loan Command SR, Inlet Watermain
Major Incident Mitigation Project Central Region Freeze Thaw Improvements
Major Incident Mitigation Project North Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Tardree Zone Watermain Improvements
Tully Rehab Work Packages
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Ballymoney Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Ballymoney Council MZC	99.7%	99.9%	99.9%	99.7%

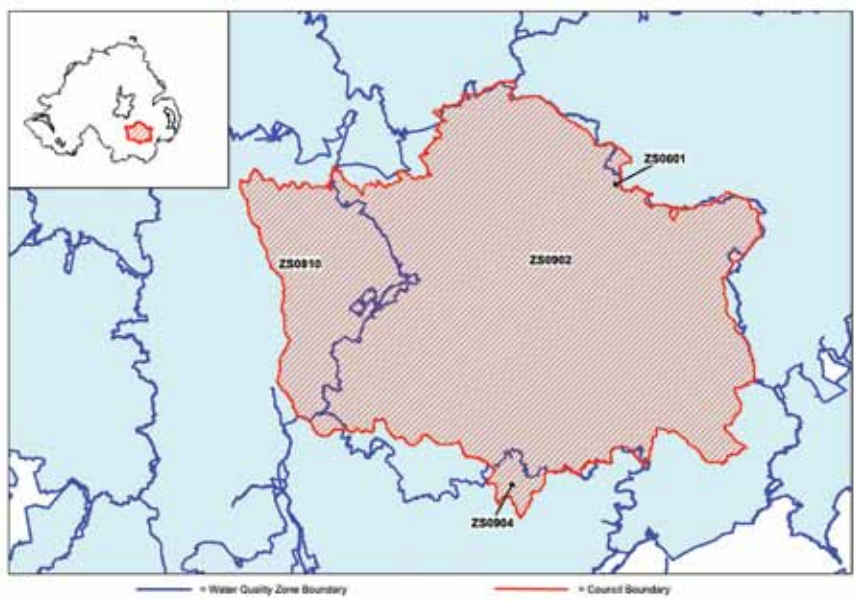
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0302	Dungonnell Glarryford
ZN0202	Altnahinch Bushmills		

2013 water quality Capital Works Programmes affecting the council area:

Altnahinch Zone Watermain Improvements
Glenlough Pumping Station & Pumping Main
High Priority Watermains Phase 2 Work Package
Loughguile Zone Watermain Improvements
Major Incident Mitigation Project North Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Banbridge District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Banbridge Council MZC	99.7%	99.9%	99.9%	99.9%

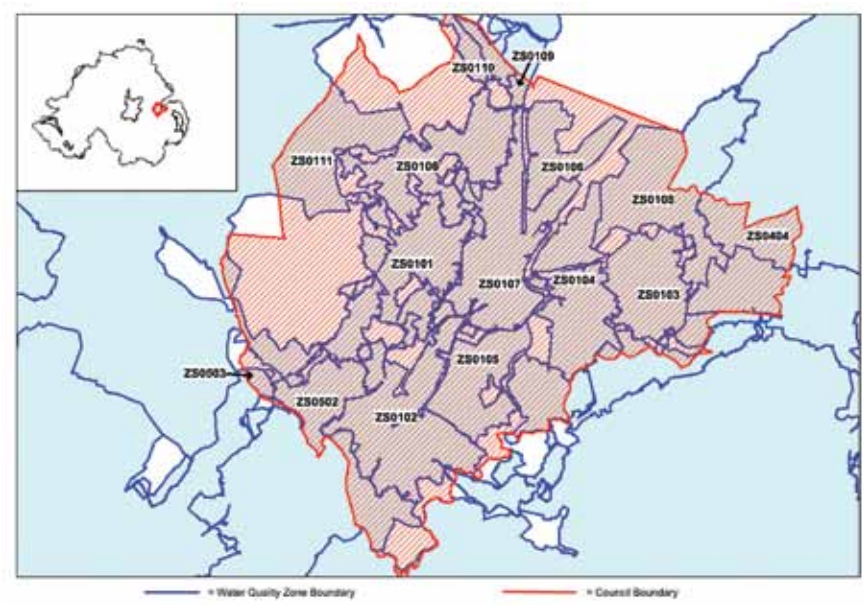
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0810	Castor Bay Tandragee	ZS0904	Fofanny Mourne
ZS0902	Fofanny Dromore		

2013 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
Fofanny Banbridge Zone Watermain Improvements Phase 2
High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project South Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Belfast City Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Belfast City Council MZC	99.7%	99.9%	99.9%	99.8%

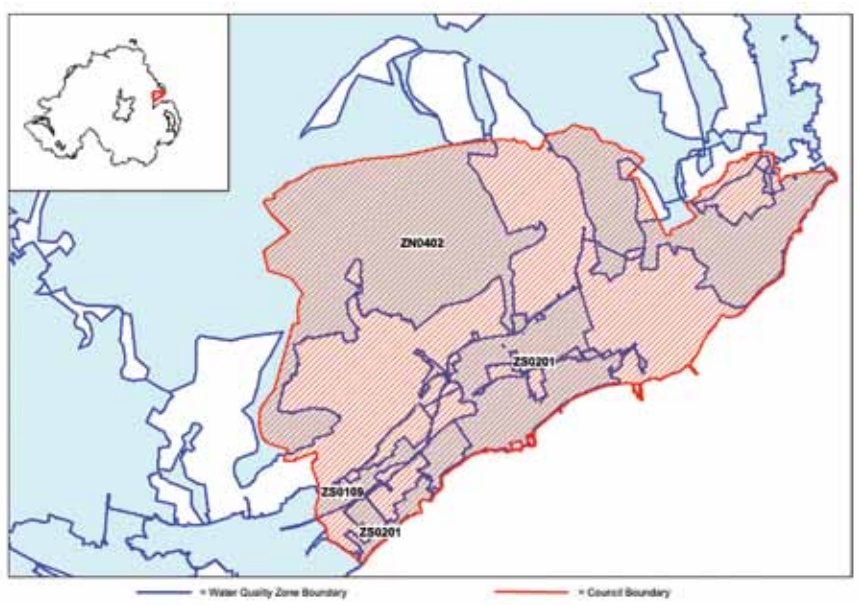
2013 water supply zones wholly or partially within the council area:

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	ZS0502	Forked Bridge Dunmurry
ZS0106	Dunore Belfast North	ZS0503	Forked Bridge Stoneyford
ZS0107	Belfast Oldpark		

2013 water quality Capital Works Programmes affecting the council area:

Ballygomartin North Phase 1 Watermain Improvements
Ballygomartin South Phase 1 Water Mains Improvements
Ballysillan Zone Watermain Improvements
Ballywonard Zone Watermain Improvements
Belfast City Centre Zone Watermain Improvements
Breda North Zone Watermain Improvements
Gravity II, McVeighs well to Old Park SR
High Priority Watermains Phase 2 Work Package
McVeigh's Well Rationalisation of Pipework
Oldpark Watermain Improvements
Security improvements at Keypoint Installations
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
Whiterock Phase 1 Watermains Improvements
WTW Effluent Quality

Carrickfergus Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Carrickfergus Council MZC	99.7%	99.8%	99.7%	99.9%

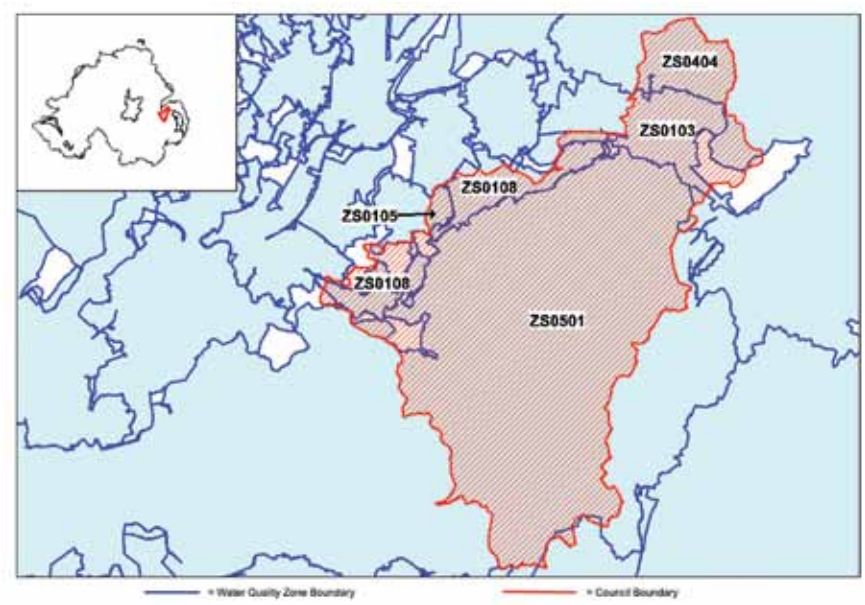
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0402	Killylane Ballynure	ZS0201	Dorisland Carrick
ZS0109	Dorisland Whiteabbey		

2013 water quality Capital Works Programmes affecting the council area:

Carrickfergus Zone Watermain Improvements Phase 1, 2 and 3
Dorisland WTW - GAC Feasibility Study
Enhanced Site Security
High Priority Watermains Phase 2 Work Package
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Tardree Zone Watermain Improvements
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies
WTWs Five Treatability Appraisal Studies

Castlereagh Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Castlereagh Council MZC	99.7%	99.8%	99.9%	99.7%

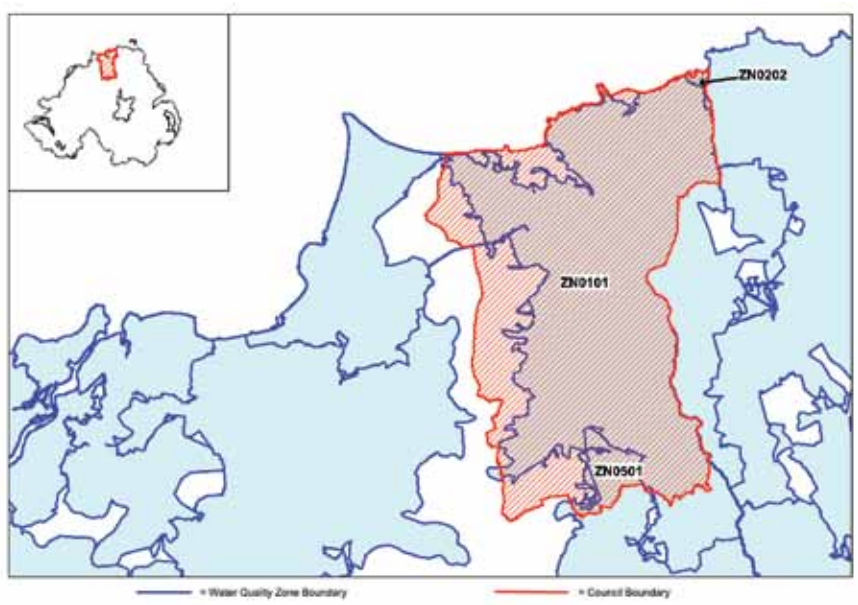
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0103	Belfast Ballyhanwood	ZS0108	Belfast Purdysburn
ZS0104	Dunore Breda North	ZS0404	Drumaroad Ards
ZS0105	Dunore Breda South	ZS0501	Drumaroad Lisburn

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
Millmount Village Dundonald Water Main Upgrades
North Down Strategic Trunk Watermains
Queensfort Road Watermain Upgrade
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Coleraine Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Coleraine Council MZC	99.7%	99.9%	99.9%	99.7%

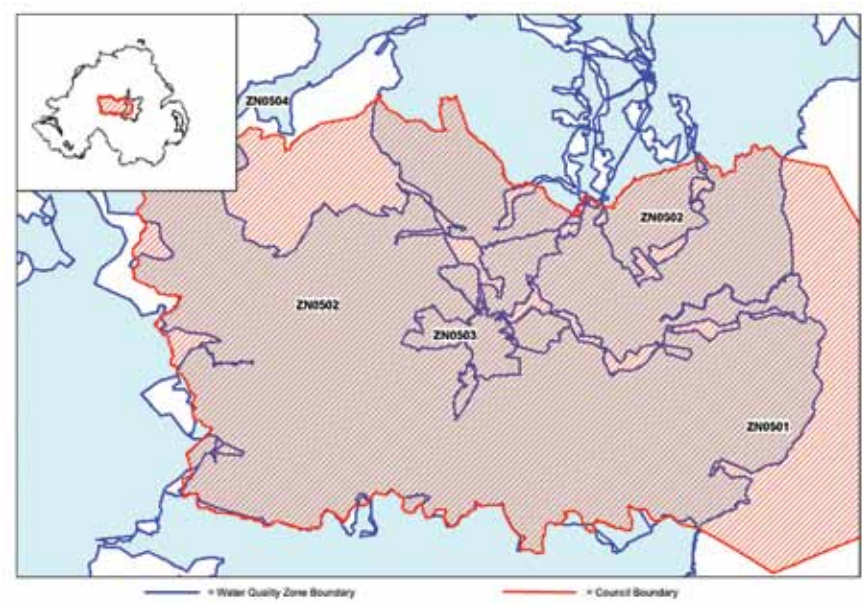
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0501	Moyola Magherafelt
ZN0202	Altnahinch Bushmills		

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project North Region Freeze Thaw Improvements
Portballintrae Zone Watermain Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Cookstown District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Cookstown Council MZC	99.7%	99.9%	99.9%	99.9%

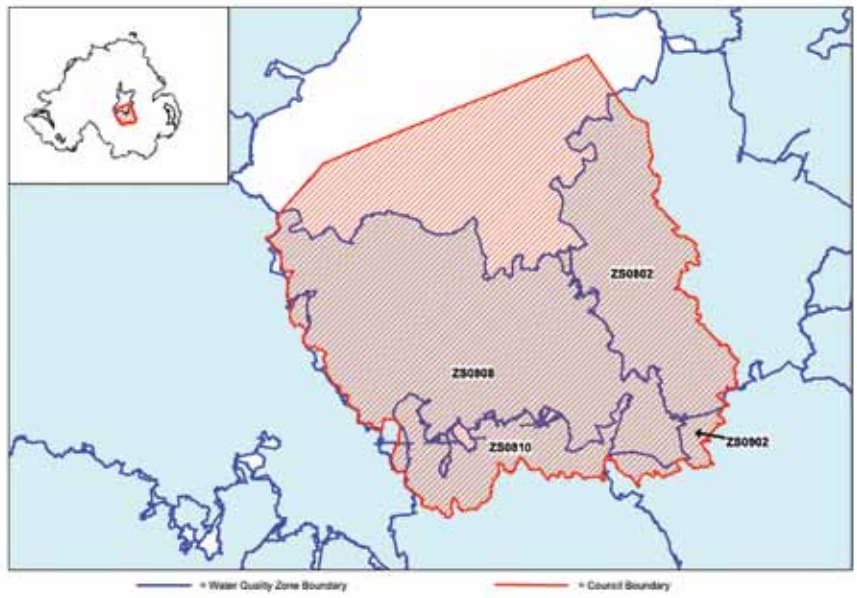
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0501	Moyola Magherafelt	ZN0504	Moyola Unagh Mormeal
ZN0502	Lough Fea Cookstown		

2013 water quality Capital Works Programmes affecting the council area:

Altmore Phase 2 Watermain Rehabilitation
Carland to Cookstown Strategic Trunk Main
Cookstown Phase 2 & 3 Watermain Improvements
Desertcreat Road/ Lindsayville Road, Cookstown, Replacement Watermain
High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project Central Region Freeze Thaw Improvements
Omagh Phase 2 Watermain Rehab
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Craigavon Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Craigavon Council MZC	99.7%	99.8%	99.9%	99.9%

2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0802	Castor Bay Lurgan	ZS0810	Castor Bay Tandragee
ZS0808	Castor Bay Craigavon	ZS0902	Fofanny Dromore
ZS0809	Castor Bay Dungannon		

2013 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
Castor Bay to Dungannon Strategic Trunk Mains
High Priority Watermains Phase 2 Work Package
Legahory Craigavon, Replacement Watermains
Major Incident Mitigation Project South Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Tardree Zone Watermain Improvements
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Derry City Council

Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Derry City Council MZC	99.7%	99.6%	99.4%	99.9%

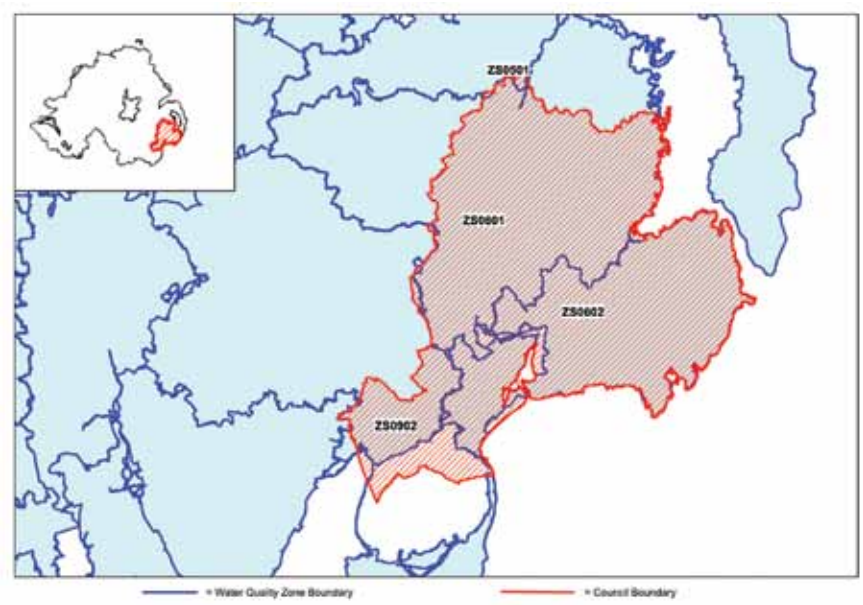
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0603	Carmoney Eglinton	ZN0605	Creggan Derry
ZN0604	Caugh Hill Dungiven		

2013 water quality Capital Works Programmes affecting the council area:

Ballinrees to Limavady/Londonderry Supply Augmentation
Carmoney to Strabane Strategic Link Watermain
Enhanced Site Security
High Priority Watermains Phase 2 Work Package
Londonderry DAP: Duke Street Work package
Major Incident Mitigation Project North Region Freeze Thaw Improvements
Security improvements at Keypoint Installations
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Down District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Down Council MZC	99.7%	99.7%	99.9%	99.9%

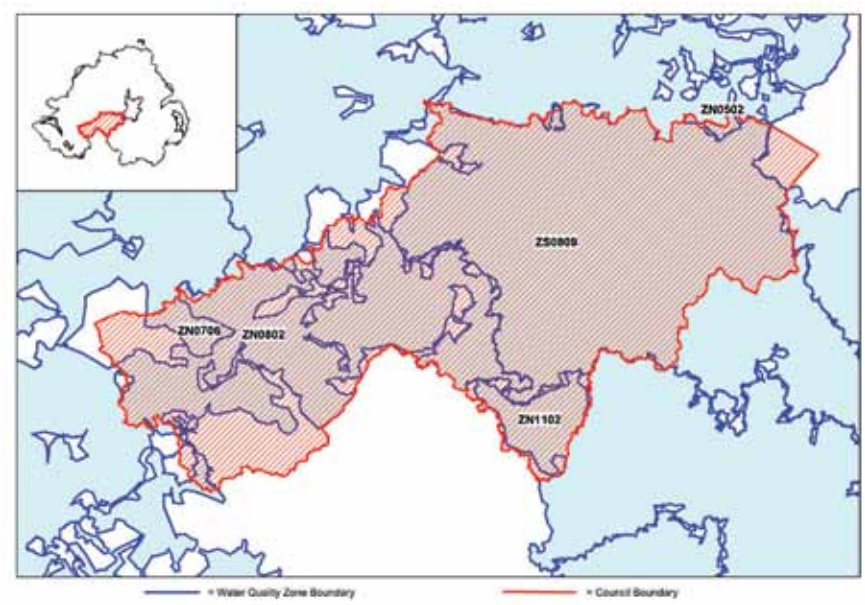
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0601	Drumaroad Ballynahinch	ZS0902	Fofanny Dromore
ZS0602	Drumaroad Downpatrick		

2013 water quality Capital Works Programmes affecting the council area:

Drumaroad WTW Clear Water Tank
Enhanced Site Security
High Priority Watermains Phase 2 Work Package
North Down Strategic Trunk Watermains
Seaside Road, Killyleagh, Watermain Extension
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
South Down Zone Watermain Improvements
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Dungannon and South Tyrone Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Dungannon and South Tyrone Council MZC	99.7%	99.9%	99.8%	99.9%

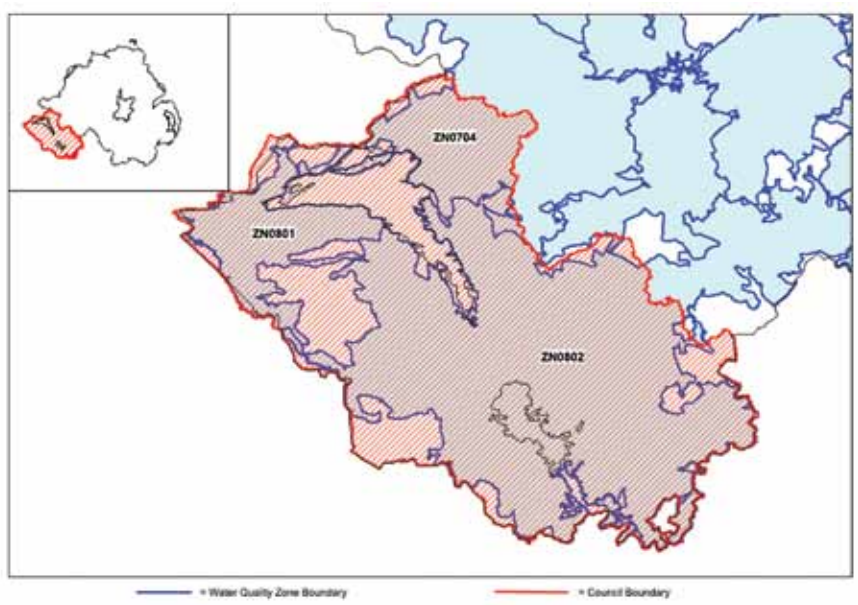
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0502	Lough Fea Cookstown	ZN1102	Seagahan Armagh
ZN0706	Lough Macrory Killyclogher	ZS0809	Castor Bay Dungannon
ZN0802	Killyhevlin Enniskillen		

2013 water quality Capital Works Programmes affecting the council area:

Altmore Phase 2 Watermain Rehabilitation
Carland to Cookstown Strategic Trunk Main
Castor Bay to Dungannon Strategic Trunk Mains
High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project South Region Freeze Thaw Improvements
Major Incident Mitigation Project West Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Fermanagh District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Fermanagh Council MZC	99.7%	99.8%	99.8%	99.9%

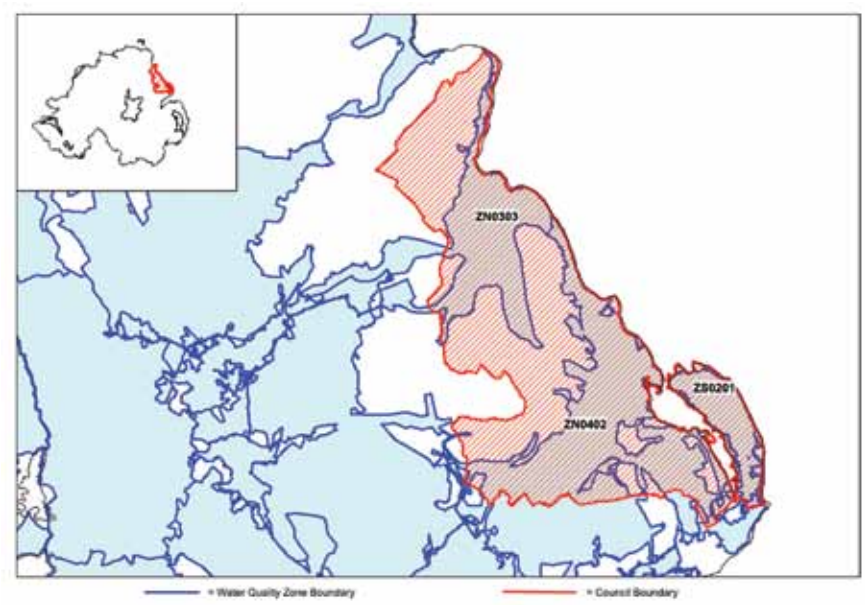
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0704	Lough Bradan Drumquin	ZN0802	Killyhevlin Enniskillen
ZN0801	Belleek Garrison		

2013 water quality Capital Works Programmes affecting the council area:

Alleyhill Zone Watermain Improvements
High Priority Watermains Phase 2 Work Package
Killyhevlin to Lough Bradan Link Watermain
Killyhevlin WTW Feasibility Study
Killyhevlin WTW Risk Assessment of Sirofloc Process
Major Incident Mitigation Project West Region Freeze Thaw Improvements
Omagh Phase 2 Watermain Rehab
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
South / South East Zonal Study South East Phase 1 Work Packages
South / South East Zonal Study South Phase 1 Work Packages
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Larne Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Larne Council MZC	99.7%	99.8%	99.8%	99.9%

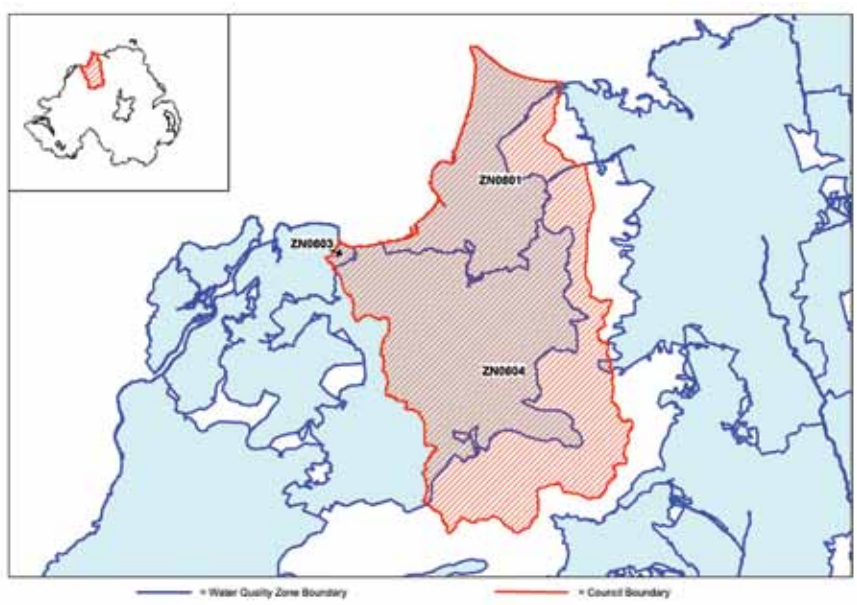
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0303	Dunore Point Ballymena	ZS0201	Dorisland Carrick
ZN0402	Killylane Ballynure		

2013 water quality Capital Works Programmes affecting the council area:

Browndod Road, Larne, Replacement Watermain
High Priority Watermains Phase 2 Work Package
Killylane Dunore East Phase 1
Major Incident Mitigation Project Central Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Limavady Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Limavady Council MZC	99.7%	99.7%	99.5%	99.9%

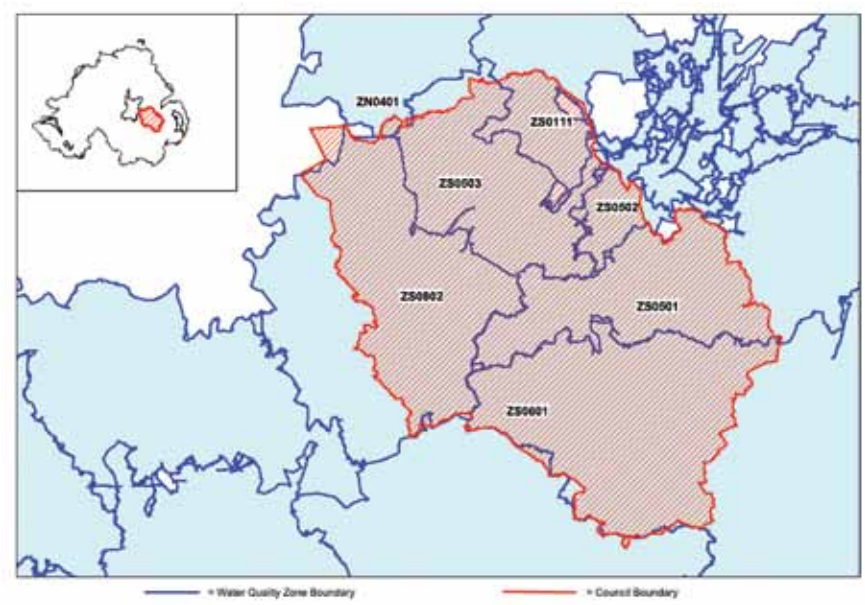
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0601	Ballinrees Limavady	ZN0604	Caugh Hill Dungiven
ZN0603	Carmoney Eglinton		

2013 water quality Capital Works Programmes affecting the council area:

Ballinrees to Limavady/Londonderry Supply Augmentation
Caugh Hill WTW FAS Storage
High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project North Region Freeze Thaw Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WP134 High Priority Water Mains Phase 1
WTW Effluent Quality

Lisburn City Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Lisburn City Council MZC	99.7%	99.7%	99.8%	99.9%

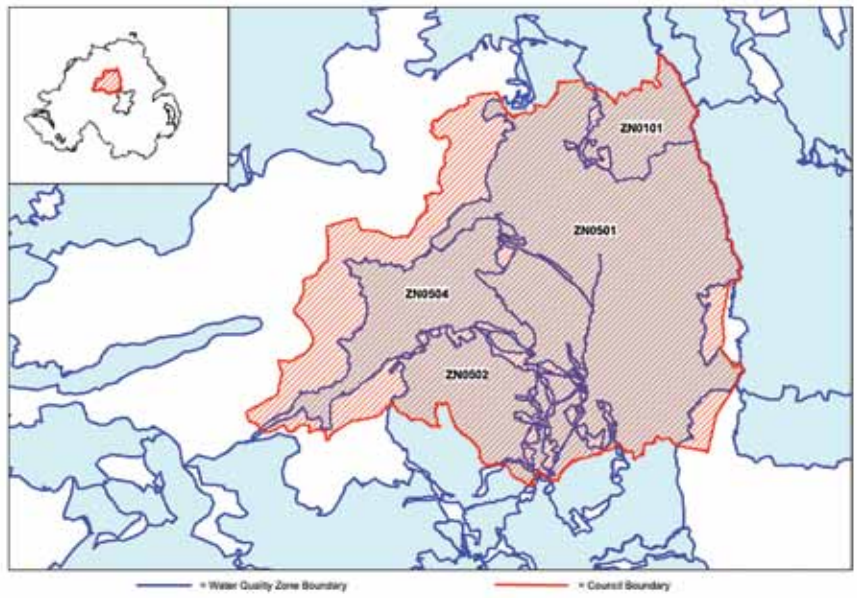
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0503	Forked Bridge Stoneyford
ZS0111	Dunore Point Hydepark	ZS0601	Drumaroad Ballynahinch
ZS0501	Drumaroad Lisburn	ZS0802	Castor Bay Lurgan
ZS0502	Forked Bridge Dunmurry		

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
Lisburn North Rural Phase 2 Watermain Improvements
Lisburn South Rural Phase 1 & Dunmurry watermain improvements
Major Incident Mitigation Project South Region Freeze Thaw Improvements
Security improvements at Keypoint Installations
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Strategic Link - Castor Bay to Belfast
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Magherafelt District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Magherafelt Council MZC	99.7%	99.8%	99.9%	99.9%

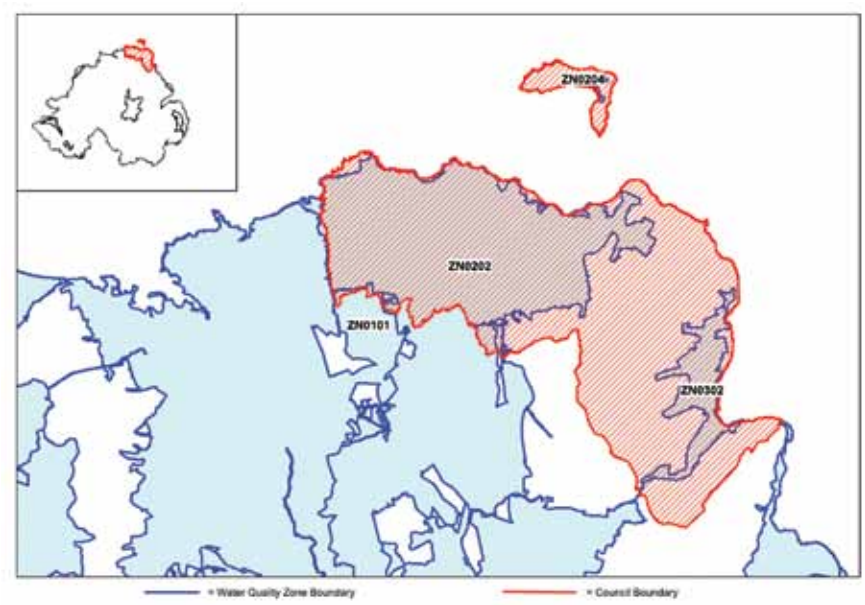
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0502	Lough Fea Cookstown
ZN0501	Moyola Magherafelt	ZN0504	Moyola Unagh Mormeal

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
Major Incident Mitigation Project Central Region Freeze Thaw Improvements
Moyola Zone Watermain Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Moyle District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Moyle Council MZC	99.7%	99.9%	99.9%	99.8%

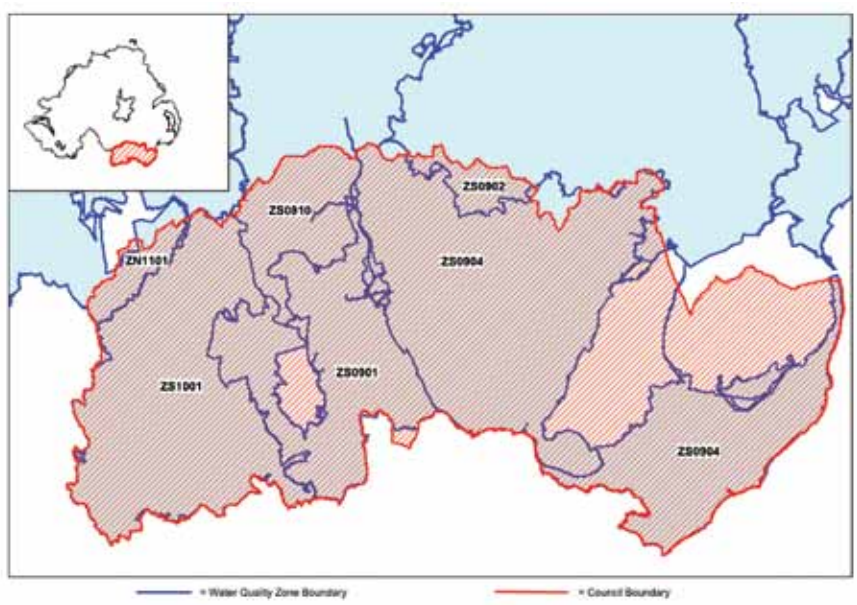
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0204	Rathlin Island
ZN0202	Altnahinch Bushmills	ZN0302	Dungonnell Glarryford

2013 water quality Capital Works Programmes affecting the council area:

Ballycastle Zone Watermain Improvements
Craigpark SR Capacity Extension
High Priority Watermains Phase 2 Work Package
Lagavara SR Capacity Extension
Loughguile Zone Watermain Improvements
Major Incident Mitigation Project North Region Freeze Thaw Improvements
Marine Apartments, Ballycastle, Watermain Extension
Moyola Zone Watermain Improvements
Portballintrae Zone Watermain Improvements
Rathlin Island Borehole Feasibility Study
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WP134 High Priority Water Mains Phase 1
WTW Effluent Quality

Newry & Mourne District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Newry & Mourne Council MZC	99.7%	99.9%	99.8%	99.8%

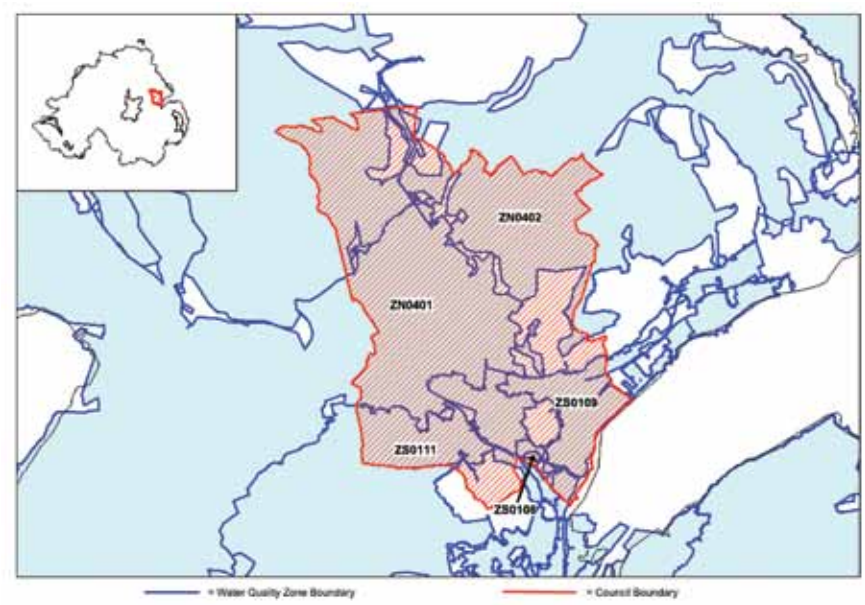
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN1101	Clay Lake Keady	ZS0902	Fofanny Dromore
ZS0810	Castor Bay Tandragee	ZS0904	Fofanny Mourne
ZS0901	Camlough Newry West	ZS1001	Carran Hill Crossmaglen

2013 water quality Capital Works Programmes affecting the council area:

Ballintemple Zone Watermain Improvements
Ballydougan to Newry Main Link Reinforcement
Crieve Road and Hilltown Road Newry Watermain Replacement
Crieve Service Reservoir
Enhanced Site Security
Fofanny Banbridge Zone Watermain Improvements Phase 2
High Priority Watermains Phase 2 Work Package
Lough Ross Zone Watermain Improvements
Major Incident Mitigation Project South Region Freeze Thaw Improvements
Newry Zone Watermain Improvements
Security improvements at Keypoint Installations
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Warrenpoint Zone Watermain Improvements
Watermain Improvements, Newry, Phase 3
Watermains Rehabilitation, New and Replacement
WP101 Newry Phase 2
WP134 High Priority Water Mains Phase 1
WTW Effluent Quality

Newtownabbey Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Newtownabbey Council MZC	99.7%	99.8%	99.8%	99.9%

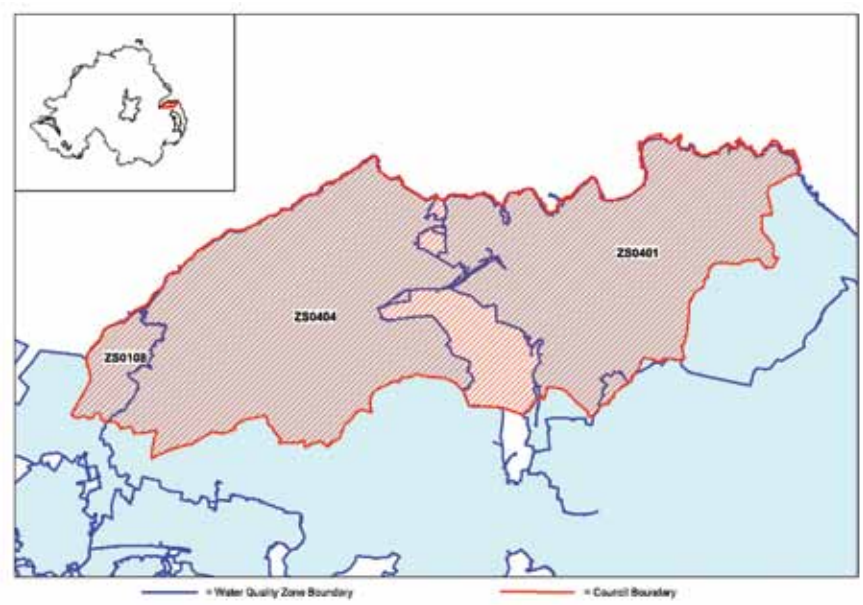
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0109	Dorisland Whiteabbey
ZN0402	Killylane Ballynure	ZS0111	Dunore Point Hydepark
ZS0106	Dunore Belfast North		

2013 water quality Capital Works Programmes affecting the council area:

Ballyclare Road Glengormley Watermains Upgrade
Ballywonard Zone Watermain Improvements
Gravity II, McVeigh's well to Old Park SR
High Priority Watermains Phase 2 Work Package
Killylane Dunore East Phase 1
McVeigh's Well Rationalisation of Pipework
Newtownabbey Zone Watermain Improvements Phase 1
Newtownabbey Zone Watermain Improvements Phase 2
Newtownabbey Zone Watermain Improvements Phase 3
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

North Down Borough Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
North Down Council MZC	99.7%	99.9%	99.9%	99.9%

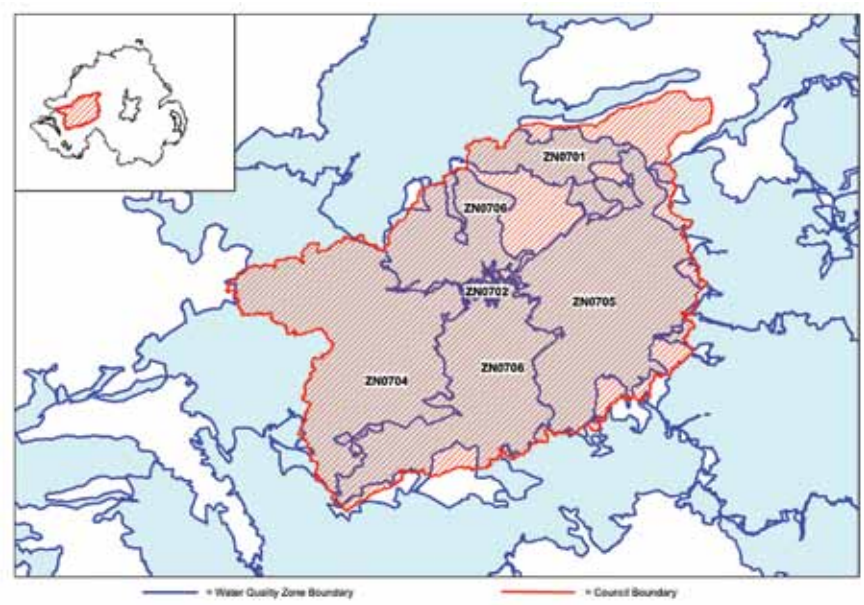
2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0108	Belfast Purdysburn	ZS0404	Drumaroad Ards
ZS0401	Drumaroad Bangor		

2013 water quality Capital Works Programmes affecting the council area:

High Priority Watermains Phase 2 Work Package
North Down Bangor Phase 2 Watermain Improvements
North Down Strategic Trunk Watermains
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality

Omagh District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Omagh Council MZC	99.7%	99.8%	99.7%	100.0%

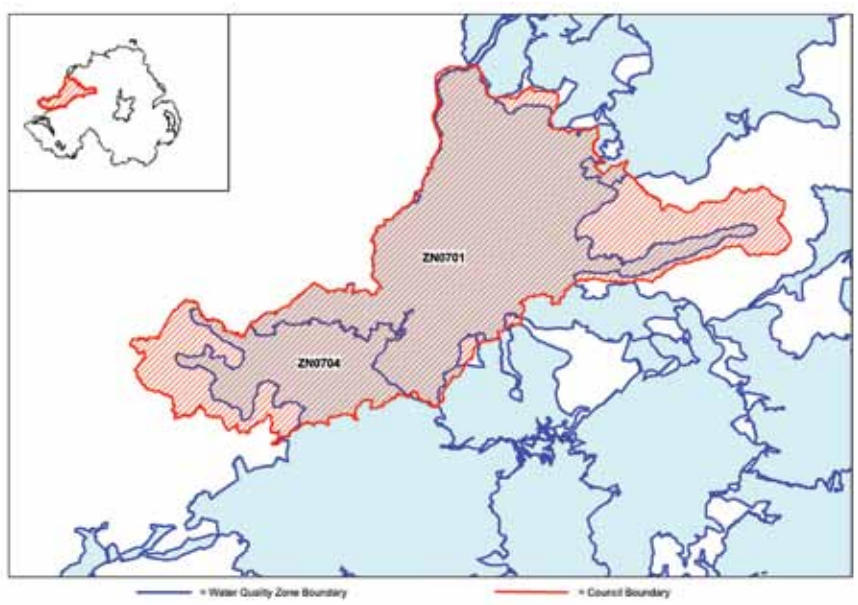
2013 water supply zones wholly or partially within the council area:

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

2013 water quality Capital Works Programmes affecting the council area:

Alleyhill Zone Watermain Improvements
High Priority Watermains Phase 2 Work Package
Killyhevlin to Lough Bradan Link Watermain
Lough Bradan WTWs Upgrade
Lough Macrory WTW Clear Water Tank
Major Incident Mitigation Project West Region Freeze Thaw Improvements
Omagh Phase 2 Watermain Rehab
Omagh Watermain Improvements
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Strule Intake For Derg WTW
Watermains Rehabilitation, New and Replacement
WP134 High Priority Water Mains Phase 1
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Strabane District Council



Mean Zonal Compliance (MZC)

	Target	2011	2012	2013
Overall Northern Ireland MZC	99.7%	99.8%	99.8%	99.9%
Strabane Council MZC	99.7%	99.7%	99.7%	99.9%

2013 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0701	Derg Strabane	ZN0704	Lough Bradan Drumquin

2013 water quality Capital Works Programmes affecting the council area:

Ballinrees to Limavady/Londonderry Supply Augmentation
Carmoney to Strabane Strategic Link Watermain
Enhanced Site Security
High Priority Watermains Phase 2 Work Package
Londonderry DAP: Duke Street Work package
Major Incident Mitigation Project North Region Freeze Thaw Improvements
Security improvements at Keypoint Installations
SEMD Surveys PC10 Water
Service Reservoir Assessments - Site Access
Service Reservoir Enhanced Security Phase 1 & 2
Watermains Rehabilitation, New and Replacement
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Appendix 4

Water Quality Events

Serious Drinking Water Quality Events in 2013

Date of Serious Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
24 April – 21 May 2013	Drumaroad WTWs (513,500 population)	Treatment difficulties led to aluminium contraventions in the works final water and related supply area. There was a significant increase in customer complaints related to water quality.	Ards, Belfast, Castlereagh, Down, Lisburn, North Down
22 July – 26 July 2013	Castor Bay WTWs (334,000 population)	A significant increase in raw water manganese levels led to manganese and turbidity contraventions in the works final water and related supply area. There was a significant increase in customer complaints related to water quality.	Armagh, Banbridge, Belfast, Craigavon, Dungannon, Lisburn and Newry & Mourne

Significant Drinking Water Quality Events in 2013

Date of Significant Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
2 January – 3 January 2013	Lough Fea WTWs (19,500 population)	Operational maintenance work led to a turbidity contravention in the works final water.	Cookstown, Dungannon & South Tyrone and Magherafelt
4 January 2013	Camlough WTWs (21,000 population)	A turbidity contravention was reported which was unrepresentative due to pumping operations.	Newry & Mourne
13 January – 17 January 2013	Carran Hill WTWs (14,500 population)	Treatment difficulties led to aluminium contraventions in the works final water and related supply area.	Newry & Mourne
21 January 2013	Caugh Hill WTWs (78,500 population)	Iron and manganese contraventions were reported. After investigation by NI Water a cause was not determined.	Derry, Limavady and Strabane
5 February – 7 February 2013	Lough Macrory WTWs (34,000 population)	Operational maintenance work led to aluminium contraventions in the works final water and related supply area.	Omagh
1 March 2013	Dorisland WTWs (129,000 population)	A turbidity contravention was reported. After investigation by NI Water a cause was not determined.	Belfast, Carrickfergus, Larne & Newtownabbey
22 March – 23 March 2013	Moyola WTWs (61,000 population)	Power related issues adversely affected the treatment process and led to manganese and turbidity contraventions in the works final water.	Cookstown and Magherafelt
4 April – 12 April 2013	Bushmills Road, Coleraine (16 properties)	A significant odour was detected after NI Water's investigation of a customer complaint identified contamination of the mains supply from a commercial borehole.	Coleraine
15 April – September 2013	Derg WTWs (39,000 population)	Lack of adequate pesticide removal treatment led to persistent MCPA contraventions in the works final water.	Strabane

Date of Significant Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
30 April – 1 May 2013	Forked Bridge WTWs (84,500 population)	Third party damage to a trunk main led to a significant turbidity contravention in the final water.	Belfast and Lisburn
22 May 2013	Dorisland WTWs (129,000 population)	An E.coli contravention was most likely due to unrepresentative sampling.	Belfast, Carrickfergus, Larne & Newtownabbey
27 May – 28 May 2013	Dorisland WTWs (129,000 population)	An overdose of coagulant led to an aluminium contravention in the works final water.	Belfast, Carrickfergus, Larne & Newtownabbey
May – June 2013	Dorisland WTWs (129,000 population)	Increased level of MCPA in the raw water supply due to pesticide usage within the drinking water catchment area. Lack of adequate pesticide removal treatment led to persistent MCPA contraventions in the works final water.	Belfast, Carrickfergus, Larne & Newtownabbey
May – September 2013	Mill Road, Larne (814 properties)	Contraventions of the iron standard and related customer complaints.	Larne
June – July 2013	Clay Lake WTWs (9,000 population)	Increased level of MCPA in the raw water supply due to pesticide usage within the drinking water catchment area. Lack of adequate pesticide removal treatment led to persistent MCPA contraventions in the works final water. Treatment has since been upgraded to include enhanced treatment to reduce pesticide levels in the drinking water supply.	Armagh
June 2013	Seagahan WTWs (35,000 population)	Increased level of MCPA in the raw water supply due to pesticide usage within the drinking water catchment area. An MCPA contravention was reported.	Armagh
18 July – 31 July 2013	Camlough WTWs (25,000 population)	Absence of specific manganese removal treatment led to manganese and turbidity contraventions in the works final water and manganese contraventions in the related supply area.	Newry & Mourne
22 July – 29 July 2013	Altnahinch WTWs (31,000 population)	Treatment difficulties led a turbidity contravention in the works final water and THM contraventions in the related supply area.	Ballymoney and Moyle
6 August – 10 August 2013	Derrychara Park & Gardens, Enniskillen (<100 population)	E.coli and coliform bacteria contraventions were detected after contamination occurred during the installation of a new section of main.	Fermanagh
19 September – 23 December 2013	Camlough WTWs (25,000 population)	Absence of specific manganese removal treatment led to manganese contraventions in the works final water and in the related supply area.	Newry & Mourne
June – October 2013	Dungonnell WTWs (37,000 population)	The treatment process was operating below normal performance for organics removal. THM levels were elevated in the related supply area and there was a THM contravention.	Ballymena and Moyle
14 October – 13 November 2013	Killyhevlin WTWs (77,000 population)	Increased level of MCPA in the raw water supply due to pesticide usage within the drinking water catchment area. Absence of specific pesticide removal treatment led to MCPA contraventions in the works final water.	Dungannon & South Tyrone and Fermanagh
31 October 2013 - 11 February 2014	Baranailt Road, Claudy (5 properties)	A 'Do Not Use Tap Water for Drinking or Cooking' notice was issued following significant aluminium, iron and manganese contraventions due to the poor condition of the old cast iron main, and the difficulties of flushing due to low pressures in the area.	Derry
17 December 2013	Dungonnell WTWs (37,000 population)	An E.coli contravention was most likely due to unrepresentative sampling.	Ballymena and Moyle

Minor Drinking Water Quality Events in 2013

Date of Minor Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Minor Event	Associated Council Area(s)
7 January 2013	Middlepark Road, Cushendall (1 property)	A pH contravention affecting only one property. Most likely caused by a section of cement-lined main. This section of mains was subsequently replaced.	Ballymena
25 January 2013	Killylane WTWs (51,500 population)	A turbidity contravention occurred following operational filter washing.	Ballymena, Larne and Newtownabbey & Antrim
12 February 2013	Seagahan WTWs (35,000 population)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Armagh
1 March 2013	Rathlin WTWs (234 population)	A turbidity contravention occurred due to operational work.	Moyle
6 March 2013	Castor Bay WTWs (249,000 population)	An enterococci contravention was reported. After investigation by NI Water a cause was not determined.	Armagh, Banbridge, Belfast, Craigavon, Dungannon, Lisburn and Newry & Mourne
13 March 2013	Dungonnell WTWs (37,000 population)	An E.coli contravention was most likely due to unrepresentative sampling.	Ballymena and Moyle
5 May 2013	Seagahan WTWs (35,000 population)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Armagh
10 May 2013	Forked Bridge WTWs (84,500 population)	An enterococci contravention was reported. After investigation by NI Water a cause was not determined.	Belfast & Lisburn
11 May 2013	Ashley Park, Carryduff (1 property)	A "Boil Water Before Use" notice was issued to a single property after two coliform bacteria contraventions.	Castlereagh
10 August – 12 August 2013	Sicily Park, Belfast (3 properties)	Recurring coliform bacteria contraventions following operational work to re-locate a section of mains.	Belfast
30 August 2013	Corlea SR (211 properties)	Two coliform bacteria contraventions occurred due to inadequate disinfection.	Omagh
16 October 2013	Fofanny WTWs (95,500 population)	A coliform bacteria contravention was most likely due to unrepresentative sampling.	Newry & Mourne
28 October 2013	Castor Bay WTWs (334,000 population)	An enterococci contravention was most likely due to unrepresentative sampling.	Armagh, Banbridge, Belfast, Craigavon, Dungannon, Lisburn and Newry & Mourne
1 November – 4 November 2013	Bridgend Road, Ballycarry (5 properties)	Recurring coliform bacteria contraventions occurred following the installation of a new section of mains.	Larne

Date of Minor Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Minor Event	Associated Council Area(s)
6 November 2013	Clay Lake WTWs (9,000 population)	A manganese contravention occurred following clear water tank maintenance.	Armagh
12 November 2013	Ballinrees WTWs (111,500 population)	A Clostridium perfringens contravention was reported. After investigation by NI Water a cause was not determined.	Ballymoney, Coleraine, Limavady, Magherafelt and Moyle
5 December 2013	Drumaroad WTWs (513,500 population)	Treatment difficulties led to elevated aluminium levels in the works final water for a short time.	Ards, Belfast, Castlereagh, Down, Lisburn, North Down

Not Significant Drinking Water Quality Events in 2013

Date of Not Significant Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Not Significant Event	Associated Council Area(s)
2 January 2013	Derg WTWs (39,000 population)	A turbidity contravention was reported due to unrepresentative sampling.	Strabane
6 March 2013	Caugh Hill WTWs (78,500 population)	A turbidity contravention was reported due to unrepresentative sampling.	Derry, Limavady and Strabane
12 March 2013	Glenhordial WTWs (33,500 population)	A turbidity contravention was reported due to unrepresentative sampling.	Omagh
22 March – 26 March 2013	Various Locations (2,500 population)	Loss of mains supply during extreme weather requiring alternative drinking water supplies to be provided.	Various
26 March 2013	Lough Fea WTWs (29,500 population)	A turbidity contravention was reported due to unrepresentative sampling.	Cookstown, Dungannon & South Tyrone and Magherafelt
23 May 2013	Lough Bradan WTWs (46,500 population)	A turbidity contravention was reported due to unrepresentative sampling.	Omagh and Fermanagh
4 July 2013	Clay Lake WTWs (9,000 population)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Armagh
30 July 2013	Deehommed SR (1,207 properties)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Banbridge
1 August 2013	Monoclough SR (757 properties)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Ballycastle

Date of Not Significant Event	Area and Estimate of Population/Properties Potentially Affected	Nature and Cause of Not Significant Event	Associated Council Area(s)
5 August 2013	Rathkeel SR (850 properties)	A coliform bacteria contravention was reported. After investigation by NI Water a cause was not determined.	Ballymena
20 November 2013	Clay Lake WTWs (9,000 population)	A Clostridium perfringens contravention was reported. After investigation by NI Water a cause was not determined.	Armagh
1 December 2013	Margaret Ave & Charles Drive, Ballyclare (50 properties)	Loss of mains supply due to a burst watermain requiring alternative drinking water supplies to be provided.	Newtownabbey
5 December 2013	Dungonnell WTWs (37,000 population)	A turbidity contravention was reported due to unrepresentative sampling.	Ballymena and Moyle
14 December 2013	Ballyblack Road, Newtownards (1 property)	A "Boil Water Before Use" notice was issued to a single property after two coliform bacteria contraventions.	Ards

Appendix 5

Water Supply (Water Fittings) Regulations (NI) 2009 Enforcement Policy

NI Water's customer leaflet "Water Fittings Regulations" details why the Water Supply (Water Fittings) Regulations exist and highlights to customers their obligations under the Regulations. A web page has been set up on the NI Water web site for customers where they can download the regulations, guidance notes, information leaflets and notification forms. Both the leaflets and web pages will provide customers with a valuable insight to and appreciation of what the Regulations mean to them, the benefits in protecting drinking water supplies and the potential consequences of non-compliance. Customers are advised both online and in leaflets that before they commence certain plumbing installations or alterations they must first notify NI Water in writing. 10 days advance notice is required before work can commence pending approval. If you do not hear from NI Water within 10 working days of writing to us then consent is 'deemed' to have been given and you can proceed with the work. NI Water also promotes and advocates the benefits of using approved contractors who are members of the Plumbing Industry Licensing Scheme (PILS) as administered by the trade associated known as the Scottish and Northern Ireland Plumbing Employers Federations (SNIPEF).

NI Water has a dedicated team of 5 front line water regulation inspectors across the province headed by a Field Manager and a Senior Engineer.

NI Water has allocated each non-domestic customer a fluid category rating which was derived from Standard Industrial Classification (SIC) codes and also guidance provided by the Water Regulation Advisory Scheme (WRAS). A proactive inspection programme is carried out each year with inspection intervals based on national 'Best Practice' documentation issued to the water authorities by WRAS and accepted by the Department for Environment, Food and Rural Affairs (DEFRA).

The Water Fittings Regulation team has systems and processes in place which are used to schedule and report on inspections, repeat inspections, their findings, contraventions and improvement notices. The Regulation team regularly liaises with external customers, scientific services and networks water teams within the company regarding compliance and non-compliance with the regulations. The team also liaises with other GB water company regulation teams and water industry expert groups to ensure a consistent application of the Regulations in Northern Ireland.

NI Water will only consider applying to the Regulator (WPD) 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 2014 Annual Information Return (AIR) figures:

Description	Number
*Total number of connected properties	850,459
*Total number of new connections from 1st April 2013 to 31st March 2014	3,815

* Information source Annual Information Return 2013

Enforcement Data

Staff and Training

Number of staff involved in enforcement.

Description	Number
Spending more than 75% of time	6
Spending between 50% and 75% of time	0
Spending between 5% and 10% 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 enforcement staff are expected to have passed the City and Guilds qualification in Water Fittings Regulations for enforcement 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 Enforcement Staff
- Introduction into RPZ installations (Reduced Pressure Zone Devices)
- C&G L8 legionella course

Promotion of the Regulations

As a fully subscribing member of WRAS and part owner NI Water has representation on the WRAS Board, Technical Committee and Technical Support Group national forums which meet at least 3 times per year.

NI Water uses WRAS for advice on the interpretation of the Regulations where unusual installations are discovered or where a dispute with an installer/manufacturer occurs regarding the particular meaning of a certain regulation. Participation on this national stage ensures that NI Water like other water suppliers is applying the Regulations consistently across its customer base. It also 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.

A Water Regulation web page is available on the company web site (www.niwater.com/water-fittings-regulations) for both 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.

Notifications

Description	Number
*Total No. of water connection application forms received between 1st Jan 2013 - 31st Dec 2013	5,943
Total number of written customer notifications other than those associated with new connections applications. 1st April 2012 – 31st March 2013	22
**Total No. of new connections made between 1st April 2013 – 31st March 2014	3,815

*Calender year
**Financial year

In most cases customers must notify NI Water in advance of installing or making changes to the water systems within their premises. Owners, occupiers and plumbing installers must get 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 Water Fittings Regulations and are detailed under Regulation 5. NI Water will not unreasonably withhold consent for any work but it may be granted subject to conditions, which must be followed. If customers do not hear from us within 10 working days of writing to us, consent is deemed to have been given and work may proceed.

Approved Contractors Scheme

Northern Ireland Water recommends that customers use an approved plumbing contractor when installing, altering or repairing plumbing systems, water fittings and water-using appliances. Owners and occupiers of premises and anyone who installs plumbing systems have a legal duty to ensure their systems satisfy the requirements of the Water Supply (Water Fittings) Regulations (Northern Ireland) 2009.

NI Water recommends customers use approved plumbing contractors who are members of an approved contractors scheme. These include firms and individuals who are members of the WaterSafe scheme funded by the water industry including NI Water. WaterSafe is a dedicated search facility bringing together thousands of qualified contractors employed by plumbing businesses from the existing Approved Contractors scheme across the UK. WaterSafe can be contacted by telephoning **0333 2079030** 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 Licensed Plumber in your area simply enter your postcode or town on their web site **www.needaplumber.org.uk** or contact SNIPEF on **0845 224 0391**

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.

Description (Number)	2011-2012	2012-2013	2013-2014
No of members in SNIPEF	770	749	734
No of members in Northern Ireland.	81	71	74
No of members in Northern Ireland who are also members of the Plumbing Industry Licensing Scheme (PILS).	71	63	65
No of members in Northern Ireland awaiting approval as approved members of the Plumbing Industry Licensing Scheme.	10	8	2

Financial Year from SNIPEF.

Inspections (Other than those arising from Notification)

As anticipated in the previous year's annual return; inspections, contraventions, notifications, repeat visits and enforcement notifications have considerably increased in 2013 compared with 2012.

Description	Number 2012	Number 2013
*Total number of Domestic and Non-Domestic Inspections	997	1,076
*Total number of Contraventions recorded	2,440	2,762
*Total number of Contraventions rectified	1,015	1,538
*Total Number of outstanding contraventions	1,425	1,224

* 2013 Calendar year

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

- Failure to comply with Regulation 5 – Notifications.
- Water fittings no-compliant with Regulation 4.
- 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 private water supplies (Bore Wells and 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.

Enforcement Actions

NI Water through its enforcement 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; where these requests are not complied with then a non-compliance report is forwarded to the NI Water legal team for appropriate action. No legal referrals are outstanding in the reporting year.

Disputes

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

General Information

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

There are Circa 40,000 FC4&5 premises across Northern Ireland, NI Water inspected 780 of these premises during the reporting year

Number of Reactive Water Regulation inspections (37) attributed to water quality incidents and NI Water observations

Date	Address
Jan-12	Food Processing Plant, Belfast
Feb-13	Petrol Station Co. Antrim
Mar-13	Pharmacy, Co. Armagh
Apr-13	Oil Storage Depot, Co. Fermanagh
Apr-13	Car wash, Co. Londonderry
May-13	Care site, Co. Antrim
May-13	Private residence, Co. Antrim
June-13	Farm, Co. Down
Oct-13	Care site, Co. Tyrone
Nov-13	Private residence, Co Londonderry
Dec-13	Domestic/Agriculture premises

(**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 correct action is required to bring their systems into compliance with the Regulations)

In addition to proactive inspections the Water Fittings Regulation team also undertook reactive inspections as a result 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 as a result of concerns or requests for assistance from customers and colleagues.

Action taken by NI Water

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

Reporting Year Recap

Since the formation of NI Water and the introduction of the new Water Fittings Regulations in August 2009 NI Water has in the last reporting year:

- Continued to update as required the NI Water Water Fittings Regulation web page and literature necessary for the enforcement of the regulations and customer compliance guidance.
- Provided a facility on the company website for customers to locate their nearest approved plumbing contractor as registered through WaterSafe (www.watersafe.org.uk) and SNIPEF (www.needaplumber.org)
- Continued to contribute specialist advice for inclusion in NI Water publications including the winter preparation campaign.
- Promoted compliance with the Water Regulations at every opportunity and attended conferences, trade shows and agricultural shows when invited
- Developed and published "Keeping Water Safe in Premises" document. This sets out the roles and responsibilities appropriate for water suppliers and customers in ensuring consistency of compliance across the UK
- NI Water has with other UK Water Suppliers facilitated the setting up of the WaterSafe organisation which will help customers find their nearest Approved Contractor.

Looking Forward

- Further develop processes and documentation relating to Water Fittings Regulation inspections and enforcement;
- Liaise with NI Water legal team regarding the implementation of a compliance framework;
- NI Water will continue to participate with other GB water suppliers facilitated by WRAS in further refining and implementing the National Enforcement Policy (Keeping Water Safe in Premises).
  - This overarching policy will necessitate water companies making their Water Fittings Regulation enforcement policies available upon request or through their web sites
- NI Water will continue to promote at every appropriate opportunity the general awareness of the Regulations to customers through suitable public and professional interfaces;
- 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 promotional opportunities to raise plumbing standards in Northern Ireland.
- Continuous improvement and refinement of the annual Water Regulation return and interim Regulatory reports.
  - NI Water plans to replace or upgrade the current reporting system in 2014. The existing Connect2 system is built on a platform which is being de-supported and is incapable of providing the more detailed interim reports required by the Regulator.

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 customers' 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.
Coliforms	A group of bacteria which 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 Cryptosporidium.
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 which will give 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 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 assessment of water quality at a parameter level based on water supply zones.
Microbiological	Associated with the study of microbes.
m^3/d	Cubic metres per day.
mg/l	Milligrammes per litre.
µg/l	Microgrammes per litre.
ml	Millilitre.
Ml/d	Megalitres per day (one Ml/d is equivalent to 1,000 m3/d or 220,000 gallon/d).
Oocyst	The resistant form in which Cryptosporidium 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 customers' 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 which 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. In certain circumstances, the DWI may authorise a time limited departure from the regulatory value. See 'Authorised Departure'.
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.
Regulations	The Water Supply (Water Quality) Regulations (Northern Ireland) 2010

Remedial action	Action taken to improve a situation.
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 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).
WPD	DRD Water 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**
Wholesomeness	A concept of water quality which is defined by reference to standards and other requirements set out in the Regulations.

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