northern ireland water

Delivering what matters

Drinking Water Quality

Annual Report 2017

Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2017 and I am delighted to report that we continue to deliver a very high drinking water quality to our customers.

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

Drinking water is carefully monitored and tested for quality. This report summarises NI Water's results from 1 January 2017 to 31 December 2017 to meet the requirements of the Regulations under which we operate. During this reporting period, 99.88% of all tests carried out on samples taken from water treatment works, service reservoirs and customer taps complied with the regulatory standards assessed using Overall Percentage Compliance. This measure has been adopted as the standard, high level, indicator for water quality throughout the treatment and distribution processes across the UK.

At the same time as maintaining a very high quality of drinking water for our customers, NI Water again also returned the highest ever quality of treated wastewater safely back to the environment.

Like much of the UK water industry, NI Water has continued to have issues with elevated levels of pesticides in our catchments over recent years. This is caused largely by wash-off from farm land during the very wet weather events we have experienced in recent years. We continue to liaise closely with the farming community and other stakeholders through the Water Catchment Partnership and the SCaMP NI (Sustainable Catchment Management Planning) programme to try and minimise the chances of reoccurrence in the future. NI Water, in association with its partners, have been trialling weed-wiping in the Seagahan WTW catchment area, with very positive outcomes on MCPA reduction from its initial trials – see the Catchment Management section of this report.

NI Water is a customer focused but asset based organisation. In order to deliver the maximum level of customer service at the lowest sustainable cost, it is important that NI Water assigns expenditure in the most effective possible manner. Although our funding programme for our PC15 price control period (2015-21) continues to be uncertain, we are committed to overcome the challenges presented to us and will continue to work closely with the Utility Regulator, the Drinking Water Inspectorate, the Consumer Council and other stakeholders to maintain and improve our services to our customers. As the largest user of electricity in Northern Ireland, we are committed to finding innovative renewable energy projects to reduce our expenditure on power, which has already tumbled by £5 million over the last three years – this includes the newly commissioned solar farm built at Dunore Point WTW and other projects.

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

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

We are now seeing the benefit of the investment in our overall infrastructure and systems over the past number of years, and as we move forward our investments will be more directly customer focussed to improve water quality at a local level, despite ever present financial pressures. We continue to exceed the targets placed upon us by our regulators to comply with water quality standards, and will continue to improve the service to all our customers in the future.

Sara Venning
Chief Executive Officer


Delivering what matters
for our health, economy and the environment
NI Water
supports the 2018
In real terms, non-domestic customers
£1.9 billion invested
Delivering what matter
Go with Flo & fill up on the go!
northern ireland water
Delivering what matters
Pick up
a reusable water bottle & fill up here with high quality tap water
NI Water
is committed to reducing our impact on the environment & playing our part to tackle the issue of plastic waste.

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Water Quality Standards

During 2017 Drinking Water Quality in Northern Ireland was assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as amended. The regulations incorporate the requirements of the European Commission's Drinking Water Directive 98/83/EC (the "Directive") relating to the quality of water intended for human consumption and, for certain parameters, more stringent UK national standards.

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

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

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

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

NI Water has a monitoring programme in place which covers raw waters, water at various treatment stages, drinking water in distribution and at the customer tap. NI Water liaises with its customers on a wide variety of issues. Where there is an exceedance of a regulatory parameter, investigations and remedial work are carried out to ensure that drinking water is regulatory compliant. Where the monitoring programme highlights a problem with the customer's plumbing, NI Water informs the customer, the local Environmental Health Officer and the Drinking Water Inspectorate. To assist in understanding the contents of this report, a glossary of technical terms is provided (Appendix 6).

Monitoring Drinking Water Quality

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

A water supply zone is a designated area with a population of no more than 100,000 supplied with water from one water treatment works or blended water from several works.

Under the Regulations, samples to be analysed for parameters which do not change in the supply water main may be collected from Authorised Supply Points. These samples are collected from the final distribution point of the Water Treatment Works, and are considered under the Regulations to be equivalent to samples collected from the customer tap. All samples are carefully collected, handled and transported to ensure that they accurately represent the water quality 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 customer taps are taken at random addresses in each water supply zone. A water supply zone is a designated area with a population of no more than 100,000 supplied with water from one water treatment works or blended water from several works. The number and boundaries of water supply zones are subject to change according to operational requirements as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis 51 water supply zones were monitored during the period of this report.

The parameters for which samples are tested include:-

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

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

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

Drinking Water Quality Summary – Year on Year

Compliance assessed against the "Water Supply (Water Quality) Regulations (Northern Ireland) 2007" as amended.

Compliance Measure	2012	2013	2014	2015	2016	2017
% Overall compliance with drinking water regulations	99.77%	99.81%	99.86%	99.83%	99.86%	99.88%
% Compliance at consumers tap (including supply points)	99.63%	99.74%	99.78%	99.75%	99.77%	99.81%
% Iron compliance at consumers tap	97.25%	98.08%	98.95%	98.40%	98.66%	98.85%
% Service Reservoirs with coliforms in >5% samples	0.30%	0.00%	0.00%	0.00%	0.00%	0.00%

Protecting Our Customers

Drinking Water and Health

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

The Drinking Water and Health Liaison Group (DW&HLG) is a multi-agency group 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, the Public Health Agency, the Drinking Water Inspectorate, the Northern Ireland Public Health Laboratory, Environmental Health Northern Ireland and NI Water.

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

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

The guidance document can be found at:
https://www.niwater.com/drinking-water-guidance/

Lead Monitoring for Vulnerable Customers

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

Primary Schools in Northern Ireland have been prioritised based on the age of the school and dates of any building modification and sampled as part of this programme. From this, a monitoring programme was initiated in 2011 that began with the top priority schools and was largely completed in 2017.

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

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

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

Lead Pipework Replacement Programme

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

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

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

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

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

During PC15 NI Water will be replacing over 1800 lead pipes per year within its distribution network. This programme of replacement has been developed to ensure that NI Water prioritises and targets areas with high numbers of lead pipes and poor compliance with the lead standard.

Drinking Water Safety Plans

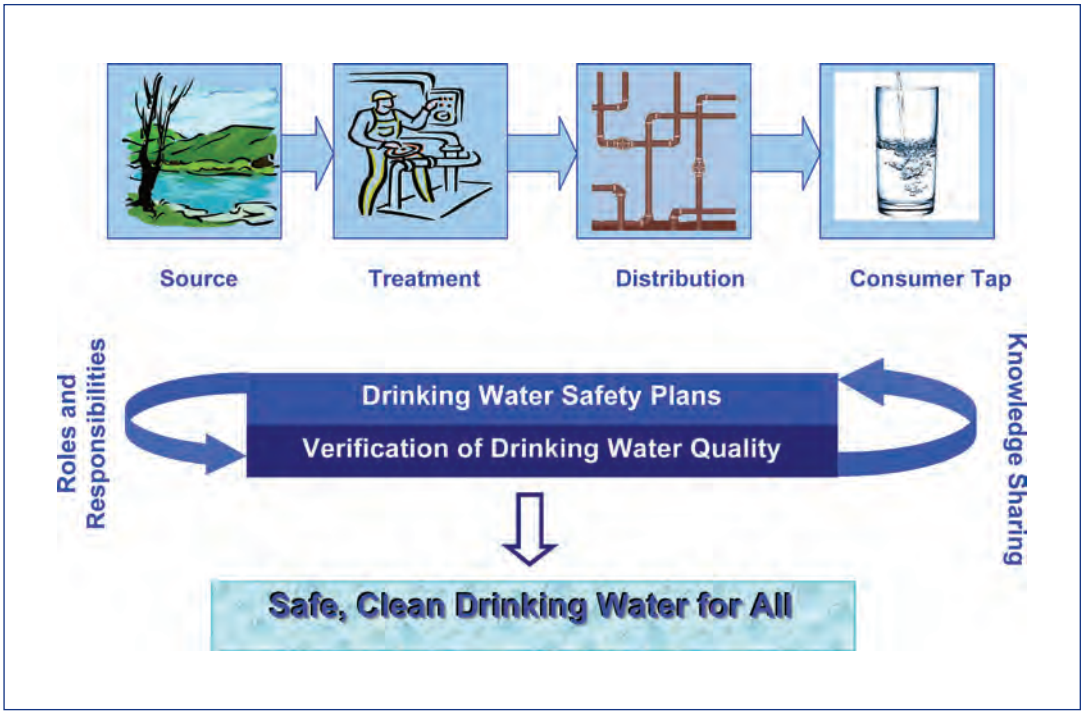
A Drinking Water Safety Plan (DWSP) is the most effective way of ensuring that a water supply is safe for human consumption and that it meets the health based standards and other regulatory requirements. It is based on a comprehensive risk assessment and risk management approach to all the steps in a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

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

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

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

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



Sustainable Catchment Management Planning Northern Ireland (SCaMP NI)

Overview of SCaMP NI

The traditional approach in the water industry to achieving wholesome, compliant drinking water has followed an asset- and construction-based approach in installing treatment processes to remove any pollutants. Over time, as the raw water challenges change, these processes may become redundant and alternatives have to be installed at considerable cost both economically and environmentally. NI Water is increasingly taking a new more innovative, resilient and environmentally sustainable approach to this problem, by working with farmers and other groups within our source catchments to improve raw water quality before it even reaches the treatment works. This means careful consideration before proceeding with the traditional model of constructing expensive WTWs, with a high carbon footprint and high operating costs. Instead, consideration is being given to the catchment area as the first stage of the treatment process, using a more holistic approach, which benefits the environment, biodiversity and reduces our operating costs, especially when resources are pooled with stakeholders and external finance is maximised.

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

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

The aim of NI Water's SCaMP NI project is to improve the quality and reliability of the water received at NI Water's raw water abstraction points through sustainable catchment based solutions that focus on protecting and enhancing the natural environment. NI Water has a background of doing just that on the land we own around our reservoirs and catchment areas – much of which the public can visit and enjoy.

The NI Water SCaMP NI team

Catchment Management Studies

In NI Water there are 23 drinking water catchment areas and it is our target to complete a study in each area. To date 21 Catchment Management Studies have been completed with the aim of completing the remaining 2 studies in the next financial year.

The Catchment Management Studies aim to undertake a scoping and planning study of the drinking water catchments. This uses the approach advocated in the UK Water Industry Research (UKWIR) framework for quantifying the benefits of catchment management, to establish the basis for a programme of management that provides business benefits to NI Water. Diffuse water pollution and insensitive land management may pollute surface and ground water supplies with substances such as nutrients, pesticides and microbial pathogens. It may also increase colour, turbidity and suspended solids in abstracted water. These unwelcome substances increase the capital and operating costs of water treatment, increase the quantity of effluent and waste produced, and increase the carbon footprint of the industry.

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

Public Recreation and Access

NI Water welcomes members of the public to enjoy access to its land, and will endeavour to facilitate recreational activities where it is safe to do so. A Recreation and Access Policy has been developed to provide a framework defining what access is permitted to NI Water owned lands and waters, and how access arrangements will be communicated, controlled and governed.

Wildfire Control

Wildfires have devastating effects on habitats, flora and fauna and can also result in a deterioration in raw water quality and increased treatment costs. This has been a particular issue in the Mournes drinking water catchment. NI Water in conjunction with stakeholders have developed a coordinated approach to wildfire prevention in order protect the water supply and preserve the Mourne landscape for generations to come.

Riparian Planting

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

Working on Cross-Border Catchments

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

Managing Invasive Species

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

Dealing with Pesticides

There have been high residual levels of pesticides found in the raw water at many of NI Water's drinking water sources across NI over the past number of years. This has been particularly difficult and expensive for NI Water to remove in the treatment process to produce quality drinking water. It has also resulted in water quality issues and DWI enforcement orders. The herbicide MCPA is a particular problem and it is frequently detected in rivers and lakes by NIEA

The Weed-Wiping Trial in Seagahan Catchment, Co. Armagh. This is a community-focused project to reduce pesticide levels at source.

Catchment Management

and NI Water at abstraction points in drinking water catchments in NI.

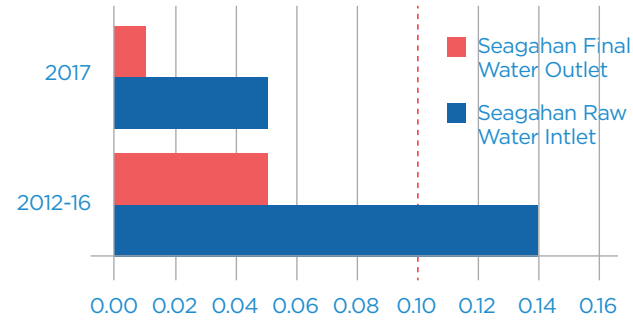
Farmers in NI have traditionally used boom sprayers for apply the herbicide MCPA to rushes. However, trials in conjunction with College of Agriculture, Food and Rural Enterprise (CAFRE) have shown that weed-wiping with Glyphosate is a more effective and less pollutant rush control method than using MCPA via a boom sprayer. Using weed-wipers to manage rushes is more effective as herbicide is applied directly to the plant, using less chemical and dramatically reduces spray drift and runoff to water.

NI Water has begun a trial weed-wiping project in the Seagahan WTW drinking water catchment area in Co. Armagh under the tagline "A Rush Solution without Pollution". The project offers a free weed-wiping service using Glyphosate, as an alternative to spraying MCPA, to demonstrate an alternative effective rush control method which causes less water pollution.

This is a joint initiative with The Water Catchment Partnership as part of a campaign to help reduce levels of MCPA in the Seagahan reservoir catchment area. This involves representatives from Ulster Farmers Union, Northern Ireland Environment Agency, Department of Agriculture, Environment and Rural Affairs, College of Agriculture, Food and Rural Enterprise and the Voluntary Initiative. The overall aim is to show that MCPA levels can be reduced in the reservoir without the need for more expensive water treatment processes.

Initial results have shown a marked decrease in MCPA found in the raw water, with a residual MCPA reduction of more than 50% in the 2017 period, in comparison with the average for the previous 2 years.

Seagahan Raw and Final Average MCPA level 2012-16 vs 2017



Forestry Management

Some NI Water catchment areas are particularly vulnerable to the effects of forestry felling and replanting activities, due to the particular soils and underlying geology. Forestry activities require careful planning in order to avoid any detrimental impacts on raw water quality which is abstracted for water treatment. NI Water has been working closely with the forestry industry to minimise any detrimental effect to raw water quality or the environment.

Peatland Restoration

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

NI Water has been working in partnership with Royal Society for the Protection of Birds Northern Ireland (RSPB NI) and other partners on a project funded by INTERREG VA and managed locally by the Special European Union Programmes Board (SEUPB). The project is called the "Co-operation Across Borders for Biodiversity" (CABB) Project and began in late 2017, with completion in late 2021.

The overall objective of the CABB project is to bring about the recovery of protected habitats (active raised and blanket bog) and priority species (breeding waders and marsh fritillary at key sites) on a cross border and cross country basis. The overall CABB project has been awarded €4.6m of EU funding for projects in Scotland, N Ireland and the Republic of Ireland. CABB will contribute to delivering the EC Birds and Habitats Directives and Biodiversity Strategies in each of the three countries and will also link with strategies for climate change mitigation and adaptation and sustainable development in the three countries, as well as Programme for Government targets.

Catchment Management

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

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

Work ongoing at Garron Plateau to complete the Blanket Bog restoration project.

The launch of the EU funded 'CABB' project to complete the restoration of Garron Plateau blanket bog.

‘Source to Tap’ Project

Overview of Source to Tap

Building on NI Water’s success at demonstrating how, by working together we can manage catchments for water quality, NI Water are lead partner in an exciting and innovative project called “Source to Tap”. This project is funded under the INTERREG VA Environment Programme and managed by the Special EU Programmes Body (SEUPB). A Letter of Offer was signed in July 2017 by NI Water as Lead Partner on behalf of the partners which include: Irish Water, The Rivers Trust, Ulster University, Agri Food and Bioscience Institute (AFBI) and East Border Region.

The Derg and Erne drinking water catchments straddle the border and are predominantly rural in nature. The partnership will work together over five years (2017 to 2021) to deliver proposals and test pilots for how to protect raw water quality at source across both jurisdictions.

In the upper reaches of these catchments, the landscape is dominated by peatbog and forestry with more intensification of land for agricultural use in the lower reaches. Activities such as forestry and farming can cause contaminants such as sediments and pesticides to run off the land and drain into the raw water, which NI Water abstracts for drinking water causing increased costs to treat and remove them before the water, can be used for drinking water supply.

Water catchments are designed to be the first stage of a multiple barrier approach to water treatment. The Source to Tap project will trial pilot studies to reduce pesticides and sediments getting into the water in the first place, and raise awareness of the importance of protecting our precious drinking water resource. The project includes a number of different work packages which will ultimately lead to the production of a sustainable catchment management plan.

The Source to Tap Project Officers and Project Manager

The project will include the following aspects:

The love your water element of the project will cover citizen science and volunteering opportunities that encourages people to get involved in protecting and improving our rivers and lakes. We will provide training to volunteers from within the community to upskill them in water quality monitoring and improvement, including the establishment of a community-led volunteer Water Quality Monitoring Initiative. This will help to create a lasting legacy in the project area. To help raise awareness of the project a website and interactive mapping portal was launched in December 2017 and further information is available on www.sourcetotap.eu

Source to Tap aims to work with schools and the local community to highlight the important connection between our rivers and lakes and what comes out of the tap. It will do this through a school education programme aimed at upper Primary and lower Secondary aged children and the development of a School Activity Booklet. Targeting local communities, it will also carry out a programme of road shows, seminars, information exchange events, attend agricultural shows and community fayres.

'Source to Tap' Project

There will be a pilot study working with Forest Service NI to restore 135 hectares of previously afforested peat bog areas adjacent to watercourses on Forest Service NI land. By installing peat dams to trap water, it will contribute to the health of the bog, reduce erosion and sediment run–off and improve water quality in adjacent watercourses.

A pilot study will trial various mitigation measures at 6 pilot sites over 2 years. Working with Forest Service and Coillte a number of mitigation measures will be installed and trialled to filter the runoff from the forestry operation sites through the installation of settlement traps/ponds and using various media e.g. geotextiles. By monitoring the streams it will help to inform best practise to reduce soil run-off in future forestry activities.

Another pilot study will trial a cross-border pilot Land Incentive Scheme (LIS) in the River Derg catchment, providing incentives to land owners to adopt sustainable land management practices that help reduce herbicide residue and soil escaping from the land into rivers. Project Officers working with the farmers will produce a Water Environment Management Plan for each farm identifying areas where improvements can be made to benefit both the farmer and the water environment.

Output

Monitoring will be undertaken throughout the project and the results of these activities will be assessed using the UK Water Industry (UKWIR) Benefits Assessment Framework for Drinking Water Catchments. It will also identify recommendations to both water companies on how they might sustainably manage raw water quality in the future. Collectively best practise learned from these pilots inform the SCAMP plan for the Erne and Derg catchments. The Plan will be a resource for the water companies in sustainably managing the Erne and Derg catchments in the future.

Building Relationships

The project aims to develop relationships between the water companies and other stakeholders to improve cross-border communication, thus building the foundations for the future. An Expert Advisory Group made up of a range of stakeholders with an interest or role in protecting our precious water resources, met for the first time in December 2017. The project will aim to share findings to improve best practice with stakeholders on the island of Ireland and Scotland.

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

Environmental Management System (EMS) and ISO14001

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

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

NI Water's Environmental Management System (EMS) has become an integral part of our daily activities and business processes.

NI Water is proud of its achieved maintenance of and compliance with the international standard ISO14001 for our Environmental Management System (EMS).

Water Mains Rehabilitation

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

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

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

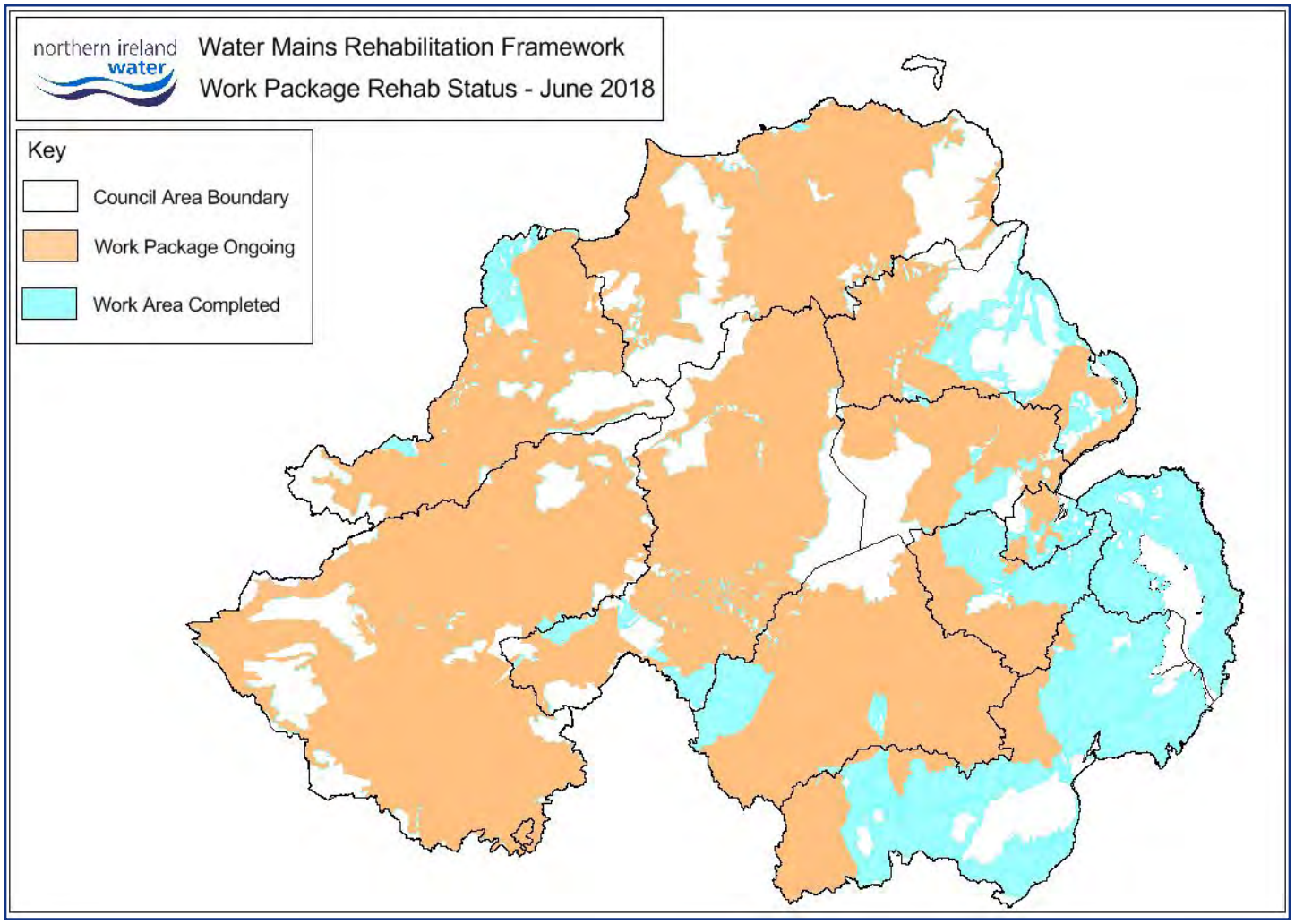
In preparation for the PC15 business plan (covering 2015 – 2021), NI Water revised its approach to identifying Water mains investment needs. In consultation with external stakeholders such as the Drinking Water Inspectorate, the Utility Regulator and the Consumer Council Northern Ireland, NI Water developed the Water mains Infrastructure Investment Methodology (WIIM). Building on the basis of the previous Zonal Studies approach which provided solid analysis of structural and water quality issues, the revised approach draws on corporate data, focusing on customer contacts and customer preferences when identifying and prioritising investment needs.

The Water Mains Rehabilitation programme delivered 449km of mains in the PC13 period (2013 – 2015) and if fully funded, should deliver approximately 900km during the PC15 period.

NI Water Customer targets, for drinking water compliance, are set to assist the company in improving the customer experience as well as to facilitate improvement in Regulatory compliance with lead, iron and turbidity. The long term aim, of improving both the customer experience and Regulatory compliance, in relation to these 3 parameters, lies with replacement / refurbishment of the drinking water distribution system.

The Water Mains Rehabilitation Programme for Northern Ireland was established in 1999 to ensure the investment in water mains infrastructure was appropriately targeted at those areas of greatest need.

Water Mains Rehabilitation



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

Sufficiency of Supply

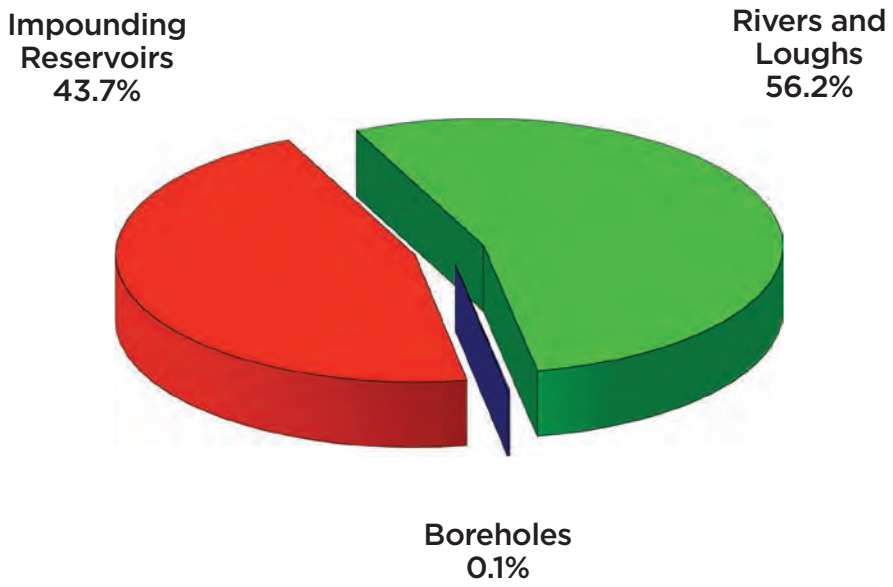
Approximately 863,000 domestic, agricultural, commercial and business properties in Northern Ireland are connected to the public water supply – this equates to around 99.9% of the total population. This entailed supplying an average of about 571 million litres of high quality drinking water to customers every day during 2017. For this NI Water utilised 38 sources which include upland Impounding Reservoirs, Boreholes, Rivers and Loughs.

NI Water has a legislative requirement to produce a Water Resource Management Plan (WRMP) and a Drought Plan as part of its forward planning process. The Water & Sewerage Services Act (Northern Ireland) 2016 permitted NI Water to combine these two plans into the Water Resource and Supply Resilience Plan (WR&SR Plan). The WR&SR Plan sets out how NI Water intends to maintain the balance between supply and demand for water for all its customers over the long-term and the operational and management options and activities available to respond to short-term critical events such as drought and freeze-thaw. A key strategic aim of this plan is to improve the resilience of Northern Ireland's water supply system and the plan is to be updated on a rolling 6 yearly programme.

The Draft WR&SR Plan has been completed and an 8 week consultation process will begin once DfI approval has been granted. Once the consultation responses have been reviewed and actioned as appropriate the Final WR&SR Plan will be issued.

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

Raw Water Sources



Drinking Water Inspectorate - Technical Audit

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

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

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

In 2017/18, the technical audit inspection programme included:

- An audit of the Laboratory Information Management System (LIMS)
- An audit of Glenhordial WTW
- An audit of Killylane WTW
- An audit of Castor Bay WTW

DWI made a number of recommendations and suggestions and NI Water has followed up on these issues. DWI will report on the inspections and the quality of water supplied by NI Water in its annual report, 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 Significant, Serious and Major Water Quality Events notified to the DWI during 2017 is detailed in Appendix 4 herein.

Regulatory Enforcement

DWI put in place one "Consideration of Provisional Enforcement Order" (CPEO) during 2017:

- CPEO 17/01 - to seek remedial measures relating to contraventions of the pesticide, MCPA [(4-Chloro-2-methylphenoxy) acetic acid], from water supplied from Ballinrees WTW was issued on the 20/06/2017. DWI accepted and published a series of Undertakings from NI Water on the 24/07/2017. These Undertakings are scheduled to run through until 16/03/2018.

DWI put in place one "Regulation 27(5) Notice" during 2017:

- Regulation 27(5) Notice – to review the regulation 27 risk assessment for Dorisland WTW in relation to representative sampling from the final water sample point, was issued following Event 02/17, on the 14/02/2017. This review was undertaken and a Completion of Notice letter was issued on the 05/04/2017.

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

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

In addition to this, both of NI Water's testing laboratories have attained the necessary standard of analytical excellence to the requirements of ISO17025. UKAS auditors carry out an annual audit of the NI Water laboratories' quality system to maintain this.

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

NI Water attaches great importance to the integrity of the analysis and for this reason applies strict laboratory analytical quality control procedures.

Use of Technology for Increased Assurance

To assist in its ability to audit its sampling programme, NI Water has put in place a ruggedised tablet PC (Toughpads) based system to produce an enhanced audit trail, and to eliminate data transcription errors.

The system uses Toughpads 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 has recently been upgraded to more fully automate the audit trail and chain of custody.

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

Water Quality Summary

NI Water Sites in Service

During 2017, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	24
Service Reservoirs	290
Water Supply Zones	51
Authorised Supply Points (see glossary)	24

Overall Water Quality Testing

During 2017 99,206 microbiological, physical and chemical tests were carried out for mandatory and indicator consented parameters on water samples taken from water treatment works, service reservoirs and customer taps in the year 2017. Of these, 99,084 tests complied with the regulatory standards giving an overall percentage compliance of 99.88%.

Location Type	No of Samples	Regulatory Parameters Analysed	Regulatory Parameters used for Compliance Assessment
Raw Water Source	200	4,490	0
Water Treatment Works	6,305	46,287	18,974
Service Reservoir	15,118	89,190	29,794
Zone (including Authorised Supply Point)	7,532	64,985	50,438
Overall	**29,256**	**204,481**	**99,206**

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

Microbiological Quality

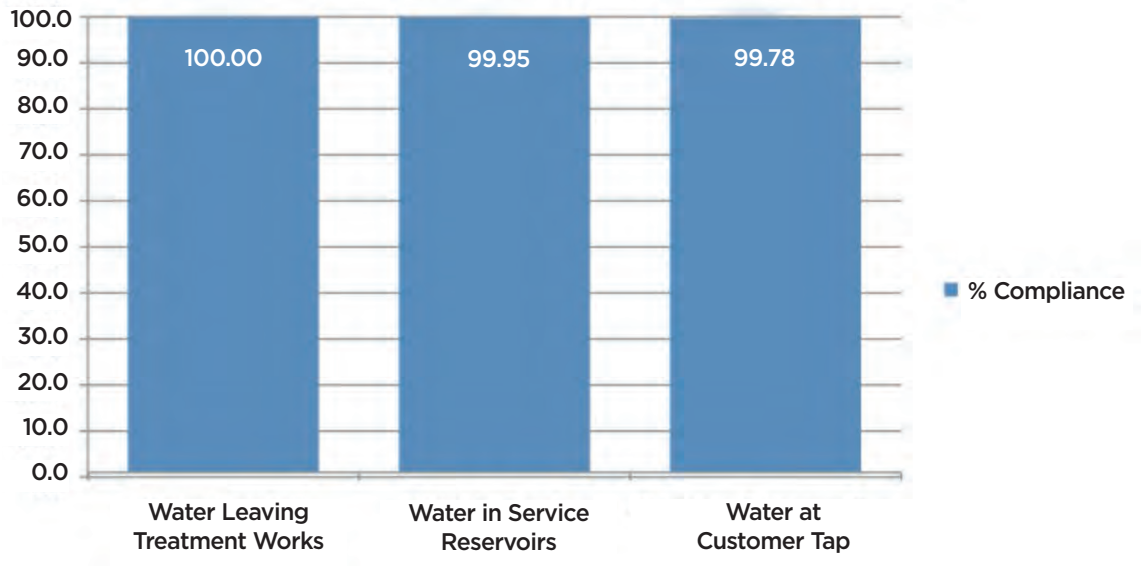
Water leaving water treatment works is disinfected with chlorine to safeguard public health by destroying microorganisms. This is the most important part of the water treatment process. NI Water has developed a disinfection policy for water treatment and individual disinfection statements for each water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

To ensure the effectiveness of the treatment and chlorination process, the wholesomeness of treated water is regularly examined to ensure the absence of coliform bacteria and faecal coliforms (E. coli) at water treatment works, service reservoirs and in the distribution system at customer taps. The presence of these organisms may indicate potential microbiological contamination of water supplies, and if they are detected in drinking water, immediate action is taken to identify the source and to minimise any risk to public health.

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

A summary of the microbiological quality of water supplied in 2017 is given below.

Overall Microbiological Water Quality



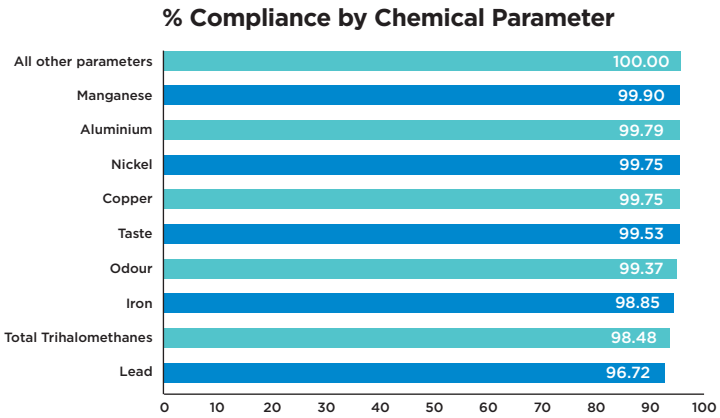
Physical and Chemical Quality at Customer tap

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

- During 2017 37,417 physical and chemical tests were assessed against their consent for water samples taken at customer taps or authorised supply points. Of these, 37,344 tests complied with the regulatory standards giving a compliance of 99.81% for physical and chemical tests.

Appendix 2 shows the extent of NI Water's compliance with the regulatory standards at both customer tap and authorised supply point. For most parameters, compliance is judged 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.

Overall Water Quality			
	Number of Analytical Tests	**Number of Tests Exceeding PCV**	**% Compliance with Regulatory Standards**
Water Leaving Treatment Works			
Bacteriological Analysis	12,492	0	100.00
Indicator parameters	6,482	10	99.85
Total	**18,974**	**10**	**99.95**
Water in Service Reservoirs			
Bacteriological Analysis	29,794	16	99.95
Total	**29,794**	**16**	**99.95**
Water at Customers' Taps or Authorised Supply Points			
Bacteriological Anal. inc Coliforms	13,021	23	99.82
Zone Chemical Analysis	22,101	70	99.68
Supply Point Chemical Analysis	8,776	3	99.97
Indicator parameters	6,540	0	100.00
Total	**50,461**	**96**	**99.81**
Total Mandatory Parameters	**86,184**	**112**	**99.87**
Total Indicator Parameters	**13,022**	**10**	**99.92**
Overall Water Quality Total	**99,206**	**122**	**99.88**



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

During 2017 the following main chemical parameters exceeded their prescribed concentration or value at some point.

Aluminium

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

Iron

The iron standard has been set for aesthetic reasons as levels persistently above the standard can give rise to discoloured water and particulate matter. Where the standard for iron has not been met, this may be due to problems of corrosion of iron water mains. There is an ongoing proactive programme of flushing and cleaning of the distribution system to minimise the problem. In addition, NI Water has an ongoing Water Mains Rehabilitation Programme in which supply zones that experience water quality and other supply problems are subjected to a detailed zonal study. These detailed zonal studies include the analysis of historic water quality data (including iron) 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 water main and the kitchen tap or in domestic plumbing, there may be a risk of concentrations at the customer tap exceeding the lead standard.

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

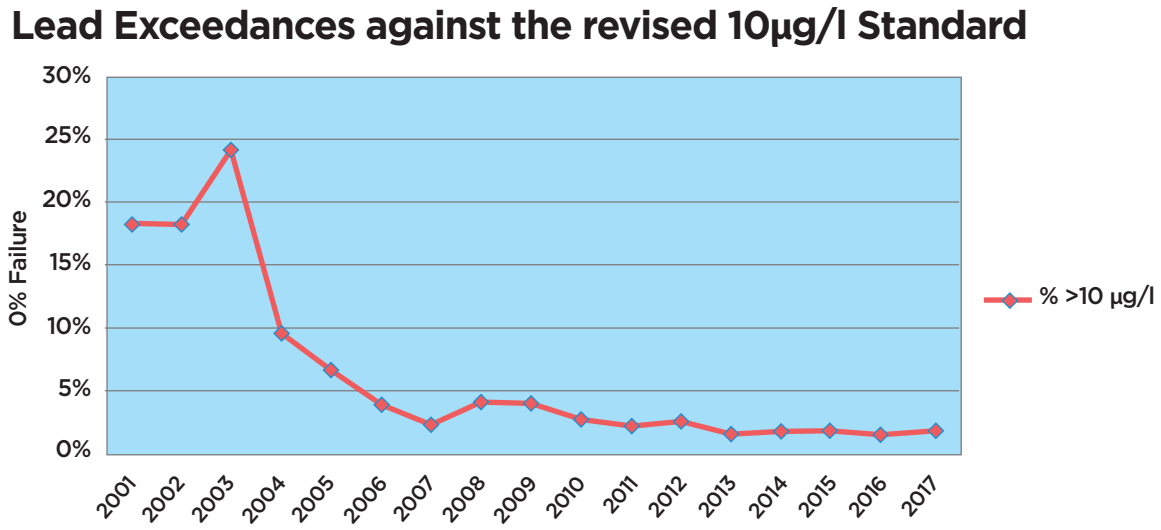
NI Water will also replace free of charge, any of its lead pipes supplying a property, if it receives a written request from a customer who has replaced the portion of lead service pipe for which the householder is responsible.

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

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

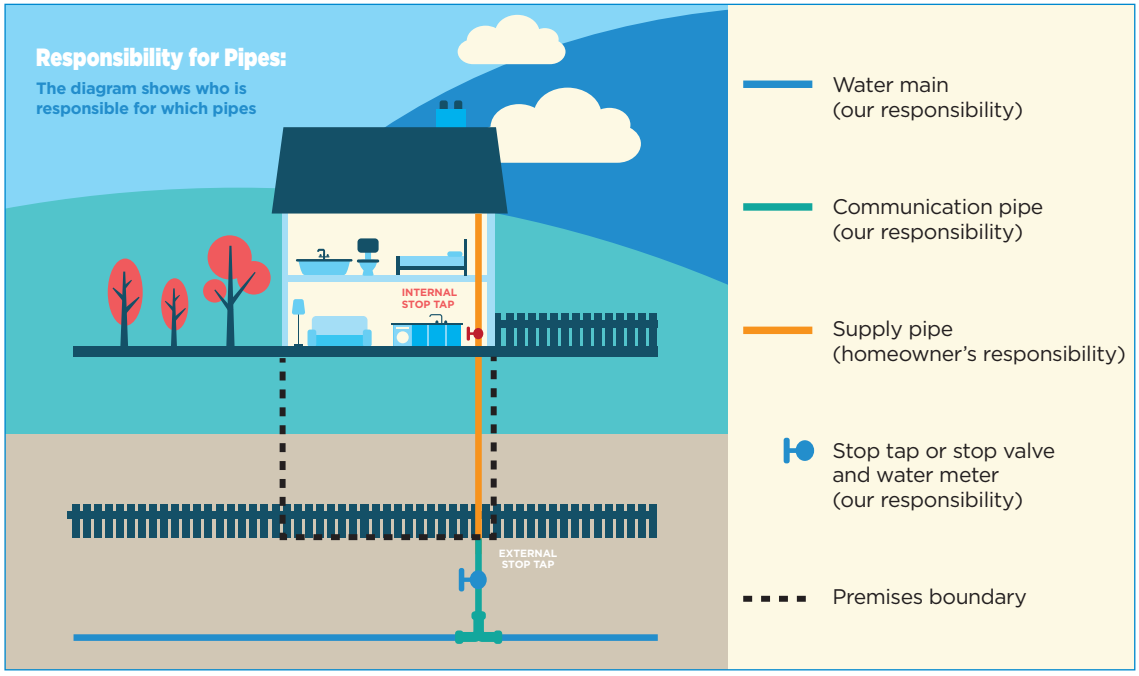
Water Quality Issues

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



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

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



Manganese

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

Pesticides

Pesticides include insecticides, herbicides, fungicides and algaecides. These can find their way into watercourses from a variety of sources, mainly from use in agriculture or weed control. NI Water has an ongoing pesticide monitoring programme and analysed samples for 34 individual pesticides during 2017. NI Water liaises with other regulatory bodies in Northern Ireland such as the Northern Ireland Environment Agency (NIEA) regarding the control of pesticide usage.

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

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

Total Trihalomethanes (THMs)

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

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

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

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

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

Turbidity

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

Summary

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

Further information

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

Asset Delivery

In October 2014 the Minister for Regional Development provided Social and Environmental Guidance which outlined the priorities for investment for NI Water for the period April 2015 to March 2021 (PC15). From this, the Utility Regulator for Northern Ireland set a % Overall Water Quality Compliance target of not less than 99.79% for water quality during this period. NI Water developed the PC15 business plan to maintain the quality of water through the investment period. The water quality section of the PC15 plan included the laying of 905km of new, renewed or relined water mains, the provision of 3 strategic trunk mains, the upgrading of water treatment works, service reservoirs and pumping stations. During 2017/18 NI Water laid 123km of watermains and the cumulative PC15 watermains total is 412 km.

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

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

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

Research, Development and Innovation

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

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

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

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

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

In 2017 NI Water partnered with Invest Northern Ireland and Irish Water to host a very successful 'Dragons Den' style interactive innovation event which saw companies pitching their ideas and products to a panel of experts. Due to its success the event will be held again this year.

Water Supply (Water Fittings) Regulations (NI) 2009

Water Regulation Background

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

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

NI Water has an obligation to ensure the 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 Regulations are primarily designed to prevent the **waste, misuse, undue consumption, erroneous measurement** of water and most importantly to **prevent contamination** of wholesome water. Owners and occupiers of premises, and anyone who installs plumbing systems or water fittings, have a legal duty to ensure that their systems satisfy the requirements of the regulations. Advance notice must be given, in most cases, of proposed installations, so architects, building developers and plumbers have to follow the Regulations on behalf of future owners or occupiers.

For the purpose of this return:

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

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

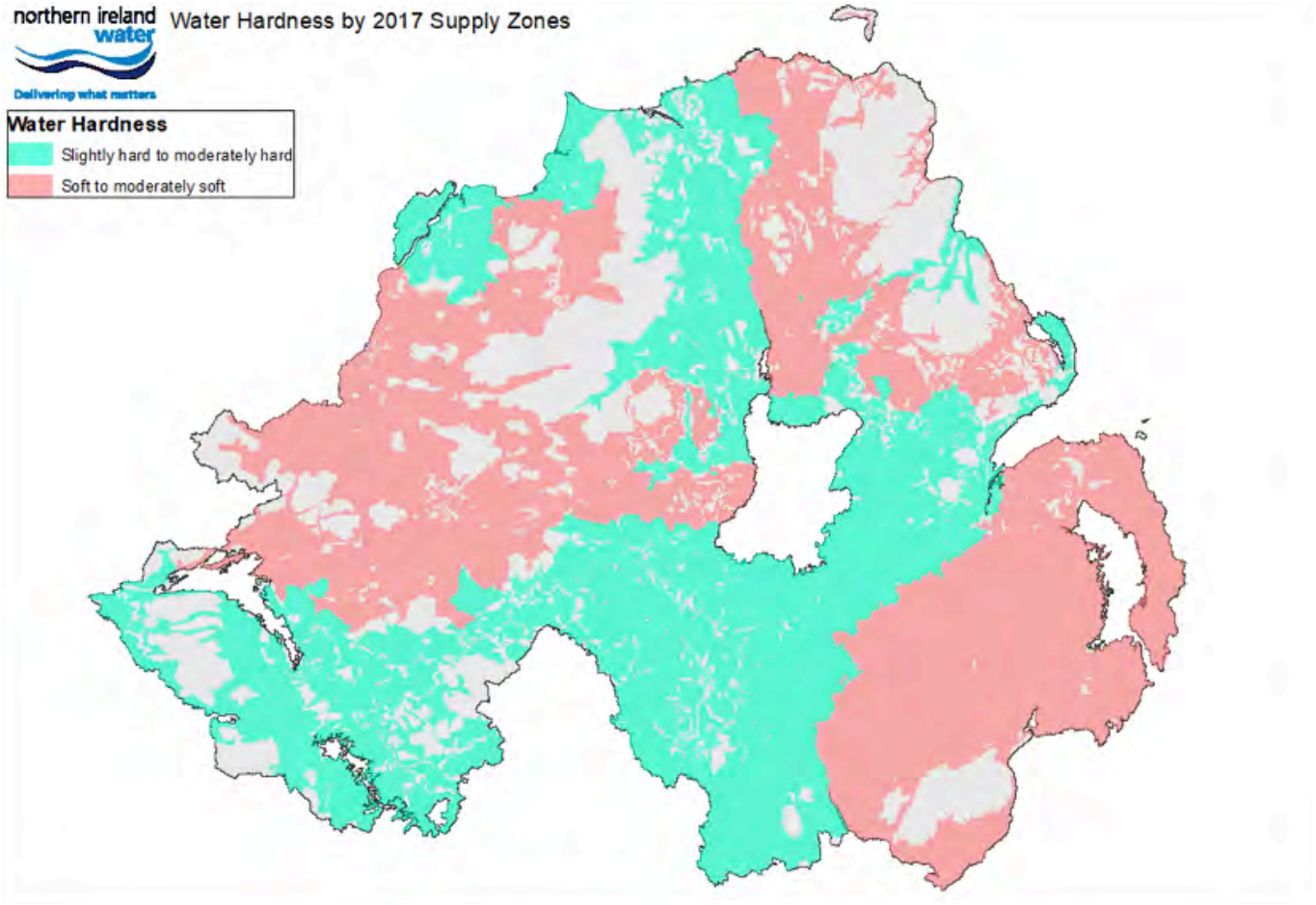
NI Water's implementation of these regulations is detailed at Appendix 5 herein. Detailed below are the numbers of inspections completed, contraventions observed and contraventions awaiting customer resolutions.

Description	Number
*Number of Domestic and Non Domestic Inspections • Full Inspections. • Revisit Inspection. • Drawings Inspection. Total number of all Inspections	 529 445 28 **1,002**
*Number of Premises/Bodies visited	1,002
*Number of Contraventions Active recorded	1,119
*Number of Contraventions Closed	697
*Number of Outstanding Contraventions	422
*Number of Inspections with outstanding contraventions > 3 months passed to NI Water Legal Department	2

*2017 Calendar year

Drinking Water Register

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



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

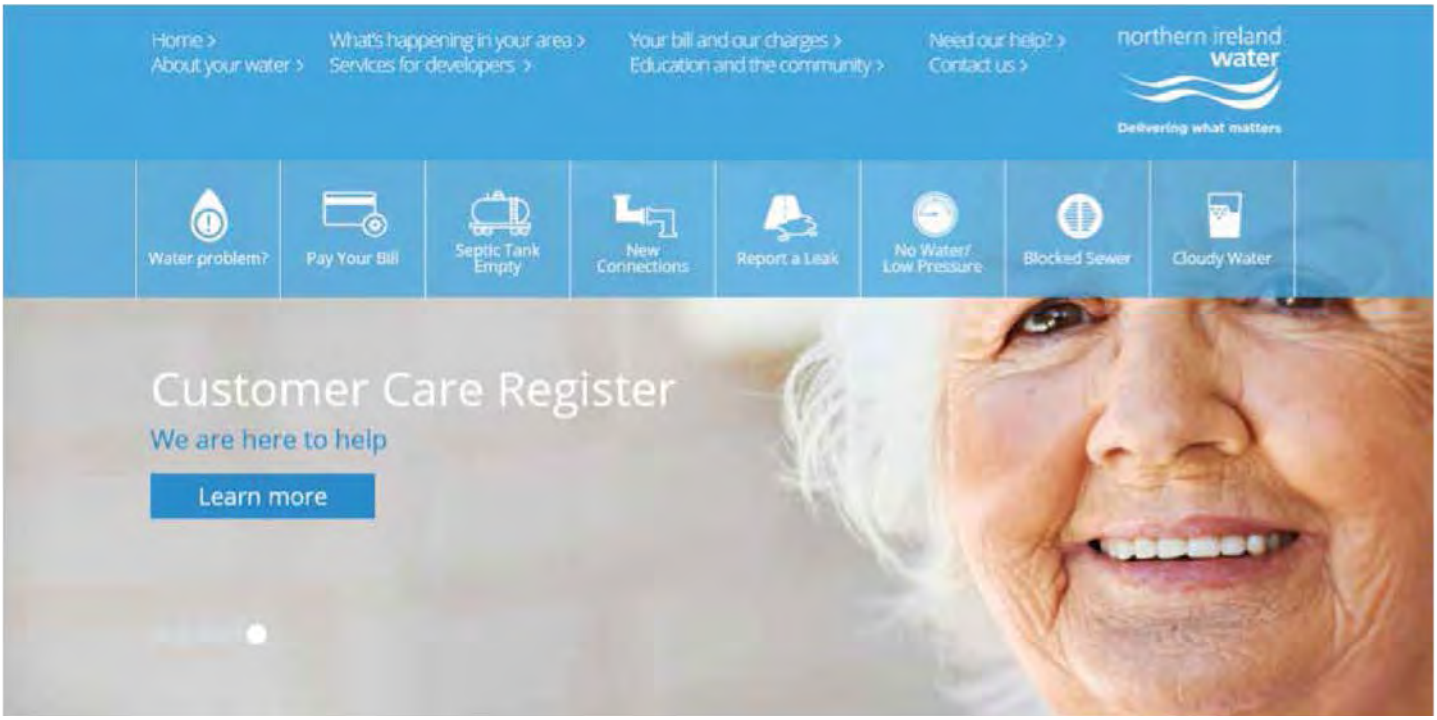
Customers, who wish to receive information about the quality of water in their water supply zone by post, can write to the address listed below:
Customer Relations Centre, 4th Floor, Capital House, 3 Upper Queen St, Belfast BT1 6PU

Customers can contact the Customer Relations Centre on our **Waterline: 03457 440088**
Customers who have hearing difficulties can also contact us via type talk on: **03457 440088**
Customers may also contact Customer Services by email on: **waterline@niwater.com** 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.

Customer Services

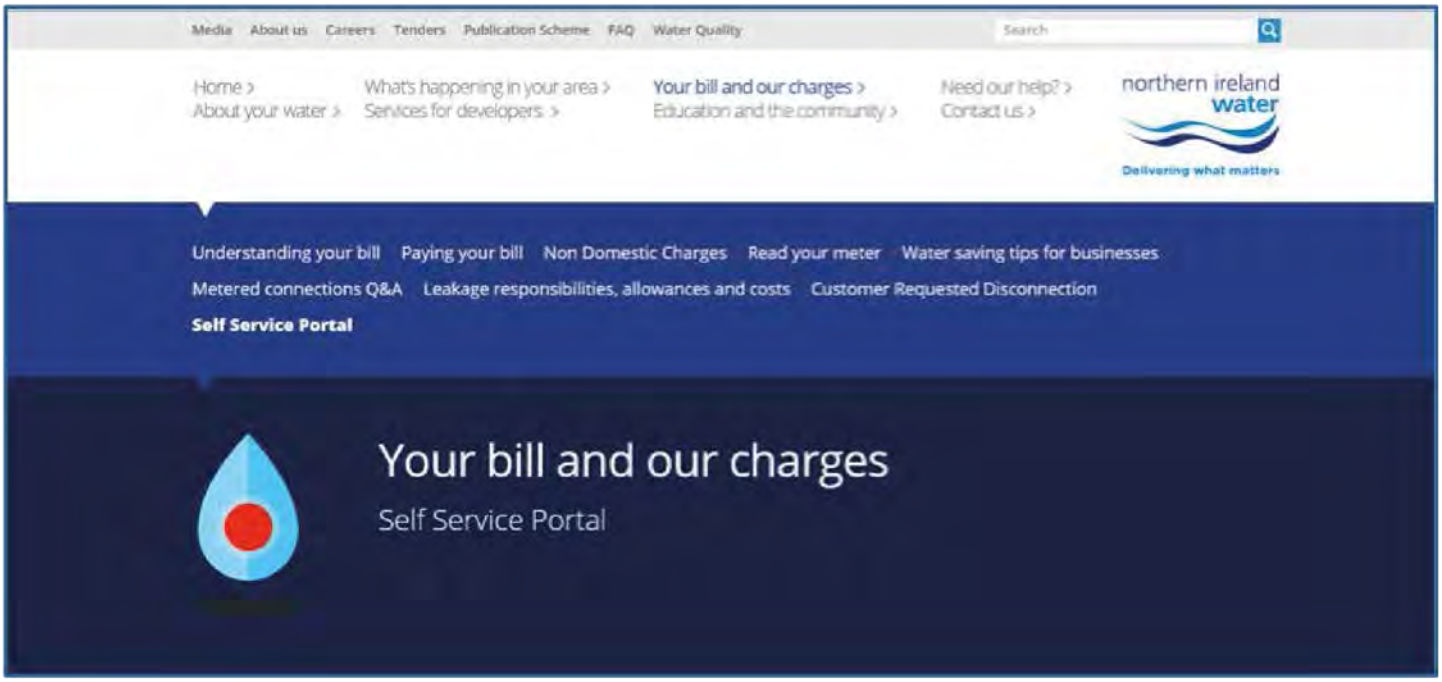
Staff in the Customer Relations Centre record details and the nature of all enquiries, requests for services, emergencies and complaints. All contacts are logged and routed directly to staff who will investigate the matter and resolve the problem as quickly as possible.

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



Self Service Portal

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



Once registered, customers are able to:

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

This web portal is found at: **www.selfservice.niwater.com**

Social Media

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

Facebook

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

YouTube

NI Water has its own YouTube channel **www.youtube.com/northernirelandwater** 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**.

Major Incident Information

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

To increase the number of calls answered and the quality of information provided, NI Water has installed a High Volume Call Answering (HVCA) system. This 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).

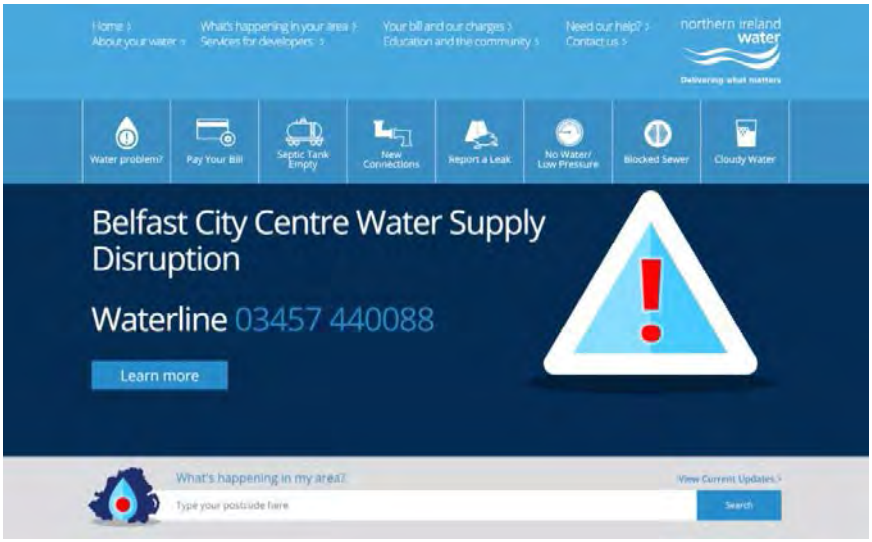
NI Water's customers should have a better experience when they ring us because their call will always be answered, and they should be provided with up to date information.

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 the UK.

Major Incident and Major Emergency Website

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

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



Information available includes:

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

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

APPENDICES

Appendix 1

Drinking Water Quality Standards

Water Supply (Water Quality) Regulations (Northern Ireland) 2007

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	Customer taps
Escherichia coli (E. coli)	0	number/100ml	Customer taps
Coliform bacteria	0	number/100ml	Customer taps (i)

Appendix 1

TABLE B.

CHEMICAL PARAMETERS

Part I: Directive requirements

Parameters	*Concentration or Value (maximum)*	*Units of Measurement*	*Point of compliance*
Acrylamide	0.10	µg/l	(i)
Antimony	5	µg Sb/l	Customer taps
Arsenic	10	µg As/l	Customer taps
Benzene	1	µg/l	Customer taps
Benzo(a)pyrene	0.01	µg/l	Customer taps
Boron	1	mg B/l	Customer taps
Bromate	10	µg BrO3/l	Customer taps
Cadmium	5	µg Cd/l	Customer taps
Chromium	50	µg Cr/l	Customer taps
Copper	2	mg Cu/l	Customer taps
Cyanide	50	µg CN/l	Customer taps
1,2 Dichloroethane	3	µg/l	Customer taps*
Fluoride	1.5	mg F/l	Customer taps
Lead	10	µg Pb/l	Customer taps
Mercury	1	µg Hg/l	Customer taps
Nickel	20	µg Ni/l	Customer taps
Nitrate	50	mg NO3/l	Customer taps
Nitrite	0.5	mg NO2/l	Customer taps
Aldrin	0.03	µg/l	Customer taps*
Dieldrin	0.03	µg/l	Customer taps*
Heptachlor	0.03	µg/l	Customer taps*
Heptachlor epoxide	0.03	µg/l	Customer taps*
Other pesticides	0.1	µg/l	Customer taps*
Total Pesticides (ii)	0.5	µg/l	Customer taps*
PAH - Sum of four substances (iii)	0.1	µg/l	Customer taps
Selenium	10	µg Se/l	Customer taps
Tetrachloroethene/ Trichloroethene – Sum (iv)	10	µg/l	Customer taps*
Total Trihalomethanes (v)	100	µg/l	Customer taps
Vinyl chloride	0.50	µg/l	(i)

Appendix 1

Notes:

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

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

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

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

(v) The specified compounds are:
- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane

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

Part II: National requirements

Parameters	*Concentration or Value (maximum unless otherwise stated)*	*Units of Measurement*	*Point of compliance*
Aluminium	200	µg Al/l	Customer taps
Colour	20	mg/l Pt/Co	Customer taps
Iron	200	µg Fe/l	Customer taps
Manganese	50	µg Mn/l	Customer taps
Sodium	200	mg Na/l	Customer taps
Tetrachloromethane	3	µg/l	Customer taps
Turbidity	4	NTU	Customer taps

Appendix 1

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

Notes:

(i) The water should not be aggressive.

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

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

Explanatory Notes

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

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

Appendix 2

Water Quality Report for Water Supply Zones

Schedule 1 parameters	Units	2017 Samples	No > PCV	% > PCV
Enterococci	No./100ml	396	0	0.00%
E. coli	No./100ml	5,148	3	0.06%
1,2 Dichloroethane	µg/l	396	0	0.00%
Aluminium	µg Al/l	1,916	4	0.21%
Antimony	µg Sb/l	396	0	0.00%
Arsenic	µg As/l	396	0	0.00%
Benzene	µg/l	396	0	0.00%
Benzo(a)pyrene	ng/l	396	0	0.00%
Boron	µg B/l	385	0	0.00%
Bromate	µg/l	396	0	0.00%
Cadmium	µg Cd/l	396	0	0.00%
Chromium	µg Cr/l	384	0	0.00%
Colour	mg/l Pt/C	1,916	0	0.00%
Copper	mg Cu/l	396	1	0.25%
Fluoride	mg F/l	396	0	0.00%
Iron	µg Fe/l	1,916	22	1.15%
Lead	µg Pb/l	396	13	3.28%
Manganese	µg Mn/l	1,916	2	0.10%
Mercury	µg Hg/l	396	0	0.00%
Nickel	µg Ni/l	396	1	0.25%
Nitrate	mg NO_3/l	396	0	0.00%
Nitrite	mg NO_2/l	396	0	0.00%
Odour	dilution No	1,916	12	0.63%
Selenium	µg Se/l	396	0	0.00%
Sodium	mg Na/l	396	0	0.00%
Taste	dilution No	1,916	9	0.47%
PAH - Sum of four substances	µg/l	396	0	0.00%
Tetrachloroethene/Trichloroethene - Sum	µg/l	396	0	0.00%
Tetrachloromethane	µg/l	396	0	0.00%
Total Trihalomethanes	µg/l	396	6	1.52%
Turbidity	NTU	1,916	0	0.00%

Appendix 2

Indicator parameters		2017 Samples	No > SPEC	% > SPEC
Coliform bacteria	No./100ml	5,148	20	0.39%
Total - Residual disinfectant	mg Cl/l	5,148	-	-
Free - Residual disinfectant	mg Cl/l	5,148	-	-
Colony Counts 37 (48hrs)	No./1 ml	1,916	-	-
Colony Counts 22	No./1 ml	1,916	-	-
Ammonium	mg NH_4/l	1,916	0	0.00%
Chloride	mg Cl/l	396	0	0.00%
Hydrogen Ion	pH value	1,916	0	0.00%
Conductivity	µS/cm 20	1,916	0	0.00%
Sulphate	mg SO_4/l	396	0	0.00%
Ammonia	mg NH_4/l	1,916	0	0.00%

Water Quality Report for Authorised Supply Points

Schedule 1 parameters	Units	2017 Samples	No > PCV	% > PCV
Cyanide	µg CN/l	236	0	0.00%
Pesticides - Total Substances	µg/l	236	1	0.42%
All other analysed Pesticides	µg/l	8,256	2	0.02%
Indicator parameters		**2017 Samples**	**No > SPEC**	**% > SPEC**
Clostridium perfringens (sulph red)	No./100 m	2,329	0	0.00%
Total Indicative Dose		2,329	0	0.00%
Tritium	Bq/l	24	0	0.00%

Appendix 2

Water Quality Report for Water Treatment Works

Schedule 1 parameters	Units	2017 Samples	No > PCV	% > PCV
Coliform bacteria	No./100m	6,246	0	0.00%
E. coli	No./100ml	6,246	0	0.00%
Nitrite	mg NO_2/l	227	0	0.00%
Indicator parameters		**2017 Samples**	**No > SPEC**	**% > SPEC**
Turbidity	FTU	6,246	10	0.16%
Total - Residual disinfectant	mg Cl/l	6,246	-	-
Free - Residual disinfectant	mg Cl/l	6,246	-	-
Colony Counts 37 (48hrs)	No./1 ml	6,246	-	-
Colony Counts 22	No./1 ml	6,246	-	-

Water Quality Report for Service Reservoirs

Schedule 1 parameters	Units	2017 Samples	No > PCV	% > PCV
Coliform bacteria	No./100m	14,897	14	0.09%
E. coli	No./100ml	14,897	2	0.01%
Indicator parameters		**2017 Samples**	**No > SPEC**	**% > SPEC**
Colony Counts 37 (48hrs)	No./1 ml	14,897	-	-
Colony Counts 22	No./1 ml	14,897	-	-
Total - Residual disinfectant	mg Cl/l	14,897	-	-
Free - Residual disinfectant	mg Cl/l	14,897	-	-

Notes:

During 2017 a Service Reservoir located on the same site as another Service Reservoir and fed from the same Water Treatment Works, was not sampled to meet regulatory requirements. This has been rectified during 2018 and the Service Reservoir is now scheduled to be sampled to meet regulatory requirements.

Water Quality by Northern Ireland Council Area

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

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

In a number of cases water supply zones overlap council boundaries. The council reports indicate which water supply zones are wholly or partially contained within the council areas, including those zones 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 zonal and council compliance relates to the whole zone and not merely the part included within a council boundary. Following discussions with the Drinking Water Inspectorate, water supply zones with fewer than 40 properties within the council area have not been used to calculate the individual council compliance. The information is based on samples taken randomly from customer taps in each water supply zone and from planned samples at authorised supply points. Due to the nature of random sampling, there may be fluctuations in water quality across the water supply zones.

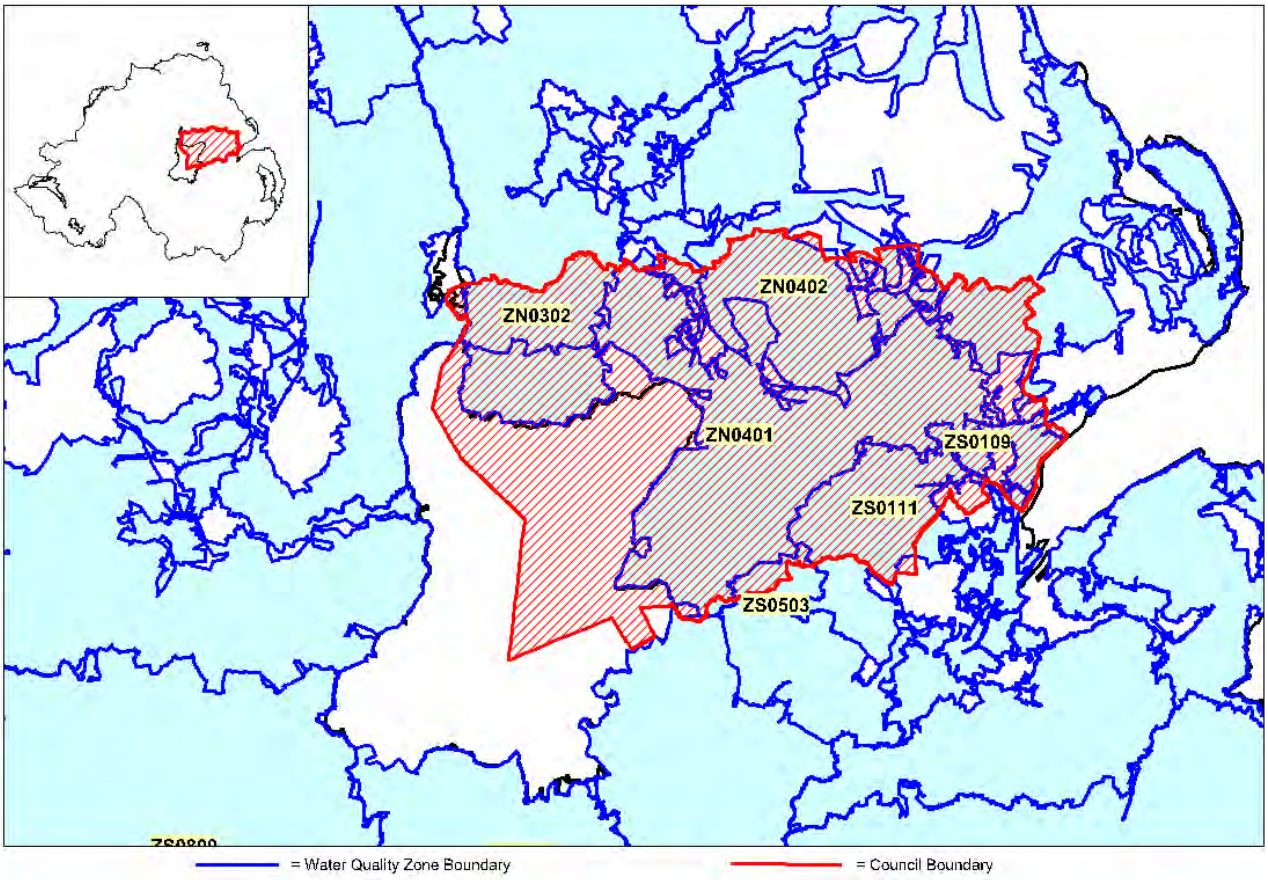
The report also details Capital Work Programmes affecting the council area which directly related to water quality during the reporting period.

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

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

Appendix 3

Antrim and Newtownabbey Borough Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Antrim and Newtownabbey Compliance	99.7%	99.8%	99.8%	99.8%	99.7%	99.9%

2017 water supply zones wholly or partially within the council area:

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

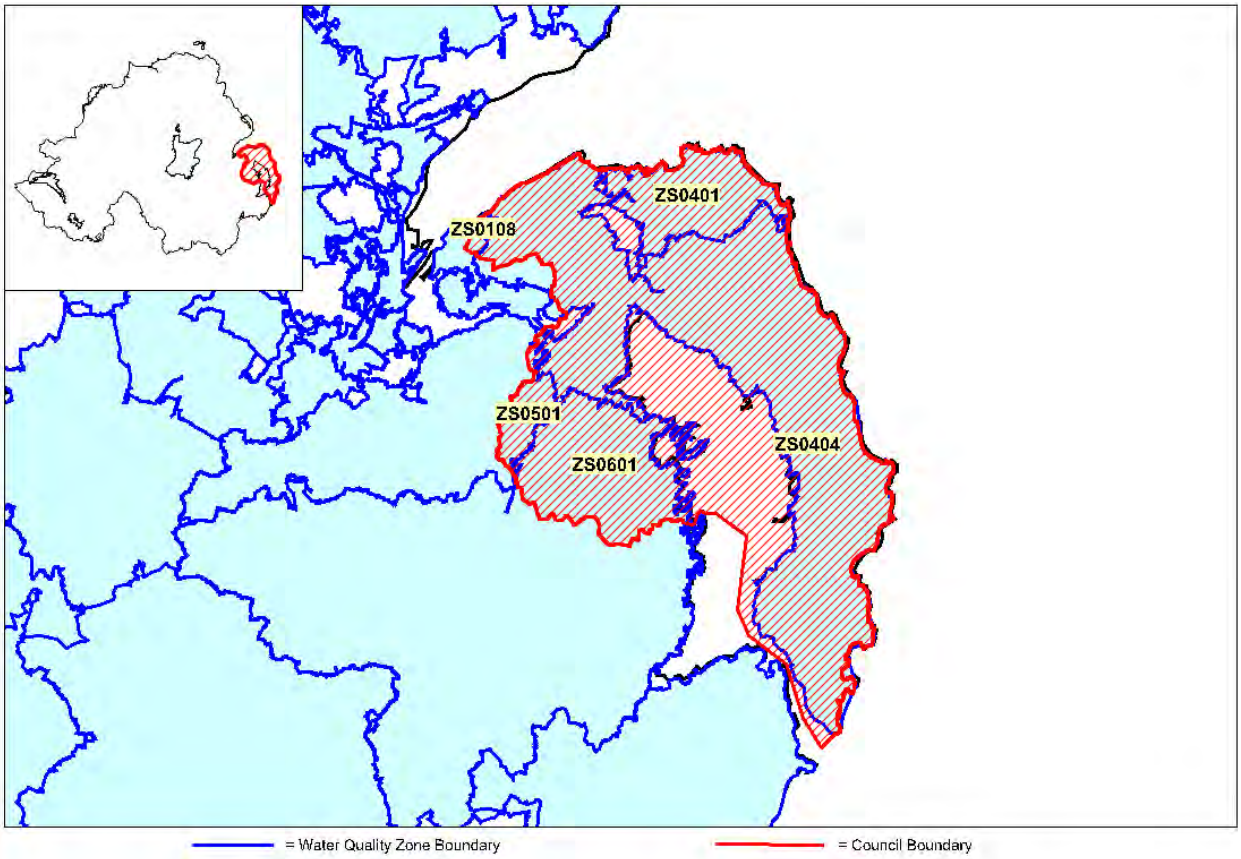
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Antrim South WIIM 2.1 Work Package
Castor Bay Outage Feasibility Studies
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Watermains Rehabilitation WP 10: Belfast North
PC15 Watermains Rehabilitation WP 6: Dungonnell
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WIIM Phase 2 Dunore Point WP
WTW Effluent Quality

Appendix 3

Ards and North Down Borough Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Ards and North Down Compliance	99.7%	99.8%	99.8%	99.8%	99.9%	99.9%

2017 water supply zones wholly or partially within the council area:

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

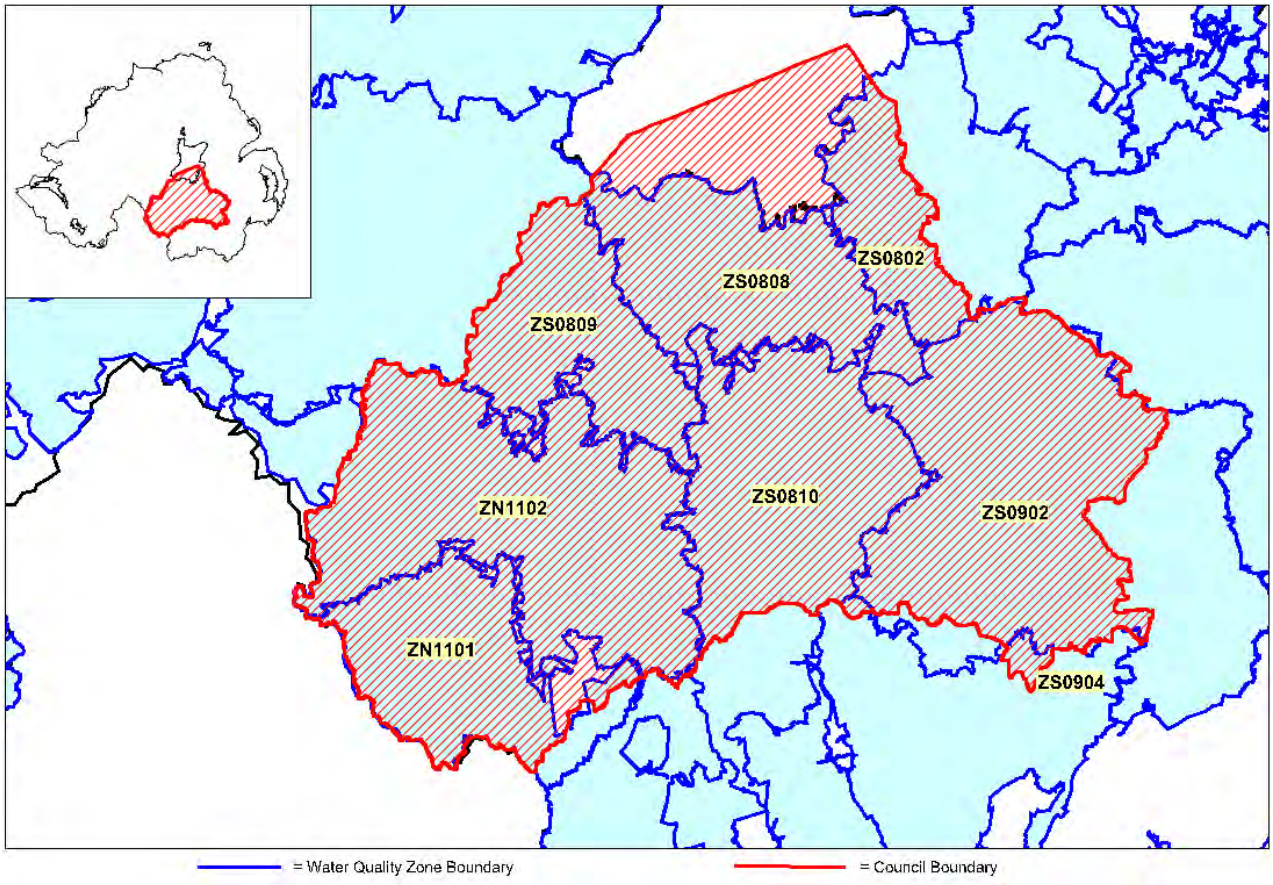
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WTW Effluent Quality

Appendix 3

Armagh City, Banbridge and Craigavon Borough Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Armagh, Banbridge & Craigavon Compliance	99.7%	99.8%	99.8%	99.8%	99.7%	99.9%

2017 water supply zones wholly or partially within the council area:

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

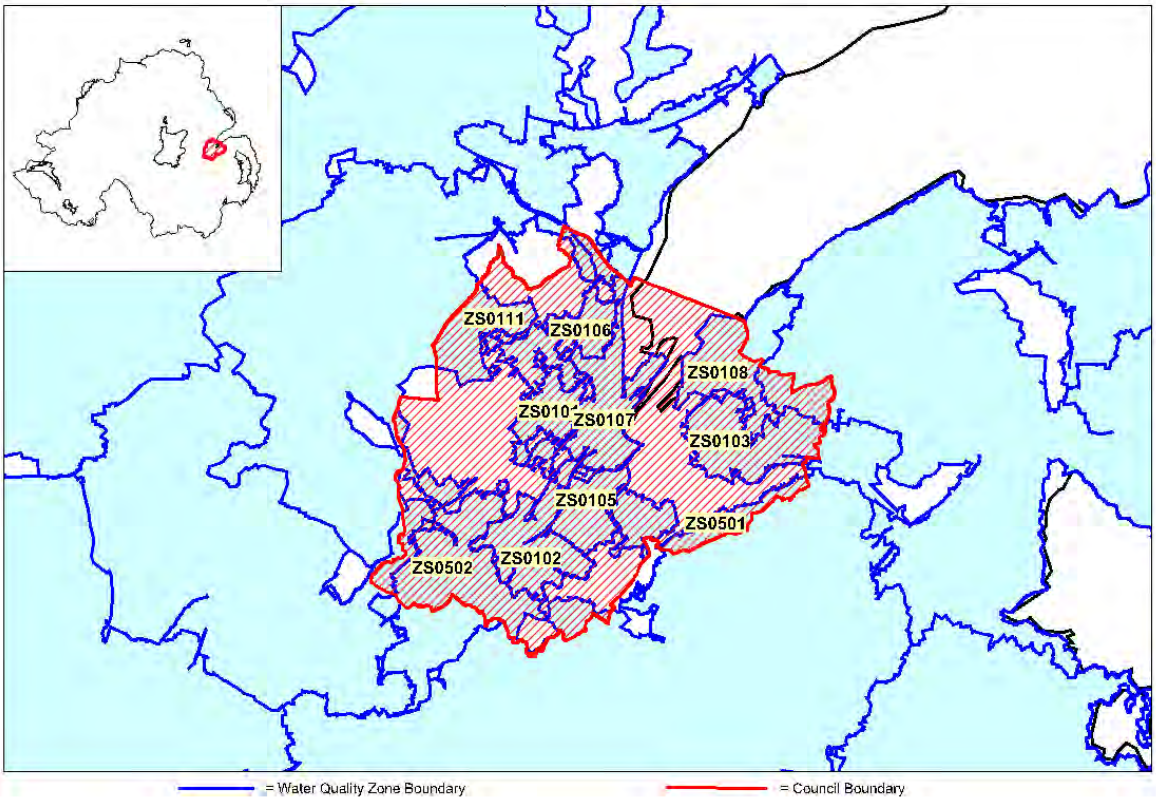
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
Castor Bay Outage Feasibility Studies
Castor Bay WTW to Ballydougan SR Upgrade
Craigavon WIIM 2.1 Work Package
Fofanny Banbridge Zone Watermain Improvements Phase 2
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
MIMP South (Major Incident Mitigation Project South Region) Freeze Thaw Improvements
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WIIM 1 Phase 2 Carran Hill Crossmaglen WP
WIIM Phase 2 Clay Lake Keady WP
WTW Effluent Quality

Appendix 3

Belfast City Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Belfast City Council Compliance	99.7%	99.8%	99.8%	99.8%	99.9%	99.9%

2017 water supply zones wholly or partially within the council area:

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

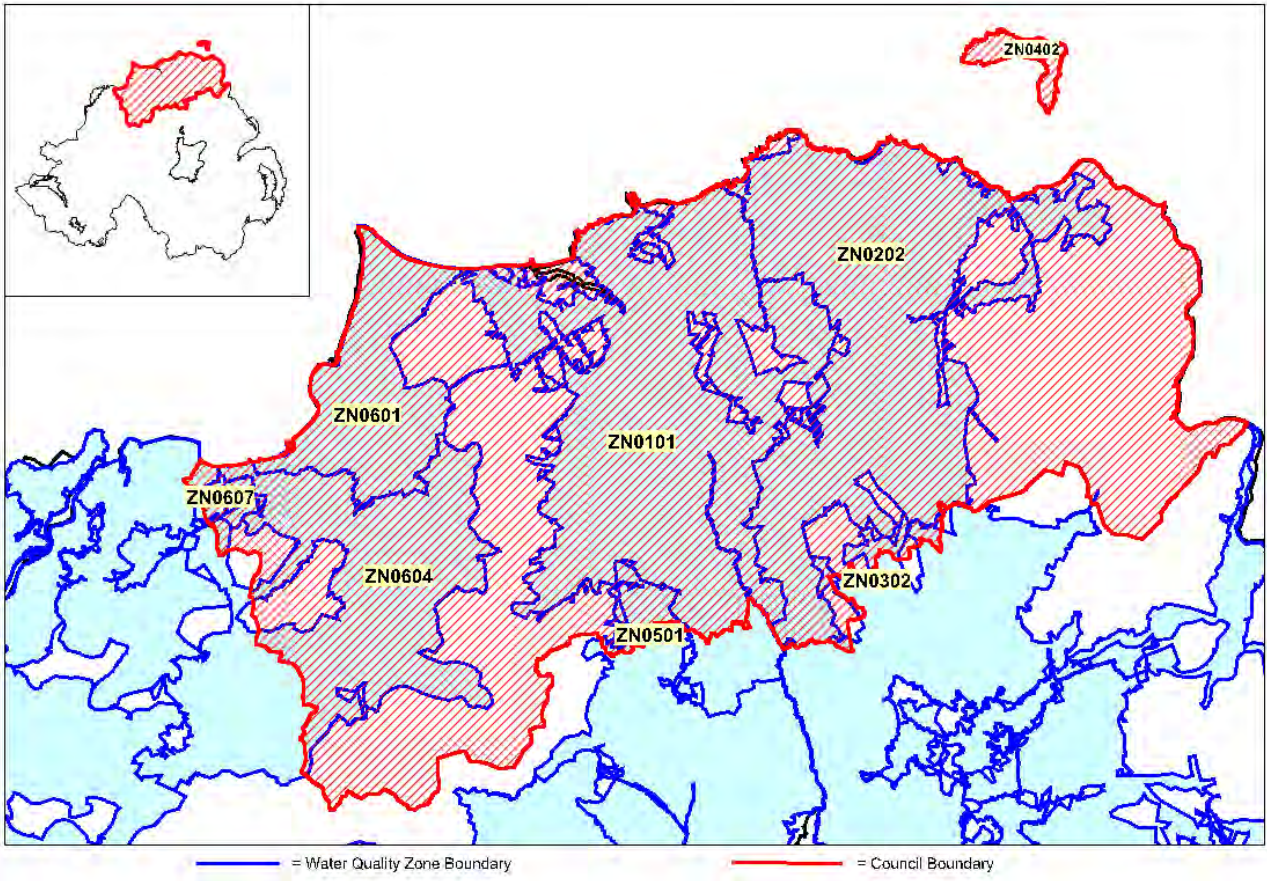
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Watermains Rehabilitation WP 10: Belfast North
PC15 Watermains Rehabilitation WP 2: Forked Bridge Dunmurry
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
Whiterock Phase 1 Watermains Improvements
WIIM Phase 2 Belfast Ballygomartin North WP
WTW Effluent Quality

Appendix 3

Causeway Coast and Glens Borough Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Causeway Coast and Glens Compliance	99.7%	99.8%	99.8%	99.7%	99.8%	99.9%

2017 water supply zones wholly or partially within the council area:

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

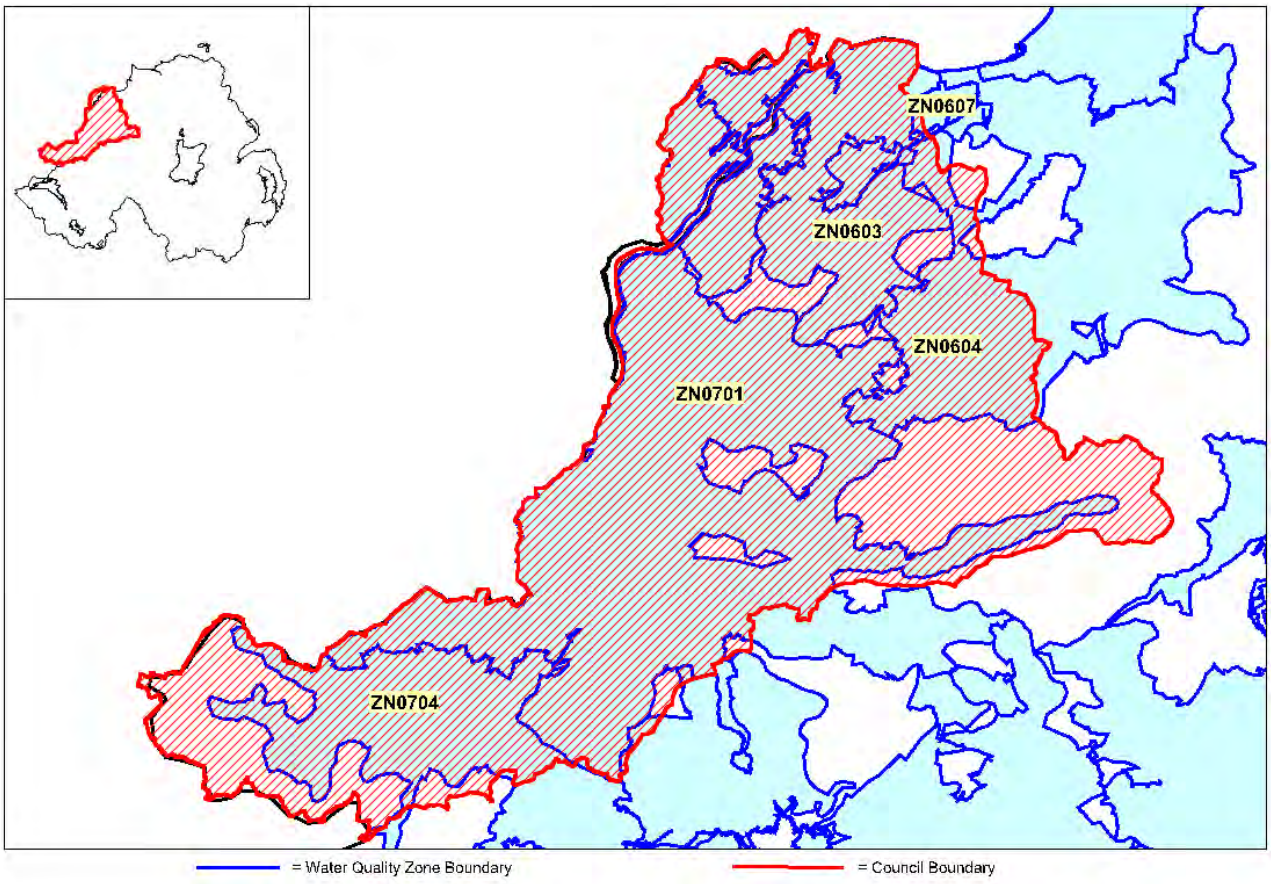
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

A26 Dualling: Glarryford to A44 (Drones Road) Junction - Water main replacements
Antrim North WIIM 2.1 Work Package
Castor Bay Outage Feasibility Studies
Glenlough Pumping Station & Pumping Main
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Monaclogh SR Capacity Extension
Non-Infrastructure Major Works
Northern WRZ Resilience
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WIIM Phase 2 Altnahinch Bushmills 2 WP
WIIM Phase 2 Altnahinch Bushmills WP
WIIM Phase 2 Ballinrees Limavady WP
WTW - Treatability Appraisal of Caugh Hill WTW
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Appendix 3

Derry City and Strabane District Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Derry City and Strabane Compliance	99.7%	99.9%	99.8%	99.8%	99.6%	99.9%

2017 water supply zones wholly or partially within the council area:

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

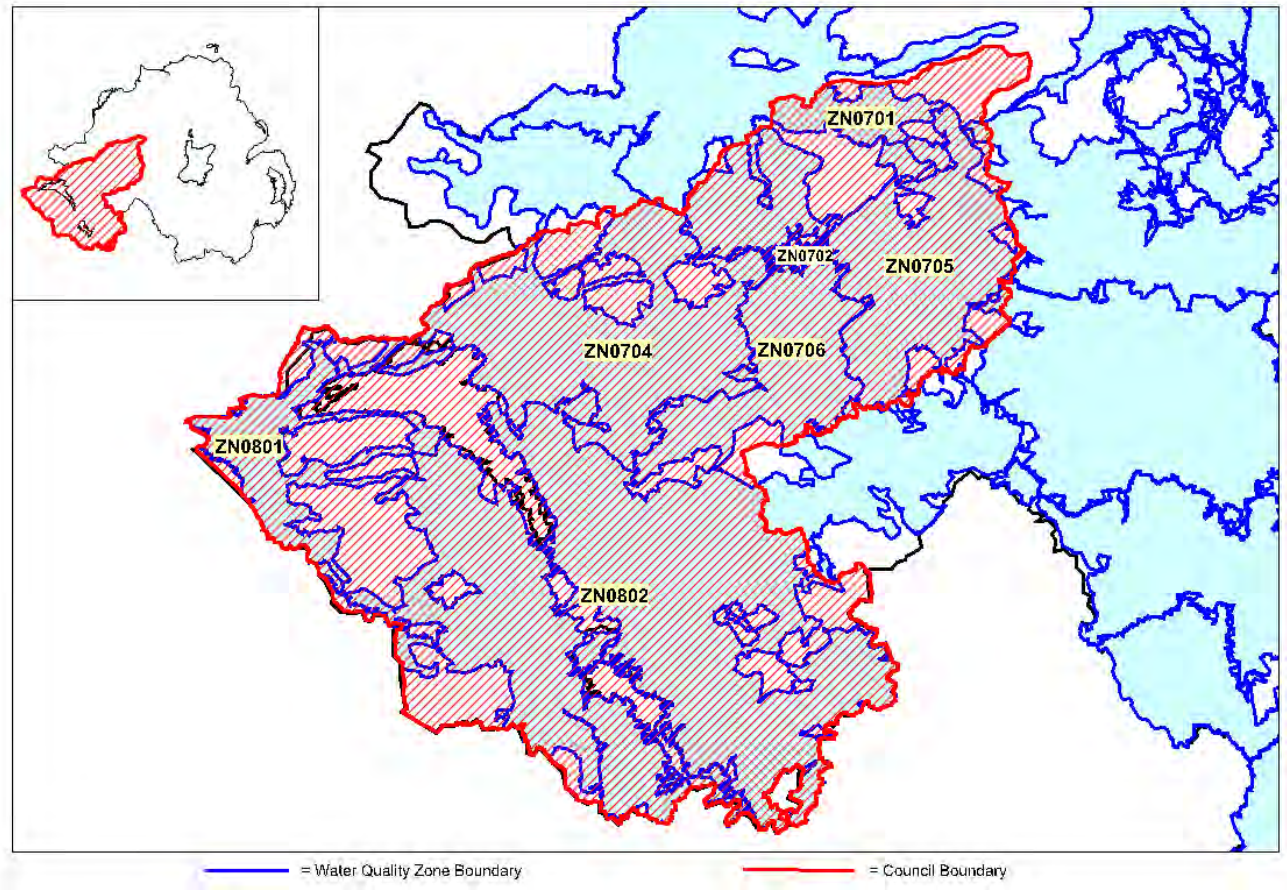
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Carmoney WTW Abstraction Point Review
Carmoney WTW Treatability Recommended Improvements
Castletown/Koram WPS Upgrade
Castor Bay Outage Feasibility Studies
Caugh Hill, Carmoney to Strabane Strategic Link Watermain
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Non-Infrastructure Major Works
Northern WRZ Resilience
Omagh Phase 2 Watermain Rehab
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Source To Tap
Southern Zone Resilience
Tyrone West WIIM 2.1 Work Package
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Appendix 3

Fermanagh and Omagh District Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Fermanagh and Omagh Compliance	99.7%	99.9%	99.8%	99.9%	99.8%	99.9%

2017 water supply zones wholly or partially within the council area:

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

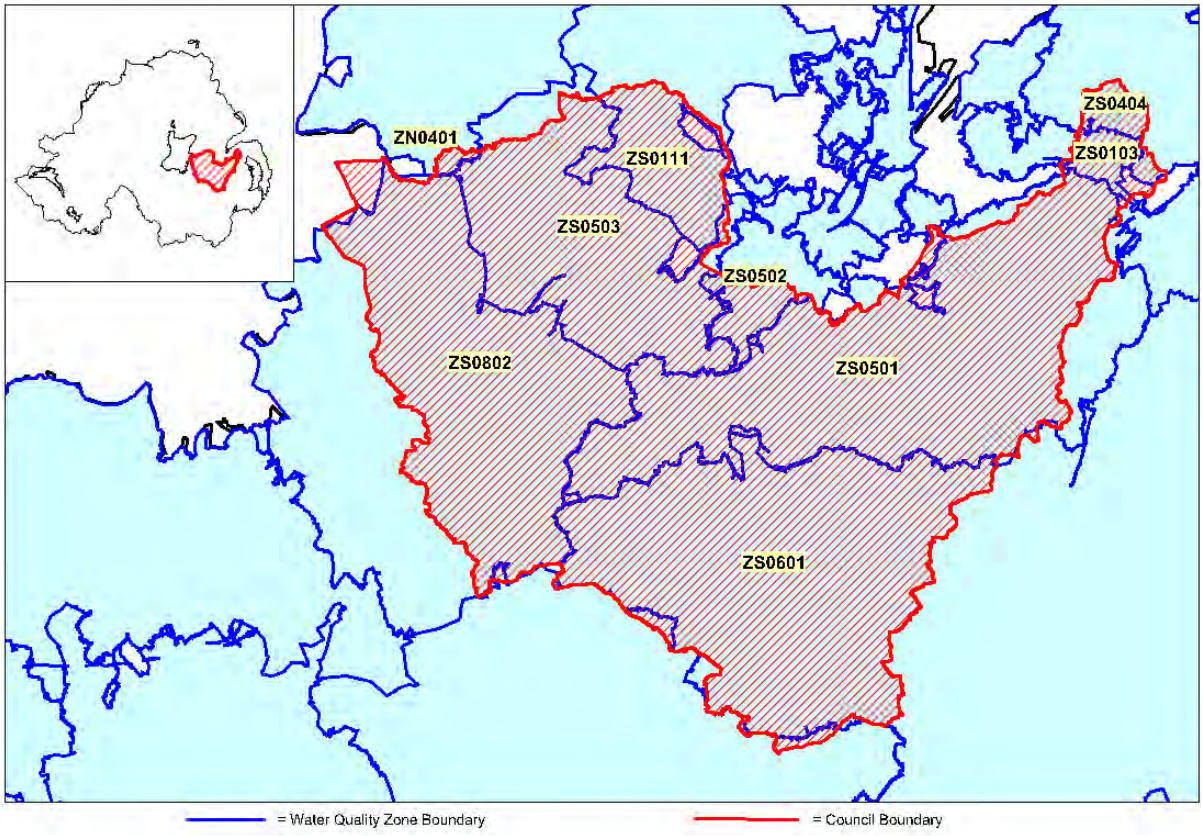
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Alleyhill to Doochrock Watermain
Belleek Meenacloybane Strategic Main Replacement.
Castor Bay Outage Feasibility Studies
Derg WTW - Upgrade of Filters and Chemical Dosing
Derg WTW MCPA PEO Undertakings
Doochrock to Drumkeeran Watermain Upgrades
Fermanagh South WIIM 2.1 Work Package
Gortin Road, Omagh - Road Widening
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Killyhevlin Clear Water Tank
Killyhevlin WTW treatability recommended improvements.
Non-Infrastructure Major Works
Omagh Phase 2 Watermain Rehab
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Source To Tap
Southern Zone Resilience
Syonfin WPS to Dungoran SR 150mm DI Watermain Replacement
Tyrone West WIIM 2.1 Work Package
Upgrade of Killyhevlin WTW
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
Western WRZ Resilience
WIIM Phase 2 Lough Braden Drumquin WP
WIIM Phase 2 Lough Macrory WP
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Appendix 3

Lisburn and Castlereagh City Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Lisburn and Castlereagh Compliance	99.7%	99.9%	99.9%	99.8%	99.9%	99.9%

2017 water supply zones wholly or partially within the council area:

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

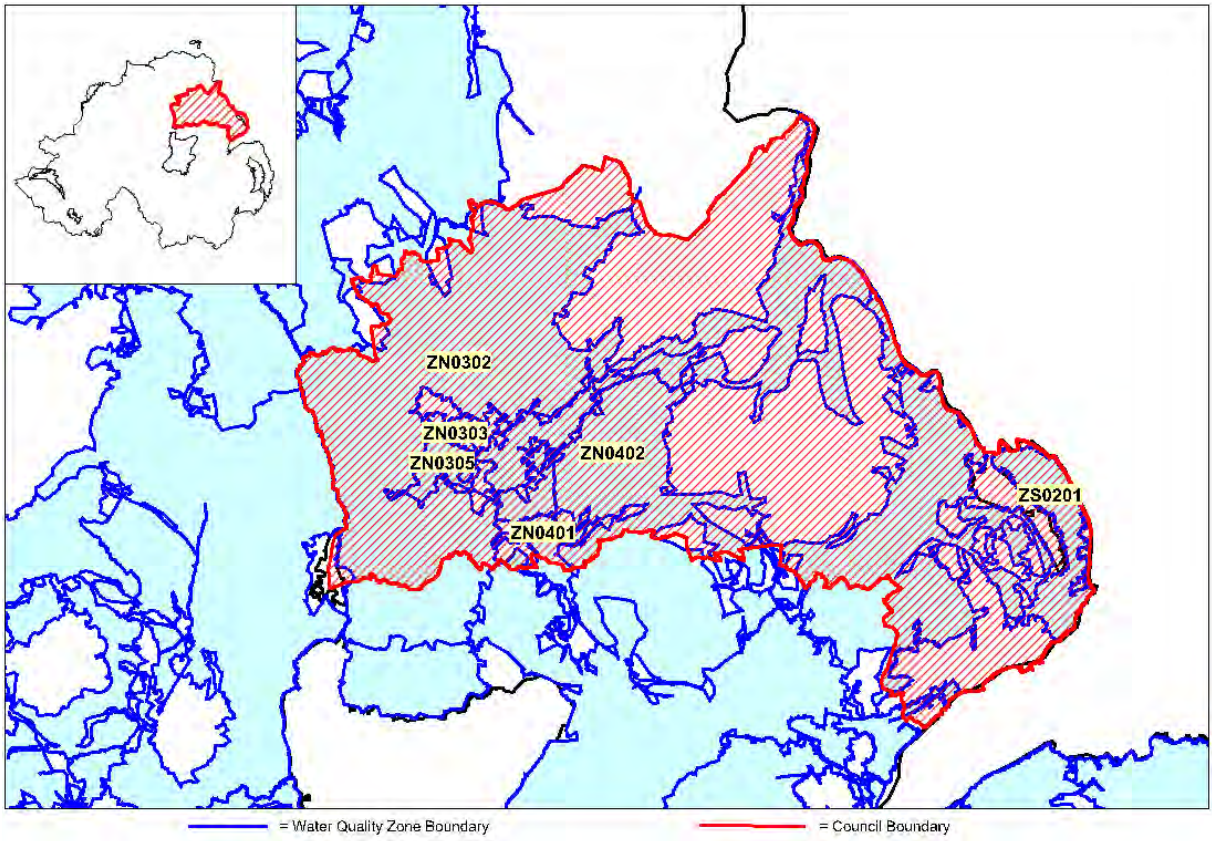
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Castor Bay Outage Feasibility Studies
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
MIMP South (Major Incident Mitigation Project South Region) Freeze Thaw Improvements
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Watermains Rehabilitation WP 2: Forked Bridge Dunmurry
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
Queensfort Road Watermain Upgrade
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Strategic Link - Castor Bay to Belfast
Water Resource and Supply Resilience Plan
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WTW Effluent Quality

Appendix 3

Mid and East Antrim Borough Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Mid and East Antrim Compliance	99.7%	99.8%	99.8%	99.8%	99.8%	99.9%

2017 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZN0402	Killylane Ballynure
ZN0303	Dunore Point Ballymena	ZS0109	Dorisland Whiteabbey
ZN0305	Dungonnell Ahoghill	ZS0201	Dorisland Carrick
ZN0401	Dunore Point Antrim		

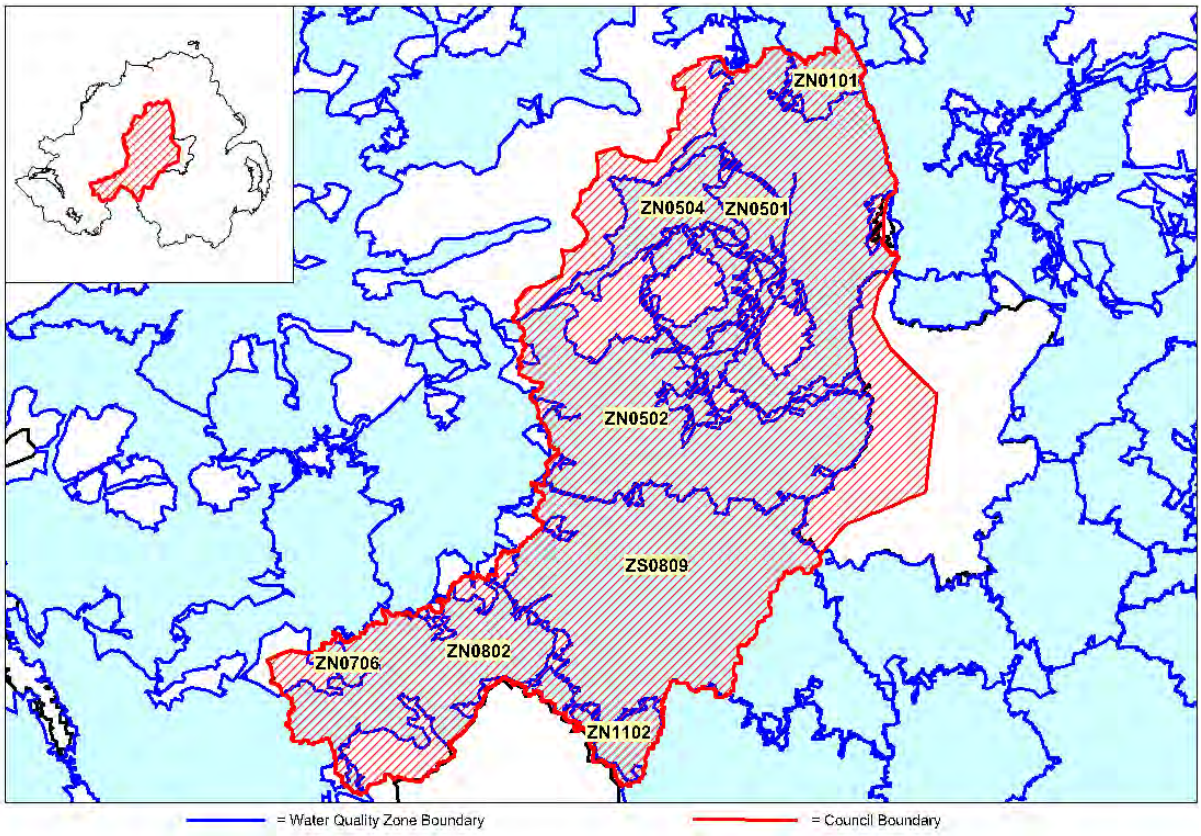
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

A26 Dualling: Glarryford to A44 (Drones Road) Junction - Water main replacements
Antrim North WIIM 2.1 Work Package
Antrim South WIIM 2.1 Work Package
Castor Bay Outage Feasibility Studies
Dorisland Impounding Reservoir
Dorisland WTW treatability recommended improvements.
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
INTERREG VA co-operating across borders for Biodiversity (CABB)
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Watermains Rehabilitation WP 6: Dungonnell
PC15 Watermains Rehabilitation WP 7: Carrickfergus
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WTW Effluent Quality
WTWs Five Treatability Appraisal Studies

Appendix 3

Mid-Ulster District Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Mid-Ulster Compliance	99.7%	99.9%	99.7%	99.8%	99.8%	99.9%

2017 water supply zones wholly or partially within the council area:

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

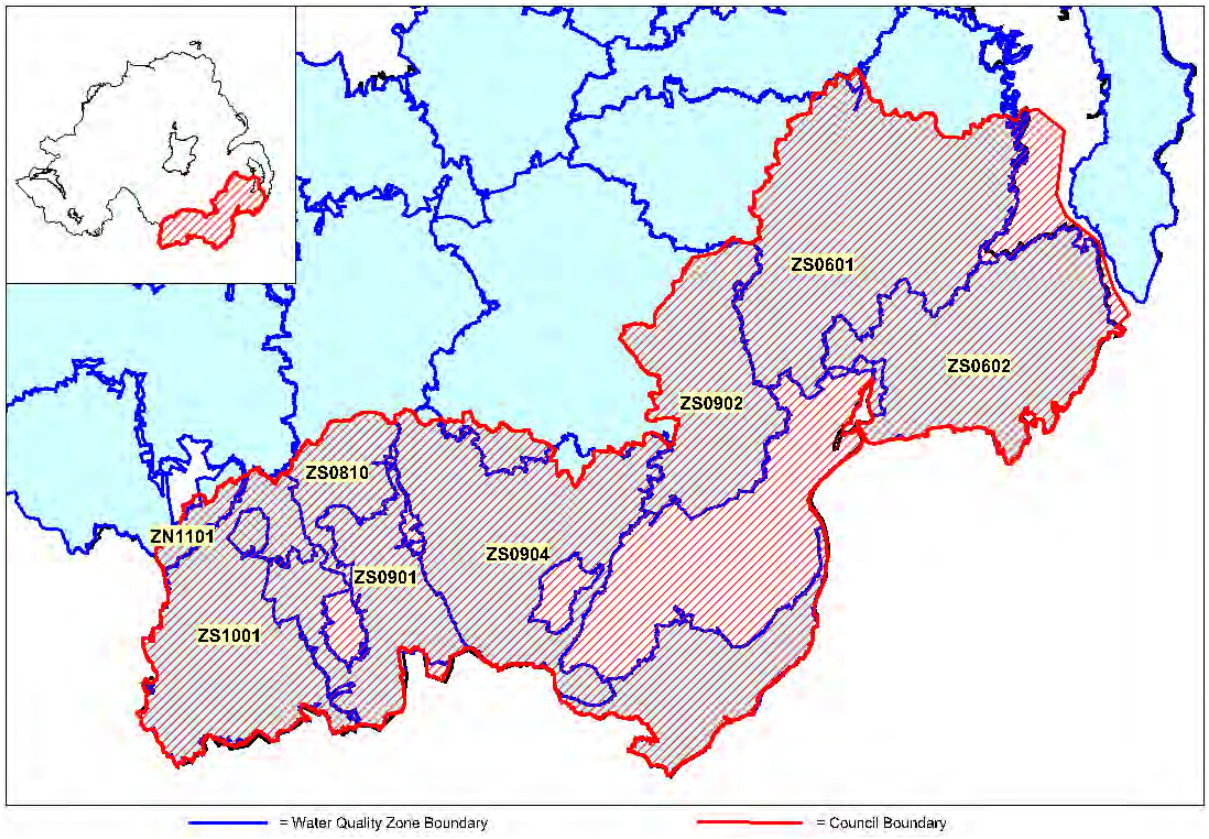
Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

A6 Castledawson to Randalstown
Antrim North WIIM 2.1 Work Package
Castor Bay Outage Feasibility Studies
Central Zone Resilience
Cookstown Phase 2 Watermain Improvements
Cookstown Phase 3 Watermain Improvements
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Lough Fea CWB Capacity Increase
MIMP South (Major Incident Mitigation Project South Region) Freeze Thaw Improvements
Non-Infrastructure Major Works
Omagh Phase 2 Watermain Rehab
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Southern Zone Resilience
Tyrone North WIIM 2.1 Work Package
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WIIM Phase 2 Lough Fea WP
WIIM Phase 2 Moyola Magherafelt WP
WTW Effluent Quality

Appendix 3

Newry, Mourne and Down District Council



% Compliance at Customer Tap (including Supply Points)

	Target	2013	2014	2015	2016	2017
Overall Northern Ireland Compliance	99.7%	99.7%	99.8%	99.7%	99.8%	99.9%
Newry, Mourne and Down Compliance	99.7%	99.8%	99.8%	99.7%	99.8%	99.9%

2017 water supply zones wholly or partially within the council area:

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

Appendix 3

2017 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
Castor Bay Outage Feasibility Studies
Crieve Service Reservoir
Drumaroad WTW Clear Water Tank
Fofanny Banbridge Zone Watermain Improvements Phase 2
Hydraulic Model Rebuilds & Project Management (PC15 Year 2)
Lough Island Reavy Scour utilisation, Drought Management
MIMP South (Major Incident Mitigation Project South Region) Freeze Thaw Improvements
Non-Infrastructure Major Works
PC15 Abstraction Monitoring
PC15 Lead Communication Pipe Replacement Programme
PC15 PPRA Review of EP Water Mains Rehab Work Packages.
PC15 Service Reservoir Sample Taps
PC15 Year 1 Base Maintenance - Chlorine Dosing Sites
PPRA's for Rehab Work Packages 2016/17
Seaside Road, Killyleagh, Watermain Extension.
SEMD Surveys PC10 Water
Service Reservoir Security Phase 1
Source To Tap
Southern Zone Resilience
Water Resource and Supply Resilience Plan
Water Treatment Sites - Water Regulation Compliance & Energy Efficiency Programme
Water Treatment Works Treatability Study
Watermains Rehabilitation, New & Replacement Incorporating First Time Services - Professional Fees
WIIM 1 Phase 2 Carran Hill Crossmaglen WP
WTW Effluent Quality

Appendix 4

Water Quality Events

Serious Drinking Water Quality Events in 2017

Date of Serious Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
22/08/17	North-western area of Northern Ireland (51,470 population)	Extremely heavy rainfall caused a series of flooding events in the North West. Carmoney WTW was off supply for 5 days, following flood damage to the raw water pumping station and there were eight burst mains. Water supply was maintained to customers through implementation of the WTW contingency Plan.	Derry City & Strabane District

Significant Drinking Water Quality Events in 2017

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
16/01/17 - 01/02/17	Killylane WTW (51,120 population)	Treatment difficulties led to aluminium and iron contraventions in the Killylane WTW final water.	Mid & East Antrim Borough
26/01/17 - 01/02/17	Aird Close, Antrim (29 properties)	Mains disturbance caused by mains replacement in this area led to one coliform bacteria, four odour and two turbidity contraventions.	Antrim & Newtownabbey Borough
28/01/17 - 30/01/17	Dorisland WTW (41,660 population)	Contraventions of the turbidity standard in the works final water were not representative of the water going into supply. DWI dealt with this matter by issuing a Regulation 27(5) Notice.	Antrim & Newtownabbey Borough; and Mid & East Antrim Borough
01/03/17 - 08/09/17	Castle Hill, Rathfriland (272 population)	Contraventions of the iron standard were caused by the age and condition of the supplying cast iron main.	Newry, Mourne & Down District
30/03/17 - 20/04/17	Glenhordial WTW (10,616 population)	Contraventions of the turbidity standard in the works final water were probably caused by disturbance in the clear water tanks and/or in the sample line.	Fermanagh & Omagh District
12/04/17 - 12/05/17	Stormont Castle (170 population)	This Event was not related to the quality of water supplied by NI Water. After the installation of a new chiller unit by an external contractor, backflow occurred which introduced ethylene glycol into the drinking water system. This event occurred due to non-compliance with the Water Fittings Regulations. There was local media interest.	Belfast City

Appendix 4

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
17/04/17 - 10/08/17	Ballinrees WTW (168,204 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Causeway Coast & Glens Borough; and Derry City & Strabane District
06/06/17 - 07/06/17	Dungonnell WTW (30,512 population)	A contravention of the turbidity standard was caused by disturbance in a Clear Water Tank (CWT) as it was being drained down for cleaning.	Mid & East Antrim Borough
06/06/17 - 07/09/17	Derg WTW (38,989 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment to effectively remove levels of MCPA in the raw water supply to the treatment works. MCPA use in the catchment area, to control weeds and rushes, caused elevated levels of MCPA in the raw water supply. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Derry City & Strabane District; and Fermanagh & Omagh District
26/06/17 - 30/06/17	Castor Bay WTW (364,673 population)	Contraventions of the taste & odour parameters occurred in the works final water due to insufficient treatment.	Armagh City, Banbridge & Craigavon Borough; Belfast City; Lisburn & Castlereagh City; Mid-Ulster District; and Newry, Mourne & Down District
03/07/17 - 07/07/17	Strand Road, Portstewart (Approximately 80,000 population)	This event was not related to the NI Water public supply. Contamination of the temporary drinking water supply within the site led to coliform bacteria contraventions.	Causeway Coast & Glens Borough
05/07/17 - 12/07/17	Drumagarner Road, Kilrea (471 properties)	Coliform bacteria contraventions occurred after a new mains was connected in Drumagarner Road. A "**Boil Water Before Use**" notice was issued to a single property.	Causeway Coast & Glens Borough
24/07/17 - 01/02/18	Glenhordial WTW (10,694 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment to effectively remove levels of MCPA in the raw water supply to the treatment works MCPA use in the catchment area, to control weeds and rushes, caused elevated levels of MCPA in the raw water supply. The Pesticides – Total Substances standard was also contravened. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Fermanagh & Omagh District

Appendix 4

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
25/07/17 - 30/11/17	Dungonnell WTW (33,446 population)	A contravention of the trihalomethanes (THMs) standard occurred in the Dungonnell WTW supply area. Four THM samples taken in August 2017 were in the "likely to fail" category. The elevated results are probably due to a combination of poor organics removal during the treatment process combined with increasing levels in the distribution system.	Mid & East Antrim Borough
14/08/17 - 11/09/17	Ballylagan Road, Garvagh (22 properties)	Operational work in this area led to short term disturbance and appearance issues with iron, manganese and odour contraventions in properties on the Ballylagan Road.	Causeway Coast & Glens Borough
24/08/17 - 31/08/17	Carmoney WTW (51,470 population)	Aluminium, iron, manganese and turbidity contraventions were reported in the Carmoney WTWs final water. Our assessment is that the contraventions were related to disturbance caused by the operational activities regarding the re-zoning of Ballinrees and Caugh Hill WTWs to maintain supplies and not due to the quality of water leaving the water treatment works. **This event was related to the "Serious" flooding event reported previously.**	Derry City & Strabane District
30/08/17 - 03/09/17	Drumagarner Road, Kilrea (471 properties)	Coliform bacteria contraventions occurred after a new mains was connected in Drumagarner Road. A "**Boil Water Before Use**" notice was issued to two properties.	Causeway Coast & Glens Borough
04/09/17 - 16/10/17	Upper Malone Road, Belfast (286,407 population)	A contravention of the trihalomethanes (THMs) standard occurred in the Dunore Point WTW supply area. It is probable that the THM contravention was mainly caused by Disinfection By-Product precursors being present in the works final water, the condition of the distribution system and the long residence time (estimated at 4 days).	Antrim & Newtownabbey Borough; Belfast City; Causeway Coast & Glens; Lisburn & Castlereagh City; and Mid & East Antrim Borough
05/09/17 - 15/09/17	Cargagh Road, Downpatrick (25 properties)	Coliform bacteria contraventions were reported after contamination of the mains occurred during a burst main repair on the Cargagh Road. A "Boil Water Before Use" notice was issued to the 25 affected properties.	Newry, Mourne & Down District
05/09/17 - 20/09/17	Altnahinch WTW (31,486 population)	Contraventions of the trihalomethanes (THMs) standard occurred in the Altnahinch WTW final water and in the related supply area. The contraventions were due to inadequate organic removal within the treatment process therefore increasing the risk for THM formation.	Causeway Coast & Glens Borough

Appendix 4

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
06/09/17 - Present	Gransha Road, Dromara (10 properties)	Contraventions of the iron and turbidity standards were caused by the age and condition of the supplying cast iron main.	Armagh City, Banbridge & Craigavon Borough
18/09/17 – 03/10/17	Ballinrees WTW (168,204 population)	A contravention of the trihalomethanes (THMs) standard occurred in the Ballinrees WTW supply area. This contravention occurred following a period when there was not full treatment in operation.	Causeway Coast & Glens Borough; and Derry City & Strabane District
06/10/17 - Present	Gorticross Road, Drumahoe (17 properties)	Aluminium, iron, manganese and turbidity contraventions occurred in Ardmore, Gosheden and Kildoag roads. These contraventions occurred after re-zoning work carried out following the flooding event which caused damage to a main on Gorticross Road. **This event was related to the "Serious" flooding event reported previously.**	Derry City & Strabane District
16/10/17 - 02/03/18	Rathlin Island - (10 properties)	A value greater than the World Health Organization Index for trihalomethanes was reported due to naturally occurring bromide in the source water, and low flows to the west of the island in the autumn. A Consideration of Provisional Enforcement Order (CPEO) has been issued by the Inspectorate.	Causeway Coast & Glens Borough
13/11/17 - 14/11/17	Dorisland WTW (127,451 population)	Aluminium, manganese and turbidity contraventions were reported in the Dorisland WTW final water due to unrepresentative sampling.	Antrim & Newtownabbey Borough; Belfast City; and Mid & East Antrim Borough
29/11/17 - 04/12/17	Dungonnell WTW (30,512 population)	Contraventions of the pH standard occurred in Dungonnell WTW supply area. This was due to overdosing of orthophosphoric acid (used for plumbosolvency control) at Dungonnell WTW.	Mid & East Antrim Borough
14/12/17 - 15/12/17	Castor Bay WTW (364,673 population)	A contravention of the aluminium standard was caused by a problem with the pH monitoring regime which led to sub-optimal treatment.	Armagh City, Banbridge & Craigavon Borough; Belfast City; Lisburn & Castlereagh City; Mid-Ulster District; and Newry, Mourne & Down District

After investigations during the reporting period, there were also 7 events categorised by DWI as "Minor", and 14 events categorised as "Not Significant".

Appendix 5

Water Supply (Water Fittings) Regulations (NI) 2009 Compliance 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 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. If customers do not hear from NI Water within 10 working days of writing to us then consent is 'deemed' to have been given and the work can proceed. NI Water promotes and advocates the benefits of customers using Approved Contractors (ACs) who are members of WaterSafe and the Plumbing Industry Licensing Scheme (PILS). The PILS scheme is administered by the trade association known as the Scottish and Northern Ireland Plumbing Employers Federations (SNIPEF).

NI Water has a team of five customer facing water regulation inspectors across the province; an operational Field Manager and all activities as overseen by a Senior Engineer directly managing the team.

NI Water has allocated each non-domestic customer a fluid category rating which was derived from Standard Industrial Classification (SIC) codes and 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.

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

NI Water Customer Base

Base Data, using NIAUR 2017 Annual Information Return (AIR) figures:

Description	Number
**Total number of connected properties	843,001
*Total number of new connections from 1st Jan 2017 – 31st Dec 2017	7,388
Up to and including 32mm dia.	7,338
Over 32mm dia.	50

**Financial Year, * Calendar Year

Compliance Data

Staff and Training

Number of staff involved in enforcement.

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

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

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

Appendix 5

Promotion of the Regulations

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

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

A Water Regulation web page is available on the company web site (**http://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 – **waterregulations@niwater.com**

Notifications

Description	Number
*Total No. of water connection application forms received between 01/Jan/2017 and 31/Dec/2017	4,421
<32mm	4,394
>32mm	27
*Total No. of new connections made between 01/Jan/2017 and 31/Dec/2017	7,388
**Total number of written customer notifications other than those associated with new connections applications RPZs etc.	4,421

*Calendar year

** Financial year

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

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

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

Approved Contractors Scheme

Owners and occupiers of premises and anyone who installs plumbing systems have a legal duty to ensure their systems satisfy the requirements of the 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 207 9030 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 0131 556 0600.

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

Approved Contractors							
Description (Number)	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
No of members in Northern Ireland	82	74	71	72	72	69	55
No of members in Northern Ireland who are members of the **Plumbing Industry Licensing Scheme** (PILS)	72	65	27	27	58	54	45
No. of Northern Ireland members who are members of the **Plumbing Industry Licensing Scheme** and who are with **WaterSafe**	-	-	35	36	38	50	39
No of members in Northern Ireland awaiting approval as approved members of the Plumbing Industry Licensing Scheme **or** who are working to meet the criteria to be Approved Contractors	10	9	9	9	14	15	10

Appendix 5

Inspections (Other than those arising from Notification)

Description	Number 2014	Number 2015	Number 2016	Number 2017
*Total number of Domestic and Non Domestic Inspections	1320	1185	947	1002
*Total number of active Contraventions recorded in year	1775	814	1066	1119
*Total number of closed Contraventions in year	725	163	786	697
*Total Number of outstanding contraventions in year	1053	651	280	422

*2017 Calendar year

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

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

Compliance Actions

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

Disputes

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

Relaxations

NI Water received one enquiry from a local Council seeking a relaxation of principles associated with backflow prevention. Following a meeting with the Council and explanation of why backflow was required and essential to safeguard drinking water safety, the Council representatives accepted NI Water would not be willing to support and submit a relaxation to the Regulator.

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 FC 4 & 5 premises across Northern Ireland, NI Water inspected 1,002 of these premises during the reporting year

Number of Reactive Water Regulation inspections (20) attributed to water quality incidents and NIW observations

NI Water, example of High Level Inspections

Type of Premises
Quarry Industry
Heavy Manufacturing Industry
Aerospace Industry
Food Production Factory
Agricultural Show
MOD/Police Establishment
Animal Feed Storage Facilities
Commercial Dry Cleaning Organisation
Sporting Pavilion
Harbour Terminal
Regional Hospital
Tourist Visitor Centre
Stormont Castle
Domestic Properties
Pharmaceutical Business
Golf tournament
Petrol Filling Station
Bar Restaurant
Industrial Unit
Irish School

Information from Connect 2 – Connect 2 is the software system NI Water uses to drive a proactive risk based inspection programme, record findings and advise or direct customers as to what corrective action is required to bring their systems into compliance with the Regulations. NI Water continues to consider options for the upgrade or replacement of the existing Connect 2 system, which is built on de-supported IT platforms.

In addition to proactive inspections, NI Water's Water Fittings Regulation team also undertook reactive inspections because of water quality concerns following sample failures. The reactive inspections were carried out following requests for assistance from NI Water staff. The team also conducts occasional reactive inspections because of concerns or requests for assistance from customers and colleagues to confirm causes of metering queries or water quality problems. Educational visits are carried out to bring customers and contractors up to date with water (fittings) regulations.

Action taken by NI Water

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

Appendix 5

Reporting Year Recap

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

- Promoted the benefits and safeguards provided by the regulations at an event in Stormont celebrating 10 years of NI Water and its achievements
- Procured backflow demonstration rigs to help educate customers as to how easy it is to cause backflow within premises and beyond to the mains network
- Provided performance measure information on water regulation activities to WRAS for inclusion in a publically available national report. The report can be viewed on the WRAS web site
- Continued to update, as required, the NI Water, Water Fittings Regulation web page and literature necessary for the compliance of the Regulations and customer compliance guidance
- Contributed specialist advice for inclusion in NI Water public events & publications including the winter preparation campaign
- Promoted compliance with the Water Fittings Regulations at every opportunity and attended conferences, trade shows and agricultural shows, such as the Balmoral Show
- Participated in water industry national working groups to further explore opportunities to promote regulatory consistency, customer notifications and performance standards reporting across the industry:
    - Ports and Harbours working group
    - Consistency measurers working group
    - Performance measurers working group
    - RPZ Measurers working group
    - Point of sale working group
    - WRAS annual conference in November 2017
- The regulation team has participated in a number of meetings with other key stakeholders to promote the Regulations and how these interact with other Northern Ireland statutory bodies such as:
    - DWI
    - DfE
    - Environmental Health Officers
    - Trading Standards
    - Drinking Water & Health Liaison Group (DWHLG) multi agency group
    - DfI (Long Term Water Resource Strategy)
- Reported to DfI (Regulator), along with other "stakeholders", on a quarterly/yearly basis. Worked with NI Water procurement section to determine if there are any readily available systems suitable to replace the existing Connect2 system

Appendix 5

Looking Forward

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

Appendix 6

Glossary of Technical Terms

Aesthetic	Associated with the senses of taste, smell and sight.
Authorised Supply Point	A sampling point within the distribution system authorised by the DWI for certain parameters, because the results of the analysis of such samples are unlikely to differ in any material respect from the results of the analysis of samples taken from customer taps.
Catchment	The area of land that drains into a watercourse.
Coagulation	The process of aggregating colloidal and fine particulate matter into a settleable material.
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.

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Filtration	The separation of suspended particulate matter from a fluid.
GPS	Global Positioning System – a satellite based location system which gives an accurate record of position.
Groundwater	Water from aquifers or other underground sources.
Hydrogen ion	A measure of the acidity or basicity related to the concentration of the hydrogen ion (also referred to as pH).
Incident	An event where there has been a demonstrable deterioration in the quality of drinking water.
Investment programme	Investment in improvement works to water treatment works and distribution systems.
LIMS	Laboratory Information Management System – the computer system used by NI Water to record and audit the results of the hundreds of thousands of parameters analysed each year.
Mains rehabilitation	Restoration or replacement of water mains pipework to a proper condition.
MCPA	MCPA is a selective hormone-type herbicide, which is absorbed by the leaves and to some degree the roots.
Mean Zonal Compliance	The former assessment of water quality at a parameter level based on water supply zones.
Microbiological	Associated with the study of microbes.
m3/d	Cubic metres per day.
mg/l	Milligrams per litre.
µg/l	Micrograms per litre.
ml	Millilitre.
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 customer water.
PAHs	A group of organic compounds known as polycyclic aromatic hydrocarbons, comprising, for the purposes of the Regulations, four substances: benzo(b) fluoranthene, benzo(k)fluoranthene benzo(ghi)perylene and indeno (1,2,3-cd) pyrene,

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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.
Protozoan parasites	A single celled organism that can only survive by infecting a host.
Public register	The information made available by NI Water to the public as required by regulation 34 in the Regulations.
Regulations	The Water Supply (Water Quality) Regulations (Northern Ireland) 2007.
Remedial action	Action taken to improve a situation.
RPZs	Reduced Pressurised Zone Valve – a type of backflow prevention device.
SCaMP NI	Sustainable Catchment Management Planning Northern Ireland.
Service reservoir (SR)	A water tower, tank or other reservoir used for the storage of treated water within the distribution system.
SIC Code	Standard Industrial Classification Code – used for Water Fittings Regulations.
Springs	Groundwater appearing at the surface at the outcrop of the junction of an impermeable stratum.
Surface water	Water from rivers, impounding reservoirs or other surface water sources.
Technical audit	The means of checking by the DWI that NI Water is complying with its statutory obligations.
Toxicology	The study of the health effects of substances.
Treated water	Water treated for use for domestic purposes as defined in the Regulations.

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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).
WDPD	DfI Water and Drainage Policy Division. Deemed to be the Regulator for all activities associated with the Water Supply (Water Fittings) Regulations (NI) 2009.
WRAS	The Water Regulation Advisory Scheme. A list of Standard Industrial Classification codes with related fluid categories used to define categories of non-domestic properties.
Water Regulations	The Water Supply (Water Fittings) Regulations (NI) 2009.
Water Safety Plan	A means of ensuring that a water supply is safe for human consumption based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain from catchment to tap.
Water supply zone (Zone)	The basic unit of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.
Website	Location of information on the Internet. NI Water's website is: http://www.niwater.com
Weed-wiping	Weed treatment method wiping the top of weeds using a roller or wicks infused with pesticide.
Wholesomeness	A concept of water quality which is defined by reference to standards and other requirements set out in the Regulations.

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