

Drinking Water Quality **Annual Report 2010**



Introduction and Foreword

I am pleased to present Northern Ireland Water's (NI Water) Annual Drinking Water Quality report covering the calendar year 2010. This is our seventh annual review on the quality of drinking water in Northern Ireland since new regulations came into force in January 2004. The Report shows that we are delivering the best drinking water quality ever to our customers.

NI Water aims to provide high quality drinking water, in a cost effective manner, to meet the requirements of both existing and future customers. By doing this we contribute to the health and wellbeing of the community and the needs of commerce in a sustainable way.

Drinking water is carefully monitored and tested for quality. This report summarises NI Water's results from 1 January 2010 to 31 December 2010 to meet the requirements of the Regulations under which we operate. During this reporting period, 99.81% of all tests carried out on samples taken from customers' taps and authorised supply points, complied with the regulatory standards assessed using the Mean Zonal Compliance (MZC) method of assessment. MZC is the method required by the drinking water regulator in Northern Ireland. This assessment demonstrates an ongoing year-on-year improvement in overall drinking water quality for the last 4 years.

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.

Towards the end of 2010 Northern Ireland experienced the coldest protracted weather in over 100 years which caused

many supply and customers' service pipes to freeze. The rapid thaw on the 26th December led to thousands of burst pipes over much of the province and a significant leakage of the water supplied. In response NI Water's Water Treatment Works were operated to nearly their optimum capacity, producing 40% more water per day than normal. The incident is discussed in more detail within this report.

Our ongoing investments in water treatment, storage and mains have led to increased regulatory compliance and quality of service. Whilst we continue to make progress, we are also aware that further challenges lie ahead and that investment must continue to maintain this high standard and address the remaining areas of non-compliance. Our capital investment programme for the reporting period is detailed by council area in Appendix 4.

We welcome these challenges and will continue to work closely with our economic and environmental regulators, the Consumer Council and other stakeholders throughout this process.

I trust you will find this report informative and relevant to your needs. As we gain the benefits of the ongoing capital investment delivered by NI Water, you can be assured of our commitment to maintaining and where possible improving the quality of the drinking water delivered to our customers. NI Water continues to meet the obligations placed upon it to comply with regulatory standards and increasing customers' expectations.

Trevor Haslett
Interim Chief Executive



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Drinking Water Quality

Water Quality Standards

During 2010 Drinking Water Quality in Northern Ireland was assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as appended by the 2010 updated regulations. The regulations incorporate the requirements of the European Commission's Drinking Water Directive 98/83/EC (the "Directive") relating to the quality of water intended for human consumption and, for certain parameters, more stringent UK national standards.

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

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

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

The Directive and the Regulations permit standards to be relaxed in certain specified circumstances provided there is no risk to public health under a process of "Authorised Departures". These allow a time limited Authorised Departure from the regulatory limit for certain parameters, provided there is a planned programme of work at the Water Treatment Works to improve the water quality and there are no adverse health implications. All NI Water's Authorised Departures have now expired, with the agreement of the

Drinking Water Inspectorate that the planned programmes of work have now been completed or are nearing completion.

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

NI Water has a monitoring programme in place which covers raw waters, water at various treatment stages, drinking water in distribution and at customer tap. NI Water liaises with its customers on a wide variety of issues and where there is an exceedance of a regulatory parameter, investigations and remedial work is 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 7).

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 UK Water Industry has adopted the DWSP approach to risk management from the raw water source, through water treatment, distribution and to our customer's taps. NI Water has put in place systems to identify hazards, assess risks and implement mitigation measures, which could potentially threaten



each stage of the water supply process. NI Water works with the Northern Ireland Environment Agency (NIEA), the Drinking Water Inspectorate, Forestry Service and other Non Government Organisations to protect the raw water sources from contamination.

NI Water has used DWSPs, developed during 2009, to inform the investment strategy for drinking water treatment works upgrades for 2010, 2011 and 2012. Water Safety Plans for all water supply systems were submitted to the Drinking Water Inspectorate at the end of 2010 and these will further inform the strategy for the period beyond 2012.

Environmental Management System (EMS) ISO 14001

NI Water has a well established Environmental Management System certified to ISO 14001 and externally accredited. The system assists NI Water in maintaining environmental stewardship whilst providing water and sewerage services to Northern Ireland.

Mains Rehabilitation

NI Water has identified the need to deliver a significant programme of watermains rehabilitation and other works across its ageing network. The works are necessary to ensure the efficient and cost effective operation of its water supply system in the immediate future and longer term. It is also to ensure adequate levels of water quality and customer supply.

To achieve this goal, NI Water has just implemented a new Watermains Rehabilitation Framework, within which it has appointed two contractors. This is to undertake work on a Northern Ireland wide basis as identified by the programme of work from zonal studies.

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

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

Authorised Departures (ADs)

Authorised Departures (ADs) from standards in Northern Ireland are authorised and administered by the Department of the Environment's Drinking Water Inspectorate (DWI) with the agreement of the Health Authorities. The standards that had a time limited AD were for Total Trihalomethanes and applied to the water supplied to the Water Supply Zones listed in Appendix 2. These named Zones are supplied from Water Treatment Works that have had either an agreed fixed programme of works intended to make them fully compliant with the regulations or else to remove them from service.

With effect from 6th August 2010 all NI Water's Authorised Departures have expired, with the agreement of the Drinking Water Inspectorate that the planned programmes of work have now been completed or are nearing completion.

Mean Zonal Compliance (MZC)

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

This is the average water quality supplied to our customers and is based on 39 specified parameters measured at either customers' taps or authorised supply points. These parameters are specified by the Drinking Water Inspectorate (DWI).

This method provides a simple means of summarising drinking water compliance and comparing year on year performance, and gives a consistent method of comparing water quality across the UK. It is supported by the DWI as an industry comparator allowing direct comparisons of results.

Drinking Water Quality Summary – Year on Year

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

Reporting Year	2005	2006	2007	2008	2009	2010
Mean Zonal Compliance (i) (average water quality at customer tap at parameter level)	99.02%	99.34%	99.30%	99.49%	99.74%	99.81%
Water Treatment Works Water Quality	99.89%	99.90%	99.92%	99.95%	99.92%	99.99%
Overall Quality at all NI Water Sites and Customer Taps	99.49%	99.64%	99.60%	99.69%	99.80%	99.87%

Notes

(i). Mean Zonal Compliance (MZC) – method of assessment used across the UK, and supported by the Drinking Water Inspectorate as an industry comparator.

Monitoring Drinking Water Quality

The Regulations necessitate a thorough and extensive water sampling programme to be undertaken, to monitor water quality throughout the supply and distribution systems. The sampling locations and frequencies for the monitoring of drinking water quality are specified in the Regulations. These monitoring arrangements are audited by the Drinking Water Inspectorate (DWI). The mandatory sampling programme requires water samples to be collected regularly at water treatment works, at service reservoirs and water towers used to store treated water and at customers' taps in the water supply zones.

Under the Regulations, samples to be analysed for parameters which do not change in the supply watermain may be collected from Authorised Supply Points. These samples are collected from the final distribution point of the Water Treatment Works, and are considered under the Regulations to be equivalent to samples collected from

the customer tap. All samples are carefully collected, handled and transported to ensure that they accurately represent the water quality which customers receive. NI Water employs skilled and experienced sampling staff for the collection and delivery of the regulatory samples to the laboratories. All sampling staff wear uniforms and carry identity cards when they call upon customers to take a sample.

Samples collected from customers' taps are taken at random addresses in each water supply zone. A water supply zone is a designated area with a population of no more than 100,000 supplied with water by one treatment works or blended water from several works. The number and boundaries of water supply zones are subject to change according to operational requirements as supply sources to areas are adjusted to meet demand and infrastructure developments. On this basis 55 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. Taste, Odour and Colour

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

Sufficiency of Supply

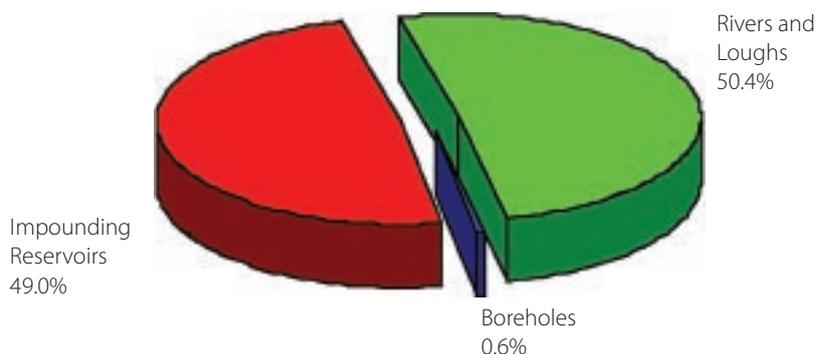
Approximately 827,000 domestic, agricultural, commercial and business properties in Northern Ireland are connected to the public water supply – this equates to 99.6% of the total population. This entailed supplying an average of more than 628 million litres of high quality drinking water to customers every day during 2010. For this NI Water utilised approximately 34 sources which include upland Impounding Reservoirs, Boreholes, Rivers and Loughs.

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

NI Water published a draft Water Resource Management Plan (WRMP) for public consultation between November 2010 and February 2011. The responses received have been considered and a final WRMP is planned to be published in August 2011.

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 down in the Regulations.

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

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

In 2010, the technical audit inspection programme included:

- audits of Castor Bay, Drumaroad and Lough Fea Water Treatment Works;
- a sampling audit (Westland House);
- the Laboratory Information Management System (LIMS) audit (Westland House);
- a consumer contacts audit;
- an event follow-up audit at Carran Hill WTW; and
- progress reporting on agreed follow-up action including non-trivial parameter contraventions.

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

Water Quality Events (Incidents and Non-Incidents)

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 Inspector's Report as a "non-incident" as opposed to an "incident". A full list of all Water Quality Events notified to the DWI during 2010 is detailed in Appendix 5.

Event Case Studies

• December 2010 Freeze / Thaw Event - Incident

Towards the end of 2010 Northern Ireland experienced the coldest protracted weather in over 100 years which caused many supply and customers' service pipes to freeze. The rapid thaw on the 26th December led to thousands of burst pipes throughout much of Northern Ireland resulting in significant leakage of the water supplied from Water Treatment Works. The Incident was declared closed on 6th January 2011. In response to the increased demand, NI Water's Water Treatment Works were operated close to their optimum output capacity, producing 40% more water per day than normal. NI Water liaised with the DWI and Public Health Agency during the event. Water quality exceedances attributed to the event were reported to the DWI through the Event Notification procedure.

An independent report was commissioned from the Utility Regulator by the Northern Ireland Assembly. The findings of this report are available for viewing at www.uregni.gov.uk/publications/

Some of the key findings of the report are:

- The winter weather was exceptional (1 in 100 year event in established records), but with a changing climate could recur in the near future.
- Around 80% of the additional water demand caused by the freeze thaw leaked from domestic and business water pipes (survey evidence estimates that there were bursts on more than 40,000 consumers' properties – domestic and non-domestic). The remainder was lost from NI Water's network.
- The water mains in Northern Ireland are relatively new compared with other parts of the UK (the average age of water mains in Northern Ireland is 29 years, compared with an average of 45 years in the rest of the UK), and performed as well as could be expected.
- There is no need for an immediate change in the mains infrastructure investment levels. However, there is a need for some further capital investment focused on improved flexibility of mains operation and better monitoring. There is also a need to think about the future investment needs arising from water resources management and a changing climate.
- Front line operational teams worked effectively in very challenging weather conditions.

The incident also prompted an investigation from the Drinking Water Inspectorate. Both sets of findings produced a number of recommendations. NI Water is working with both regulators to ensure that these recommendations are followed up to their satisfaction.

- **Oil Spill in Lough Ross, the raw water source for Carran Hill WTW – Non – Incident**

An oil spill was reported at Lough Ross approximately 300 metres from the raw water intake to Carran Hill WTW on 14 October 2010. This caused a potential risk to the raw water supply to the Carran Hill WTW.

Northern Ireland Environment Agency (NIEA) investigated the source and confirmed a substantial quantity of oil was discharged into Lough Ross. NIEA quickly deployed booms to contain the oil.

NI Water took immediate action to monitor the raw water intake to the treatment works. NI Water also increased the monitoring of the quality of the water through the treatment works and the final water into supply to ensure that the drinking water quality was not compromised.

NI Water liaised with NIEA during this event until the remediation was complete and there was no further risk to the raw water supply.

There were no water quality exceedances attributed to this event.

The DWI was notified of the potential risk to the raw water supply to Carran Hill WTW and updated on the situation regularly during the event.

A full list of all events in 2010 is detailed in Appendix 5.

Regulatory Enforcement

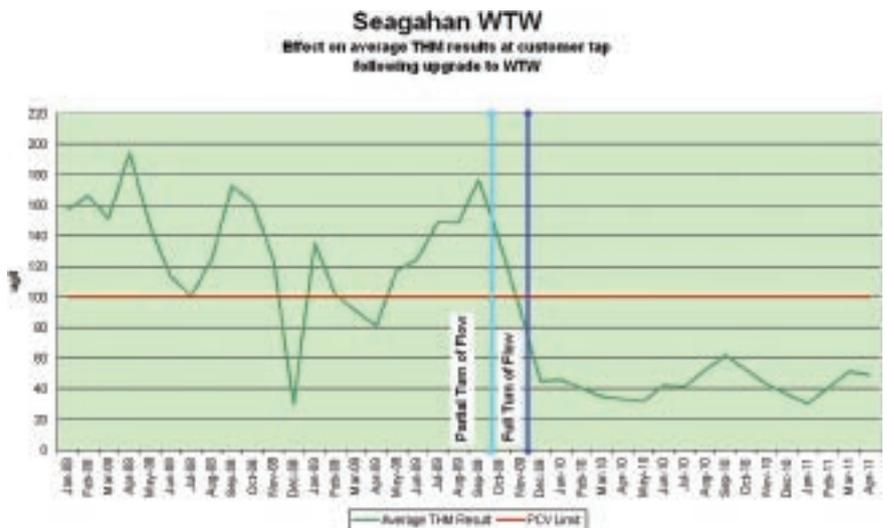
DWI put in place four “Consideration of Provisional Enforcement Orders” (CPEO) during 2010. Three of these related to iron contraventions at localised areas. These were defined by specific district metered areas (DMAs) within the Dorisland, Altmore and Altnahinch supply areas. The fourth CPEO was put in place in relation to the pesticide MCPA within the Altmore WTW water supply area.

DWI had implemented four “Consideration of Provisional Enforcement Orders” (CPEO) during 2008 and continued to monitor progress on their implementation during 2010. These earlier CPEOs related to the reduction of THM levels in the areas supplied by Derg and Killylane Water Treatment Works and the level of aluminium entering supply from Carmoney Water Treatment Works.

The CPEO issued for iron found in the Dorisland distribution area was closed during 2010.

The 2007 CPEO issued for Seagahan Water Treatment Works, for the reduction of THM levels in the area supplied, remained in place during the commissioning phase of the works upgrade which was completed in 2009. The upgrade to the works has provided the required improvement in drinking water quality, and this CPEO was closed by the DWI in 2010.

The graph below demonstrates the improvement in THM results following the upgrade of Seagahan Water Treatment Works.



Quality Assurance

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

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

In addition to this, both of NI Water's Testing laboratories have attained the necessary standard of analytical excellence and have

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

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

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

Use of Technology

To assist in its ability to audit its sampling programme, NI Water has put in place a Personal Digital Assistant (PDA) based

system to produce an enhanced audit trail and also eliminate data transcription errors.

The system uses ruggedised PDAs which incorporate mobile phone technology for communication. A built in barcode scanner is used to scan the labels on the sample bottles and GPS is utilised 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.

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 eliminates the possibility of transcription errors and gives an enhanced audit trail.

Water Quality Summary

NI Water Sites in Service

During 2010, the numbers of NI Water sites in service were:

Location Type	Number in Service
Water Treatment Works	31
Service Reservoirs	330
Water Supply Zones	55
Authorised Supply Points (see glossary)	31

Overall Water Quality

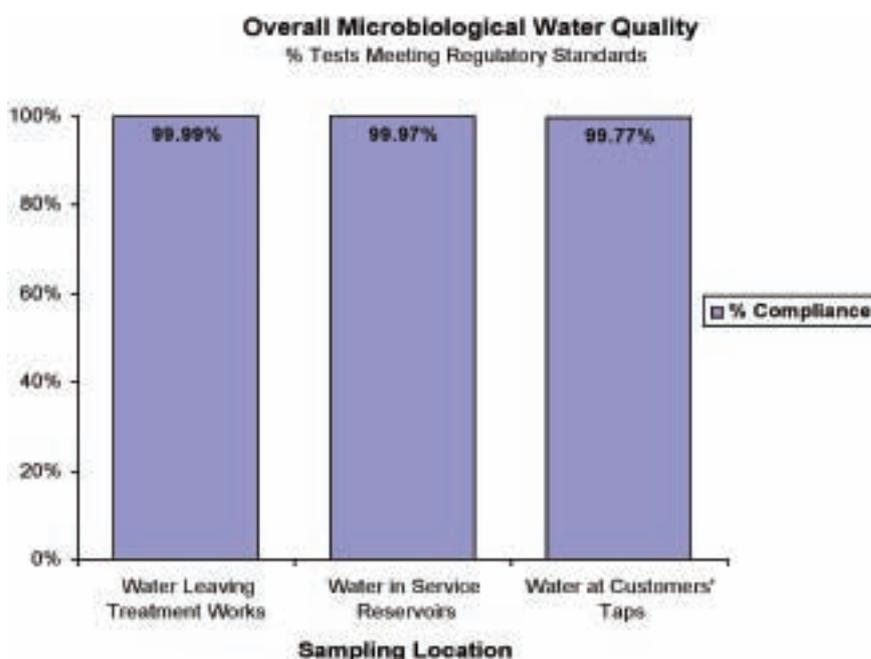
227,523 microbiological, physical and chemical tests were carried out for mandatory and indicator parameters on water samples taken from water treatment works, service reservoirs and customers' taps in the year 2010. 227,353 of these tests complied with the regulatory standards giving an overall percentage compliance of 99.93% (not including Authorised Departures). Under the Regulations a subset of these parameters is used to assess Mean Zonal Compliance at customer tap (as set out in Appendix 3).

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

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

A summary of the microbiological quality of water supplied in 2010 is given below.



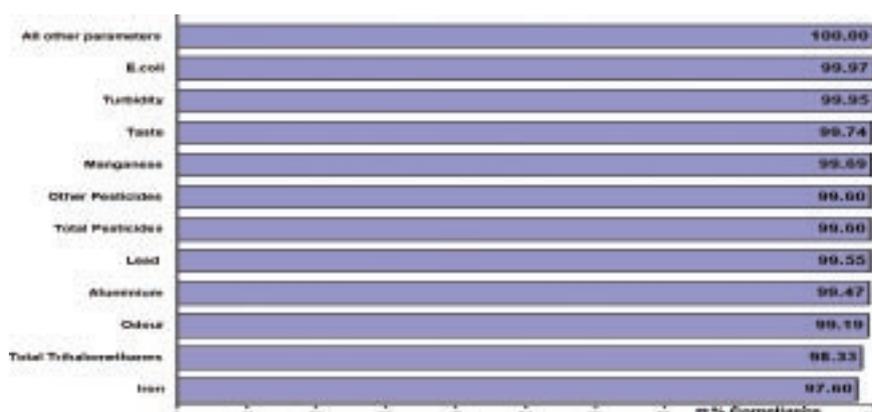
Physical and Chemical Quality at Customers' taps

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

- 34,803 mandatory physical and chemical tests were carried on water samples taken at customers' taps or authorised supply points in the year 2010. 34,709 of these tests complied with the regulatory standards giving a compliance of 99.73% for physical and chemical tests.

Appendix 3 shows the extent of NI Water's compliance with the regulatory standards at both customer tap and authorised supply point. For most parameters, compliance is judged on the basis of the results of individual samples. If a single sample exceeds the PCV, that supply is deemed not to comply with the regulatory standards, even if the cause is outside NI Water's control, e.g. defective plumbing within premises. Improved compliance will be achieved through the water treatment works investment programme and thereafter through improvements to the distribution system. Appendix 3 also shows the Mean Zonal Compliance achieved by NI Water for 2010.

Mean Zonal Compliance by Chemical Parameter



Overall Water Quality

Overall Water Quality					
	Number of Analytical Tests	Number of Tests Exceeding PCV	% Compliance with Regulatory Standards	Number of Tests Exceeding PCV or Authorised Departures	% Compliance with Regulatory Standards including Authorised Departures
Water Leaving Treatment Works					
Bacteriological Analysis	15,146	1	99.99	1	99.99
Chemical Analysis	278	0	100.00	0	100.00
Indicator parameters	37,845	29	99.92	29	99.92
Total	53,269	30	99.94	30	99.94
Water in Service Reservoirs					
Bacteriological Analysis	33,932	9	99.97	9	99.97
Indicator parameters	67,864	0	100.00	0	100.00
Total	101,796	9	99.99	9	99.99
Water at Customers' Taps or Authorised Supply Points					
Bacteriological Anal inc Coliforms	9,880	22	99.78	22	99.78
Zone Chemical Analysis	21,054	86	99.59	85	99.60
Supply Point Chemical Analysis	13,749	2	99.99	2	99.99
Indicator parameters	27,775	1	100.00	1	100.00
Total	72,458	111	99.85	110	99.85
Total Mandatory Parameters	94,039	120	99.87	119	99.87
Total Indicator Parameters	133,484	30	99.98	30	99.98
Overall Water Quality Total	227,523	150	99.93	149	99.93

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

Water Quality Issues

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

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

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

Where water mains are being rehabilitated, NI Water replaces any lead communication pipes encountered to the boundary of the property.

All major supplies in Northern Ireland are now being treated with a small amount of orthophosphoric acid, which forms a protective coating over lead pipes, to minimise levels of lead in the water supply. This dosing is reviewed annually for each water treatment works and agreed with the DWI.

A leaflet on lead in drinking water is available from the NI Water website at www.niwater.com/informationleaflets.asp

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 currently analyses samples for 47 individual pesticides. NI Water liaises with other regulatory bodies in Northern Ireland such as the Northern Ireland Environment Agency (NIEA) regarding the control of pesticide usage.

The pesticide exceedance was for one of the more commonly used pesticides – MCPA.

NI Water is engaged on an ongoing series of catchment management plans as part of the overall Drinking Water Safety Plans which include looking at pesticide usage and control.

Further information with regard to the Code of Practice for using plant protection products is available from www.dardni.gov.uk/code_of_practice_wall_chart-2.pdf

Total Trihalomethanes (THMs)

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

NI Water's ongoing water treatment works investment programme is designed to provide improved treatment to reduce organic matter prior to chlorination and thereby reduce THM levels. Further improved compliance over all of Northern Ireland is expected as improvements to water treatment works and the distribution system continue.

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

Turbidity

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

Taste and Odour

Under direction from DWI, NI Water has changed the methodology used for testing for taste and odour. This has led to a number of low level exceedances during 2010 that would not have previously been recorded.

During 2009 NI Water had 1 taste exceedance and 1 odour exceedance. Under the new analytical methodology used in 2010, this rose considerably to 7 taste exceedances and 14 odour exceedances. However, this was not due to a lowering in the quality of water supplied, but due to the change in the measurement methodology.

Summary

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

Further information

Various information leaflets giving more details of water information may be found at www.niwater.com/informationleaflets.asp

Investing for the Future

Asset Management

In 2009 the DRD Minister provided draft Social and Environmental Guidance which outlined the priorities for investment for NI Water for the period 2010 to 2013. The guidance sets a Mean Zonal Compliance target of 99.7% for water quality during this period. NI Water has developed a business plan (NIAMP3) to deliver this investment. This is largely a continuation of the investment plans made during the period 2007 to 2010. The water quality section of the plan includes laying 900km of new or renewed watermains and the upgrading of water treatment works, service reservoirs and pumping stations.

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

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

NI Water supplies potable water to all of Northern Ireland. A breakdown of water quality by local council area detailing capital investment during the reporting period is given at Appendix 4.

Research, Development and Innovation

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

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

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

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

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

NI Water has benefited from a substantial grant as a result of this collaboration and has received a fully financed post doctorate researcher for two years employed on the development of our carbon management strategy.

Water Supply (Water Fittings) Regulations (NI) 2009

This report incorporates the second annual return for the Water Supply (Water Fittings) Regulations (NI) 2009 for the period 1st January 2010 to 31st December 2011. The Water Supply (Water Fittings) Regulations (NI) 2009 are hereafter referred to in this section of the Water Quality report as the Water Regulations. This report also seeks to highlight how Water Regulations are enforced, promoted and managed through NI Water.

NI Water has developed a strategy for Water Regulation management and will use this as the basis for all future activities associated with obligations under the Water Regulations.

The key messages from this work are set out below:

In the last 12 months NI Water has:

- Continued to develop its dedicated Water Regulation team and successfully trained all appropriate staff to the City and Guilds level. This is a similar approach to other water companies in the UK.
- Implemented the use of a proprietary software system known as Connect 2 to drive a proactive Water Regulation inspection programme which records customer notifications, inspection contraventions and remedial action requirements.
- Allocated a Standard Industrial Classification (SIC) code to circa 80,000 non-domestic customers' premises which has been used to generate Fluid Category (FC) codes. These in turn will be used to drive a proactive risk based programme of inspection work.
- Finalised the production and publication of a Water Regulation leaflet and web pages associated with Water Regulations.
- Chosen to work in partnership with the trade association known as the Scottish and Northern Ireland Plumbing Employers Federation (SNIPEF). SNIPEF has with the agreement and permission of NI Water extended the running of its approved plumbing contractors' scheme to Northern Ireland. This is known as the Plumbing Industry Licensing Scheme (PILS). NI Water recommends that customers when carrying out any plumbing installations or alterations should consider using an approved

plumbing contractor. Details of these can be found by referring to the NI Water web site (www.niwater.com) and navigating to the section on Water Regulations.

During the next twelve months NI Water will:

- Continuously develop and refine the annual Water Regulation return report in agreement with (DRD) Water Policy Division. This will be published annually in the Drinking Water Quality Report.
- Further develop Water Regulation policy and procedures and assess if adequate resources are in place to implement the strategy.
- Refine both the proactive and reactive inspection programmes using Connect 2 as the operation of the systems and processes are refined over the next reporting year.
- Continue to participate at the various Water Regulation Advisory Scheme (WRAS) national forums.
- Engage with district councils and other relevant stakeholders to promote awareness of the Regulations.
- Further promote an increased customer awareness of how to contact and engage an approved plumbing contractor.
- Ensure water Regulations issues form part of any company publications and winter education programmes.

Water Supply (Water Fittings) Regulations Background

NI Water was granted an operating licence to provide water and sewerage services in Northern Ireland on 1st April 2007, replacing Water Service which was an executive agency within the Department for Regional Development (DRD).

The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 (the Water Regulations) came into operation on 3rd August 2009. The Water Regulations exist to prevent the misuse, waste, undue consumption or erroneous measurement of water and most importantly to prevent contamination of drinking water.

Owners and occupiers of premises and anyone who installs plumbing systems or water fittings have the legal duty to ensure that the systems satisfy the regulations. Advanced

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

NI Water is responsible for enforcing the requirements of the Water Regulations. We fulfil this duty by carrying out inspections of new and existing installations to check that the regulations are being met. Where breaches of the regulations are found, we will require them to be remedied as soon as practicable. Where breaches pose a risk to health, the water supply to the premises may be disconnected immediately to protect the health of occupants or others fed from the same public supply. It is a criminal offence to breach the regulations and offenders may face prosecution.

We also provide advice to anyone seeking information or clarification on any Water Regulation related issue.

For the purpose of this report:

- DRD Water Policy Division (WPD) is deemed to be the Regulator for all activities associated with these Water Regulations: NI Water and WPD meet quarterly to discuss water regulations issues, enforcement activities and contraventions.
- The Water Regulation Advisory Scheme (WRAS) list of SIC (Standard Industrial Classification) codes with related fluid categories shall be used to define categories of non-domestic properties. The SIC code system is used to classify business activities in the UK, and is developed in conjunction with the equivalent European Unions industrial classification system, NACE. The significance of the SIC code system is as a useful reference tool in the analysis, targeting and formulation of business strategies / policies, measurement of business and trading activities by authorities and statistical bodies.

NI Water is required to publish an information report by the 30th June each year to meet the requirements of Regulation 13 of the Water Regulations. This report into how NI Water has enforced the Water Supply (Water Fittings) Regulations for the period (1st January 2010 to 31st December 2010) is set out at Appendix 6.

Public Information

Drinking Water Register

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

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

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

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

Customers can alternatively contact the Customer Relations Centre on:
08457 440088

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

Calls to these numbers are charged at the local rate.

Customers may also contact Customer Services by email on:
waterline@niwater.com

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

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

Appendix 1

Drinking Water Quality Standards

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

SCHEDULE 1 PRESCRIBED CONCENTRATIONS AND VALUES

TABLE A.
MICROBIOLOGICAL PARAMETERS

Part I: Directive requirements

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

TABLE B.
CHEMICAL PARAMETERS

Part I: Directive requirements

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Acrylamide	0.10	µg/l	(ii)
Antimony	5	µg Sb/l	Customers' taps
Arsenic	10	µg As/l	Customers' taps
Benzene	1	µg/l	Customers' taps
Benzo (a) pyrene	0.01	µg/l	Customers' taps
Boron	1	mg B/l	Customers' taps
Bromate	10	µg BrO ₃ /l	Customers' taps
Cadmium	5	µg Cd/l	Customers' taps
Chromium	50	µg Cr/l	Customers' taps
Copper	2	mg Cu/l	Customers' taps
Cyanide	50	µg CN/l	Customers' taps
1,2 Dichloroethane	3	µg/l	Customers' taps*
Fluoride	1.5	mg F/l	Customers' taps
Lead	(a) 25, from 25th December 2003 until immediately before 25th December 2013	µg Pb/l	Customers' taps
	(b) 10, on and after 25th December 2013	µg Pb/l	Customers' taps
Mercury	1	µg Hg/l	Customers' taps
Nickel	20	µg Ni/l	Customers' taps
Nitrate	50	mg NO ₃ /l	Customers' taps

Parameters	Concentration or Value (maximum)	Units of Measurement	Point of compliance
Nitrite	0.5	mg NO ₂ /l	Customers' taps
Aldrin	0.03	µg/l	Customers' taps*
Dieldrin	0.03	µg/l	Customers' taps*
Heptachlor	0.03	µg/l	Customers' taps*
Heptachlor epoxide	0.03	µg/l	Customers' taps*
Other pesticides	0.1	µg/l	Customers' taps*
Total Pesticides (iii)	0.5	µg/l	Customers' taps*
PAH - Sum of four substances (iv)	0.1	µg/l	Customers' taps
Selenium	10	µg Se/l	Customers' taps
Tetrachloroethene/ Trichloroethene – Sum (v)	10	µg/l	Customers' taps*
Total Trihalomethanes (vi)	100	µg/l	Customers' taps
Vinyl chloride	0.50	µg/l	(ii)

Notes:

- (i)** NI Water, with the agreement of the Drinking Water Inspectorate, includes Total Coliforms within the Part I: Directive Requirements table for statistical purposes.
- (ii)** The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.
- (iii)** Total Pesticides: means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

(iv) The specified compounds are:

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

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

(vi) The specified compounds are:

- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane

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

Part II: National requirements

Parameters	Concentration or Value (maximum unless otherwise stated)	Units of Measurement	Point of compliance
Aluminium	200	µg Al/l	Customers' taps
Colour	20	mg/l Pt/Co	Customers' taps
Iron	200	µg Fe/l	Customers' taps
Manganese	50	µg Mn/l	Customers' taps
Odour	Acceptable to consumers and no abnormal change	Dilution number	Customers' taps
Sodium	200	mg Na/l	Customers' taps
Taste	Acceptable to consumers and no abnormal change	Dilution number	Customers' taps
Tetrachloromethane	3	µg/l	Customers' taps
Turbidity	4	NTU	Customers' taps

SCHEDULE 2
INDICATOR PARAMETERS

Parameters	Specification Concentration or Value (maximum) or State	Units of Measurement	Point of monitoring
Ammonium	0.5	mg NH ₄ /l	Customers' taps
Chloride (i)	250	mg Cl/l	Supply point*
Clostridium perfringens (including spores)	0	Number/100ml	Supply point*
Colony counts	No abnormal change	Number/1ml at 22°C Number/1ml at 37°C	Customers' taps, service reservoirs and treatment works
Conductivity (i)	2500	µS/cm at 20°C	Supply point*
Hydrogen ion	9.5	pH value	Customers' taps
	6.5 (minimum)	pH value	
Sulphate (i)	250	mg SO ₄ /l	Supply point*
Total indicative dose (for radioactivity) (ii)	0.1	mSv/year	Supply point*
Total organic carbon (TOC)	No abnormal change	mg C/l	Supply point*
Tritium (for radioactivity)	100	Bq/l	Supply point*
Turbidity	1	NTU	Treatment works

Notes:

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

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

Explanatory Notes

Measurement Units:

milli gramme per litre (mg/l) means one part in a million.
micro gramme per litre (µg/l) means one part in a thousand million.

Parameter:

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

Appendix 2

Programmes of Work to meet Authorised Departure Requirements

During 2010, certain planned and remedial programmes of work to meet Authorised Departure requirements continued. These were:

Water Treatment Works	Zone Code Affected	Zone Name Affected
Lough Bradan WTW	ZN0704	Lough Bradan Drumquin
	ZN0706	Lough Macrory Killyclogher

2010 Authorised Departures under Regulation 37

Site Code	Site Name	Parameter	Units	AD Value	AD Start	AD End
ZN0704	Lough Bradan Drumquin	Total Trihalomethanes	ug/l	150	07/08/2007	06/08/2010
ZN0706	Lough Macrory Killyclogher	Total Trihalomethanes	ug/l	150	07/08/2007	06/08/2010

With effect from 6th August 2010, all NI Water's Authorised Departures have expired with the agreement of the Drinking Water Inspectorate that the planned programmes of work have now been completed or are nearing completion.

Appendix 3

Water Quality Report for Water Supply Zones

Schedule 1 parameters	2010 Samples	No > PCV	% > PCV	No > AD	% > AD
Enterococci	424	0	0.00%	--	--
E. coli	4728	2	0.04%	--	--
1,2 Dichloroethane	424	0	0.00%	--	--
Aluminium	1736	10	0.58%	--	--
Antimony	423	0	0.00%	--	--
Arsenic	423	0	0.00%	--	--
Benzene	424	0	0.00%	--	--
Benzo(a)pyrene	424	0	0.00%	--	--
Boron	423	0	0.00%	--	--
Bromate	424	0	0.00%	--	--
Cadmium	423	0	0.00%	--	--
Chromium	423	0	0.00%	--	--
Colour	1736	0	0.00%	--	--
Copper	424	0	0.00%	--	--
Iron	1736	35	2.02%	--	--
Lead	424	2	0.47%	--	--
Manganese	1736	6	0.35%	--	--
Mercury	423	0	0.00%	--	--
Nickel	423	0	0.00%	--	--
Nitrate	424	0	0.00%	--	--
Nitrite	424	0	0.00%	--	--
Odour	1736	17	0.98%	--	--
Selenium	423	0	0.00%	--	--
Sodium	424	0	0.00%	--	--
Taste	1734	7	0.40%	--	--
PAH - Sum of four substances	424	0	0.00%	--	--
Tetrachloroethene/ Trichloroethene - Sum	424	0	0.00%	--	--
Tetrachloromethane	424	0	0.00%	--	--
Total Trihalomethanes	432	8	1.85%	0	0.00%
Turbidity	1736	1	0.06%	--	--

Indicator parameters	2010 Samples	No > SPEC	% > SPEC
Total coliforms	4728	20	0.42%
Total - Residual disinfectant	4728	0	0.00%
Free - Residual disinfectant	4728	0	0.00%
Colony Counts 37 (48hrs)	1736	0	0.00%
Colony Counts 22	1736	0	0.00%
Ammonium	1736	0	0.00%
Hydrogen Ion	1736	1	0.06%

Water Quality Report for Authorised Supply Points

Schedule 1 parameters	2010 Samples	No > PCV	% > PCV	No > AD	% > AD
Cyanide	274	0	0.00%	--	--
Fluoride	275	0	0.00%	--	--
Aldrin	275	0	0.00%	--	--
Dieldrin	275	0	0.00%	--	--
Heptachlor	275	0	0.00%	--	--
Heptachlor Epoxide	275	0	0.00%	--	--
Pesticides - Total Substances	275	1	0.36%	--	--
All other analysed Pesticides	11825	1	0.01%	0.00	0.00%

Indicator parameters	Taken to Date	No > SPEC	% > SPEC
Clostridium perfringens (sulph red)	2891	0	0.00%
Chloride	274	0	0.00%
Conductivity	2882	0	0.00%
Sulphate	274	0	0.00%
Total Organic Carbon	274	0	0.00%
Total Indicative Dose	26	0	0.00%
Tritium	26	0	0.00%

Water Quality Report for Water Treatment Works

Schedule 1 parameters	2010 Samples	No > PCV	% > PCV
Total Coliforms	7573	1	0.01%
E. coli	7573	0	0.00%
Nitrite	278	0	0.00%

Indicator parameters	2010 Samples	No > SPEC	% > SPEC
Turbidity	7563	29	0.38%
Total - Residual disinfectant	7572	0	0.00%
Free - Residual disinfectant	7572	0	0.00%
Colony Counts 37 (48hrs)	7569	0	0.00%
Colony Counts 22	7569	0	0.00%

Water Quality Report for Service Reservoirs

Schedule 1 parameters	2010 Samples	No > PCV	% > PCV
Total Coliforms	16966	8	0.05%
E. coli	16966	1	0.01%

Indicator parameters	2010 Samples	No > SPEC	% > SPEC
Colony Counts 22	16966	0	0.00%
Colony Counts 37 (48hrs)	16966	0	0.00%
Total - Residual disinfectant	16966	0	0.00%
Free - Residual disinfectant	16966	0	0.00%

2010 Mean Zonal Compliance

Parameter	Number of Samples	No of fails at zone / supply point	No of zones / supply points with fails	% Zonal Compliance
Colour	1736	0	0	100.00
Turbidity	1736	1	1	99.95
Odour	1736	17	11	99.19
Taste	1734	7	4	99.74
Sodium	424	0	0	100.00
Nitrate	424	0	0	100.00
Nitrite	424	0	0	100.00
Nitrite/Nitrate Formula	424	0	0	100.00
Aluminium	1736	10	8	99.47
Iron	1736	35	24	97.60
Manganese	1736	6	5	99.69
Copper	424	0	0	100.00
Fluoride	275	0	0	100.00
Arsenic	423	0	0	100.00
Cadmium	423	0	0	100.00
Cyanide	274	0	0	100.00
Chromium	423	0	0	100.00
Mercury	423	0	0	100.00
Nickel	423	0	0	100.00
Lead	424	2	2	99.55
Antimony	423	0	0	100.00
Selenium	423	0	0	100.00
Total Pesticides	275	1	1	99.60
PAH - Sum of four substances	424	0	0	100.00
E. coli	4728	2	2	99.97
Enterococci	424	0	0	100.00
Boron	423	0	0	100.00
Benzo(a)pyrene	424	0	0	100.00
Tetrachloromethane	424	0	0	100.00
Tetrachloroethene/Trichloroethene - Sum	424	0	0	100.00
Total Trihalomethanes	432	8	6	98.33
1,2 Dichloroethane	424	0	0	100.00
Benzene	424	0	0	100.00
Bromate	424	0	0	100.00
Aldrin	275	0	0	100.00
Dieldrin	275	0	0	100.00
Heptachlor	275	0	0	100.00
Heptachlor epoxide	275	0	0	100.00
Pesticides - other substances (P999)*	11825	1	1	99.60
Total Number of Samples / Fails	40379	90		
Mean Zonal Compliance %				99.81

Appendix 4

Water Quality by Northern Ireland Local Council Area

This section of the Drinking Water Quality Report is designed to demonstrate water quality by individual council area based on the Mean Zonal Compliance (MZC) over the water supply zones associated with that council area, as shown on the associated maps.

For monitoring purposes NI Water's supply area is divided into water supply zones. These are areas serving not more than 100,000 people, each of which are normally supplied from a single water supply source or combination of sources. There are areas where owing to topography and dispersal of population, it is not practicable to provide a mains water supply. Currently over 99.6% of Northern Ireland's population receive public water supplies.

In a number of cases water supply zones overlap district council boundaries. The council reports indicate which water supply zones are wholly or partially contained within the council areas, including those zones which may have a relatively small area within the council area. Separation of data within these water supply zones across council

boundaries is not practicable, therefore the information used in calculating the MZC relates to the whole zone and not merely the part included within a council boundary. The information is based on samples taken randomly from customers' taps in each water supply zone and from planned samples at authorised supply points.

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 continue across Northern Ireland, reflecting the need for the completion of current and future planned Capital Work Programmes.

NI Water has identified the need to deliver a significant volume of watermains rehabilitation and other works across its 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 just implemented a new Watermains Rehabilitation

Framework, within which it has appointed two contractors to undertake work on a Northern Ireland wide basis as identified by the zonal study programme of work.

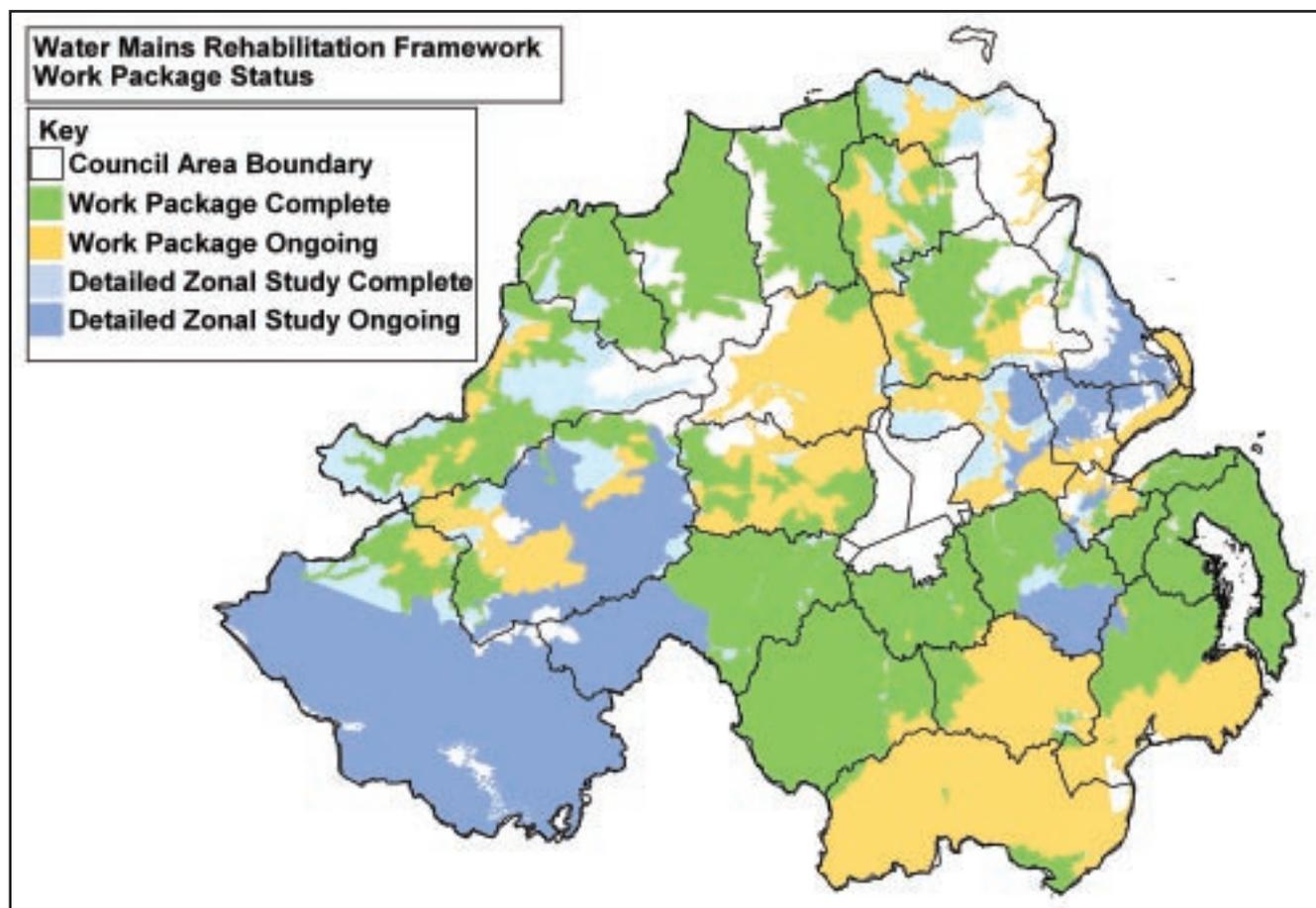
Following the removal of some small water supply sources, NI Water reassessed its water supply zones for 2010. This led to the removal of some small zones along with the merging of other zones. As the MZC calculation is based on the number of zones in a particular council area, this has changed the factors used in the calculation and may lead to a perception of a change in water quality.

The DWI directed change in the analysis of taste and odour for 2010 has resulted in a number of exceedances which would not previously have failed. This has led in some cases to a small reduction in MZC at council level. This is not normally due to a change in the quality of water supplied, but rather to the change in the method of measurement.

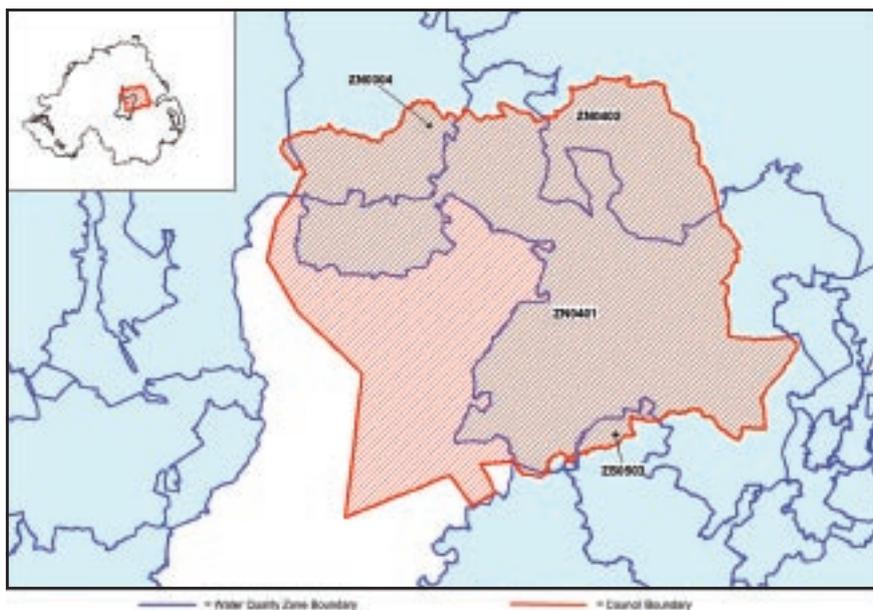
Overall, the quality of water supplied to our customers in 2010 has had a marked improvement rising from a Mean Zonal Compliance of 99.74% in 2009 to 99.81% in 2010.

Watermains Rehabilitation Framework Work Package Status

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



Antrim Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Antrim Council MZC	99.73%	99.89%

2010 water supply zones wholly or partially within the council area:

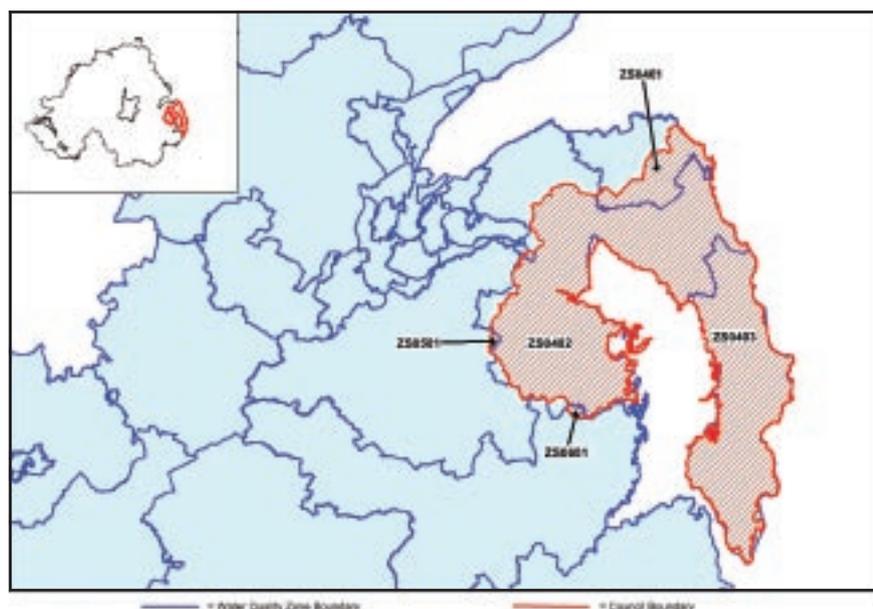
Zone Code	Zone Name	Zone Code	Zone Name
ZN0304	Glarryford Ahoghill	ZN0501	Moyola Magherafelt
ZN0401	Dunore Point Antrim	ZS0503	Forked Bridge Stoneyford
ZN0402	Killylane Ballynure	ZS0802	Castor Bay Lurgan

2010 water quality Capital Works Programmes affecting the council area:

Aghnadarragh Road, Glenavy Watermain Extension
 Birchill Road Antrim Watermain
 Castle Road/Whitehill Road Randalstown WM Replacement
 Crosskennan Service Reservoir, Antrim, Water Pumping Station.
 Dunore West Zone Watermain Improvements
 Glendoyle Cottages, Dunadry Road, Dunadry, Watermain Extension
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security
 Tardree Zone Watermain Improvements
 Tully Service Reservoir

The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Antrim council area over the next few years.

Ards Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Ards Council MZC	99.92%	99.82%

2010 water supply zones wholly or partially within the council area:

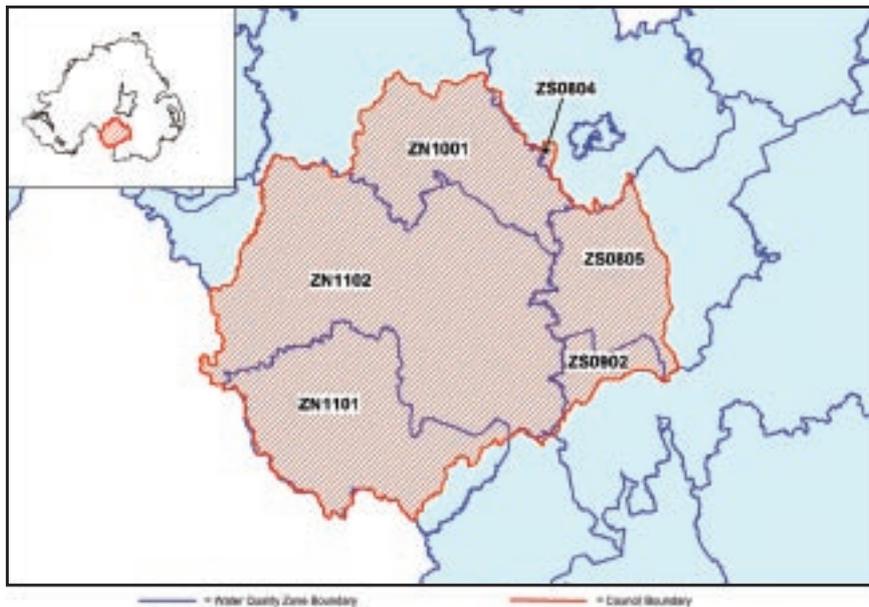
Zone Code	Zone Name	Zone Code	Zone Name
ZS0108	Belfast Purdysburn	ZS0403	Drumaroad Peninsula
ZS0401	Drumaroad Bangor	ZS0501	Drumaroad Lisburn
ZS0402	Drumaroad Comber	ZS0601	Drumaroad Ballynahinch

2010 water quality Capital Works Programmes affecting the council area:

Ards North Zone Watermain Improvements
 Ballygowan Zone Watermain Improvements
 Ballyreagh Road, Newtownards, Watermain Extension
 Metering and Treatment of WTW effluents
 Newtownards Southern Relief Road
 Newtownards Town Zone Watermain Improvements
 North Down Strategic Trunk Watermains
 Portaferry, Ballyquinton area mains replacement
 Service Reservoir Enhanced Security
 Total Trihalomethanes Reduction

The slight reduction in water quality in the Ards council area is partially due to a number of odour exceedances related to operational activities within the distribution system to maintain the supply to customers during the freeze / thaw event in January 2010. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Ards council area over the next few years.

Armagh City & District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Armagh City & Council MZC	99.51%	99.89%

2010 water supply zones wholly or partially within the council area:

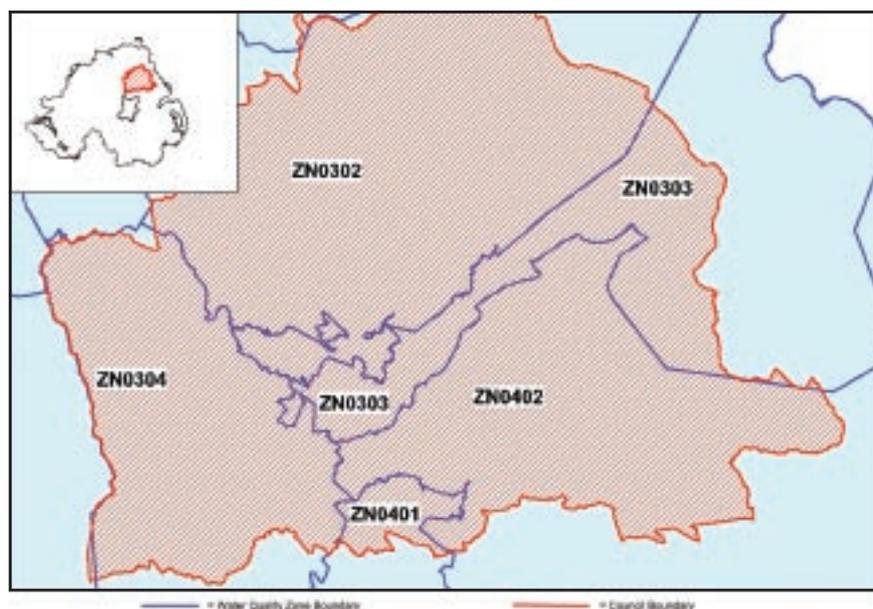
Zone Code	Zone Name	Zone Code	Zone Name
ZN1001	Shanmoy Dungannon	ZS0805	Ballydougan Gilford
ZN1101	Clay Lake Keady	ZS0902	Fofanny Dromore
ZN1102	Seagahan Armagh	ZS1001	Carran Hill Crossmaglen
ZS0804	Ballydougan Craigavon		

2010 water quality Capital Works Programmes affecting the council area:

Clay Lake WTW
 Clay Lake Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security
 Tullysaran Road Watermain Extension

The upgrade of Seagahan WTW has significantly improved the quality of water in the Armagh council area, in particular by the reduction of Total Trihalomethanes. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Armagh council area over the next few years.

Ballymena Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Ballymena Council MZC	99.71%	99.68%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0202	Altnahinch Bushmills	ZN0401	Dunore Point Antrim
ZN0302	Dungonnell Glarryford	ZN0402	Killylane Ballynure
ZN0303	Dunore Point Ballymena	ZN0501	Moyola Magherafelt
ZN0304	Glarryford Ahoghill		

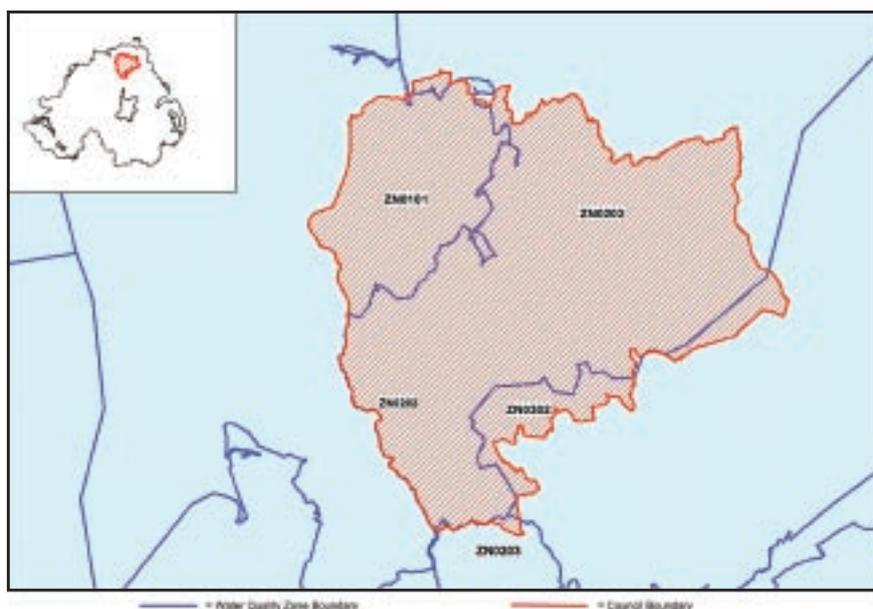
2010 water quality Capital Works Programmes affecting the council area:

Dungonnell Command Service Reservoir
 Garstings Hill Service Reservoir, Ballymena, Water Pumping station.
 Glenlough Service Reservoir, Ballymoney, New Service Reservoir
 Loan Command Service Reservoir, Inlet Watermain
 Metering and Treatment of WTW effluents
 Northern Key Transport Corridor, Ballymena Watermain Scheme

Security improvements at Keypoint Installations
 Service Reservoir Enhanced Security
 Tardree Zone Watermain Improvements
 Tullaghans Service Reservoir, Dunloy, New Reservoir
 Tully Service Reservoir

During 2010 a large part of Ballymena council area was supplied from Glarryford WTW. This Works has been removed from service with the area now largely fed from the upgraded Dunore Point WTW. Many of the exceedances attributed to water supply zones in the Ballymena council area are actually outside the council boundaries, however it is not appropriate to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. There were a number of iron exceedances in the Altnahinch and Glarryford areas and the ongoing Watermains Rehabilitation Framework has targeted these - this will continue to maintain and improve the quality of water in the Ballymena council area over the next few years.

Ballymoney Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Ballymoney Council MZC	99.79%	99.50%

2010 water supply zones wholly or partially within the council area:

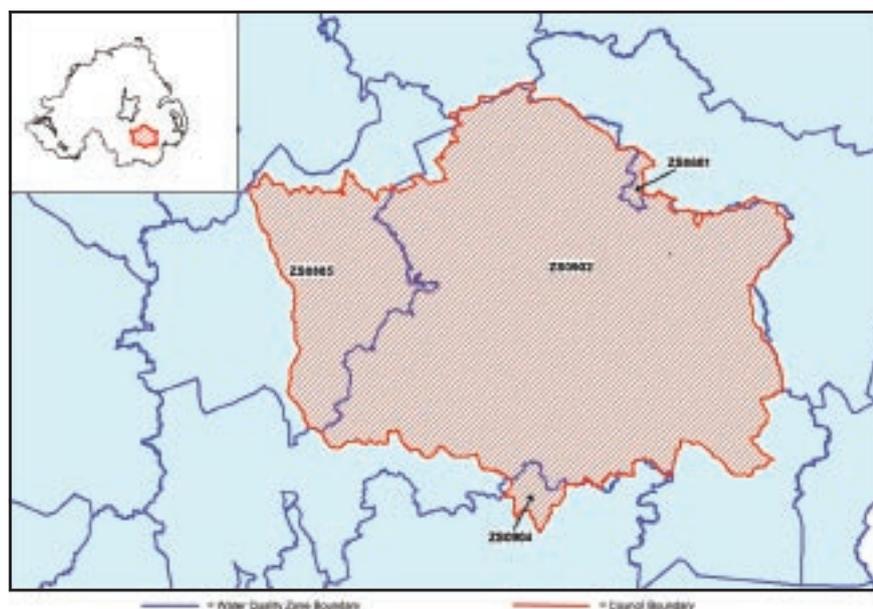
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0302	Dungonnell Glarryford
ZN0202	Altnahinch Bushmills	ZN0304	Glarryford Ahoghill

2010 water quality Capital Works Programmes affecting the council area:

Altnahinch WTP, Ballymoney, New Clear Water Basin
 Altnahinch Zone Watermain Improvements
 Glenlough Service Reservoir, Ballymoney, New Service Reservoir
 Gortahar Road, Rasharkin Watermain Extension
 Loughguile Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Portballintrae Zone Watermain Improvements
 Rasharkin Zone Watermain Improvements
 Service Reservoir Enhanced Security
 Tullaghans Service Reservoir, Dunloy, New Reservoir

The rationalisation of water supply zones in the Ballymoney area has reduced the number of zones from 6 to 4, directly affecting the MZC calculation. This in conjunction with a number of iron exceedances in the Altnahinch and Glarryford areas has led to the reduction in reported water quality in Ballymoney council area. Glarryford WTW has now been decommissioned, with water now supplied to this area from the upgraded Dunore Point WTW. Many of the exceedances attributed to water supply zones in the Ballymoney council area are actually outside the council boundaries, however it is not appropriate to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. The ongoing Watermains Rehabilitation Framework has targeted these areas and this will continue to maintain and improve the quality of water in the Ballymoney council area over the next few years.

Banbridge District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Banbridge Council MZC	99.95%	99.88%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0601	Drumaroad Ballynahinch	ZS0902	Fofanny Dromore
ZS0802	Castor Bay Lurgan	ZS0904	Fofanny Mourne
ZS0805	Ballydougan Gilford		

2010 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
 Fofanny Banbridge Zone Watermain Improvements Phase 2
 Fofanny/Banbridge Zone Watermain Improvements
 Lisburn to R.O.I. Border Trunk Road Improvements
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The water quality in the Banbridge council area has reduced slightly between 2009 and 2010. This is largely due to a number of odour exceedances during the freeze / thaw event in January 2010 which were related to operational activities within the distribution system to maintain the supply to customers. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Banbridge council area over the next few years.

Belfast City Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Belfast City Council MZC	99.80%	99.87%

2010 water supply zones wholly or partially within the council area:

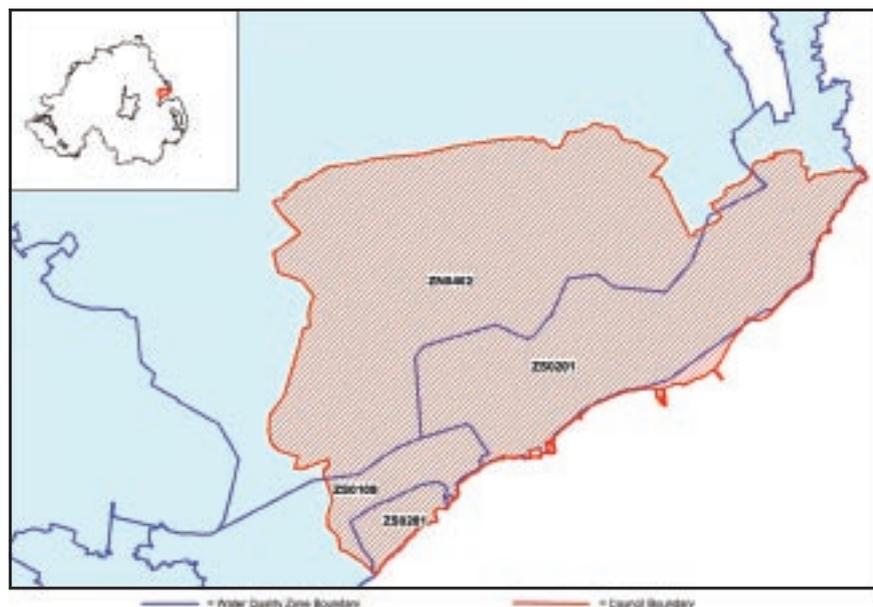
Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0108	Belfast Purdysburn
ZS0101	Belfast Ballygomartin North	ZS0109	Dorisland Whiteabbey
ZS0102	Belfast Ballygomartin South	ZS0110	Dunore Point Glengormley
ZS0103	Belfast Ballyhanwood	ZS0402	Drumaroad Comber
ZS0104	Belfast Breda North	ZS0501	Drumaroad Lisburn
ZS0105	Belfast Breda South	ZS0502	Forked Bridge Dunmurry
ZS0106	Belfast North	ZS0503	Forked Bridge Stoneyford
ZS0107	Belfast Oldpark		

2010 water quality Capital Works Programmes affecting the council area:

Ballysillan Zone Watermain Improvements	Metering and Treatment of WTW effluents
Ballywonard Zone Watermain Improvements	North Down Strategic Trunk Watermains
Belfast City Centre Zone Watermain Improvements	Security improvements at Keypoint Installations
Breda North Zone Watermain Improvements	Service Reservoir Enhanced Security
Cross Town Mains Extension - Barnetts Park to Purdysburn	West Belfast / North Lisburn
Mains replacement ,Belfast Public Realm Phase 1 Area 2	

During the period of the report, there were a number of iron and lead exceedances in Belfast City council area. NI Water has a programme of dosing with orthophosphoric acid to reduce lead uptake at customer tap which should improve lead compliance in the area. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Belfast City council area over the next few years.

Carrickfergus Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Carrickfergus Council MZC	99.44%	99.79%

2010 water supply zones wholly or partially within the council area:

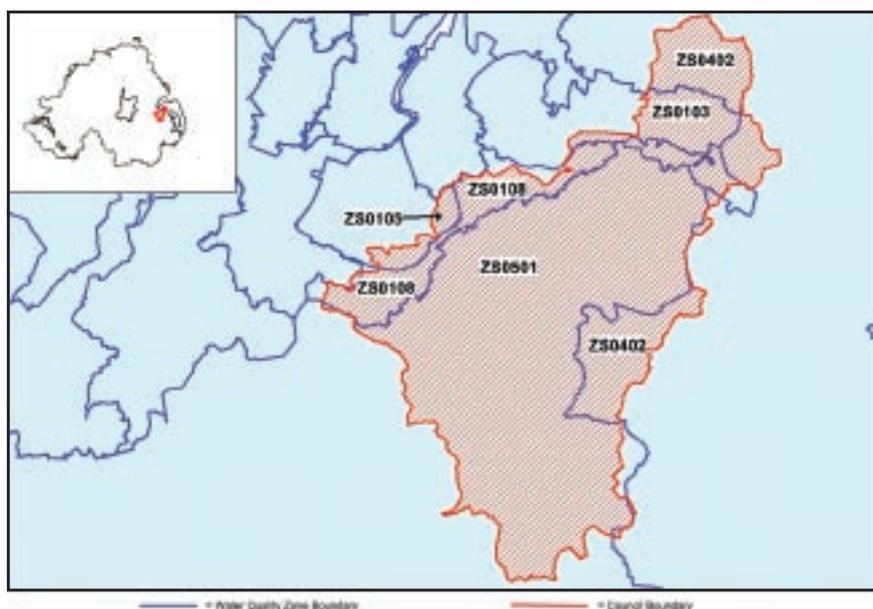
Zone Code	Zone Name	Zone Code	Zone Name
ZN0402	Killylane Ballynure	ZS0201	Dorisland Carrick
ZS0109	Dorisland Whiteabbey		

2010 water quality Capital Works Programmes affecting the council area:

Carrickfergus Zone Watermain Improvements Phase 1
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security
 Whiteabbey Lower, Mains Replacement. Newtownabbey

Water quality in the Carrickfergus council area has improved due to a combination of ongoing optimisation and improvements at Killylane WTW, and also a targeted Watermains Rehabilitation Framework programme. This ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Carrickfergus council area over the next few years.

Castlereagh Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Castlereagh Council MZC	99.85%	99.78%

2010 water supply zones wholly or partially within the council area:

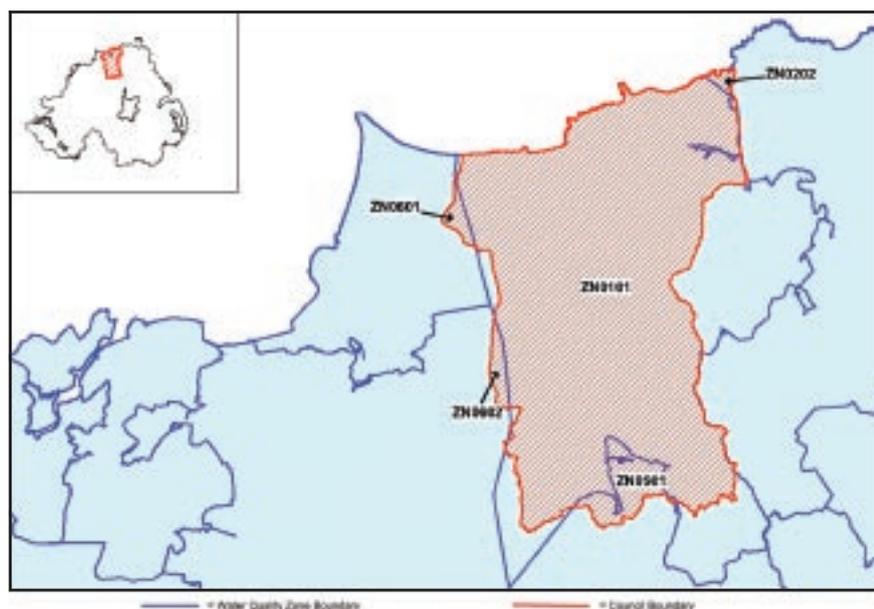
Zone Code	Zone Name	Zone Code	Zone Name
ZS0103	Belfast Ballyhanwood	ZS0402	Drumaroad Comber
ZS0105	Belfast Breda South	ZS0501	Drumaroad Lisburn
ZS0108	Belfast Purdysburn		

2010 water quality Capital Works Programmes affecting the council area:

Cross Town Main Extension - Barnetts Park to Purdysburn
 Metering and Treatment of WTW effluents
 North Down Strategic Trunk Watermains
 Service Reservoir Enhanced Security

A number of iron and lead exceedances caused the reported quality of water to decrease in the Castlereagh council area. NI Water has a programme of dosing with orthophosphoric acid to reduce lead uptake at customer tap which should improve lead compliance in the area. Many of the exceedances attributed to water supply zones in the Castlereagh council area are actually outside the council boundaries, however it is not appropriate to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Castlereagh council area over the next few years.

Coleraine Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Coleraine Council MZC	99.73%	99.76%

2010 water supply zones wholly or partially within the council area:

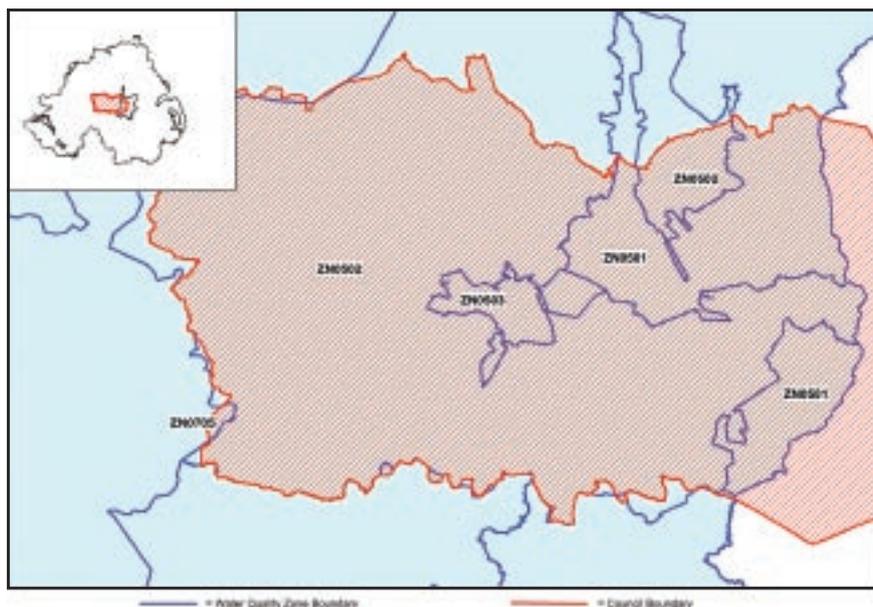
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0601	Ballinrees Limavady
ZN0202	Altnahinch Bushmills	ZN0604	Caugh Hill Dungiven
ZN0501	Moyola Magherafelt		

2010 water quality Capital Works Programmes affecting the council area:

Ballinrees Central Zone Watermain Improvements
 Fairview Lane, Articlave - Watermain Ext
 Lough Fea Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Portballintrae Zone Watermain Improvements
 Rasharkin Zone Watermain Improvements Phase 2
 Service Reservoir Enhanced Security

The ongoing Watermains Rehabilitation Framework and further treatment optimisation of Ballinrees WTW will continue to maintain and improve the quality of water in the Coleraine council area over the next few years.

Cookstown District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Cookstown Council MZC	99.72%	99.87%

2010 water supply zones wholly or partially within the council area:

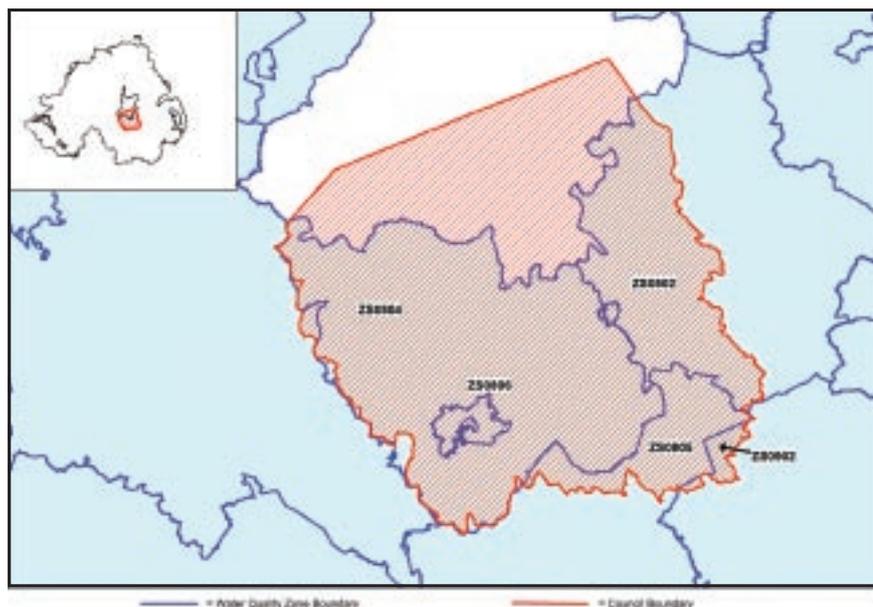
Zone Code	Zone Name	Zone Code	Zone Name
ZN0501	Moyola Magherafelt	ZN0705	Lough Macrory Beragh
ZN0502	Lough Fea Cookstown	ZN0902	Altmore Donaghmore
ZN0503	Unagh Cookstown	ZN1001	Shanmoy Dungannon

2010 water quality Capital Works Programmes affecting the council area:

Carland Bridge (Cookstown Rd) Road Realignment
 Cookstown Zone Watermain Improvements
 Lough Fea Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The improvement of water quality in the Cookstown council area is largely due to work undertaken within the Watermains Rehabilitation Framework and the improvement in water quality supplied by Moyola WTW to the area. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Cookstown council area over the next few years.

Craigavon Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Craigavon Council MZC	99.93%	99.95%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN1001	Shanmoy Dungannon	ZS0805	Ballydougan Gilford
ZS0802	Castor Bay Lurgan	ZS0806	Ballyhannon Portadown
ZS0804	Ballydougan Craigavon	ZS0902	Fofanny Dromore

2010 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
 Castor Bay to Dungannon Strategic Trunk Mains
 Lurgan & Portadown Public Realm Associated Infrastructure Improvements
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Craigavon council area over the next few years.

Derry City Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Derry City Council MZC	99.61%	99.94%

2010 water supply zones wholly or partially within the council area:

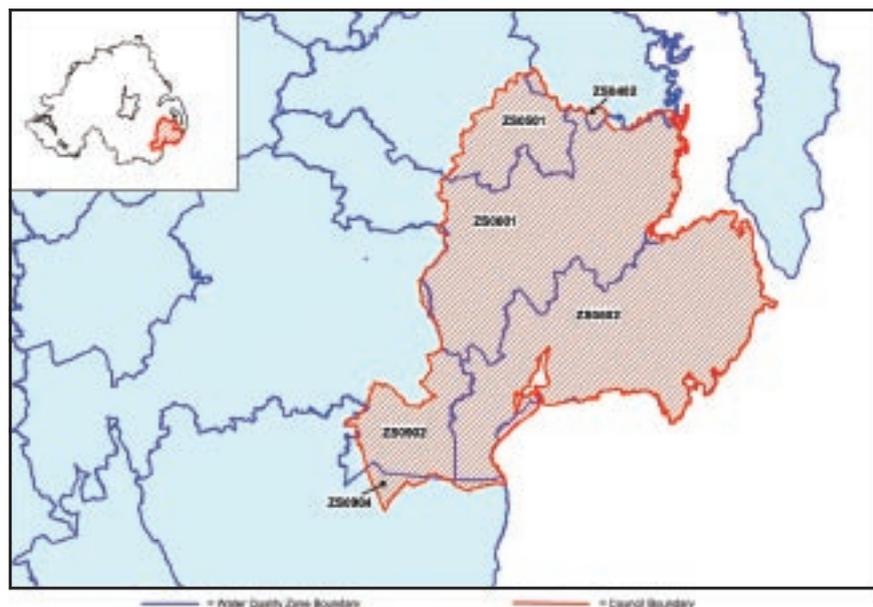
Zone Code	Zone Name	Zone Code	Zone Name
ZN0603	Carmony Eglinton	ZN0605	Creggan Derry
ZN0604	Caugh Hill Dungiven	ZN0701	Derg Strabane

2010 water quality Capital Works Programmes affecting the council area:

Carmony East Zone Watermain Improvements
 Carmony Water Treatment Works Upgrade
 Limavady Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Security improvements at Keypoint Installations
 Service Reservoir Enhanced Security
 Skeoge Development Watermains and Sewers
 Waterside Zone Watermain Improvements

Ongoing upgrade works at Carmony WTW combined with the Watermains Rehabilitation Framework work packages have improved the quality of water supplied to the Derry City council area. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Derry City council area over the next few years.

Down District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Down Council MZC	99.88%	99.78%

2010 water supply zones wholly or partially within the council area:

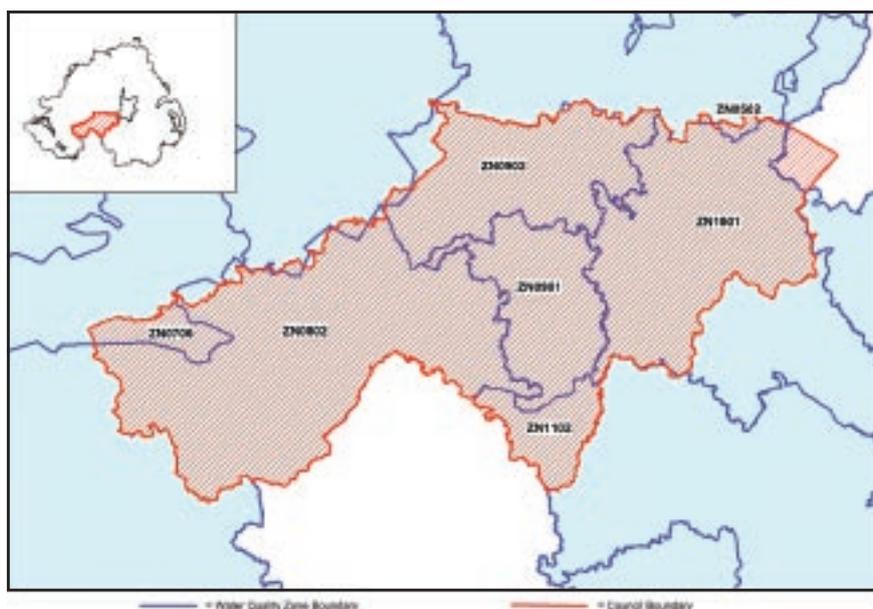
Zone Code	Zone Name	Zone Code	Zone Name
ZS0402	Drumaroad Comber	ZS0602	Drumaroad Downpatrick
ZS0501	Drumaroad Lisburn	ZS0902	Fofanny Dromore
ZS0601	Drumaroad Ballynahinch	ZS0904	Fofanny Mourne

2010 water quality Capital Works Programmes affecting the council area:

Ballykine Gravity Distribution
 Downpatrick Zone Watermain Improvements
 Fofanny WTW EC Compliance
 Metering and Treatment of WTW effluents
 Mid Down Zone Watermain Improvements
 Service Reservoir Enhanced Security
 South Down Zone Watermain Improvements

The water quality in the Down council area has reduced slightly between 2009 and 2010. This is largely due to a number of odour exceedances during the freeze / thaw event in January 2010 which were related to operational activities within the distribution system to maintain the supply to customers. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Down council area over the next few years.

Dungannon and South Tyrone Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Dungannon and South Tyrone Council MZC	99.47%	99.81%

2010 water supply zones wholly or partially within the council area:

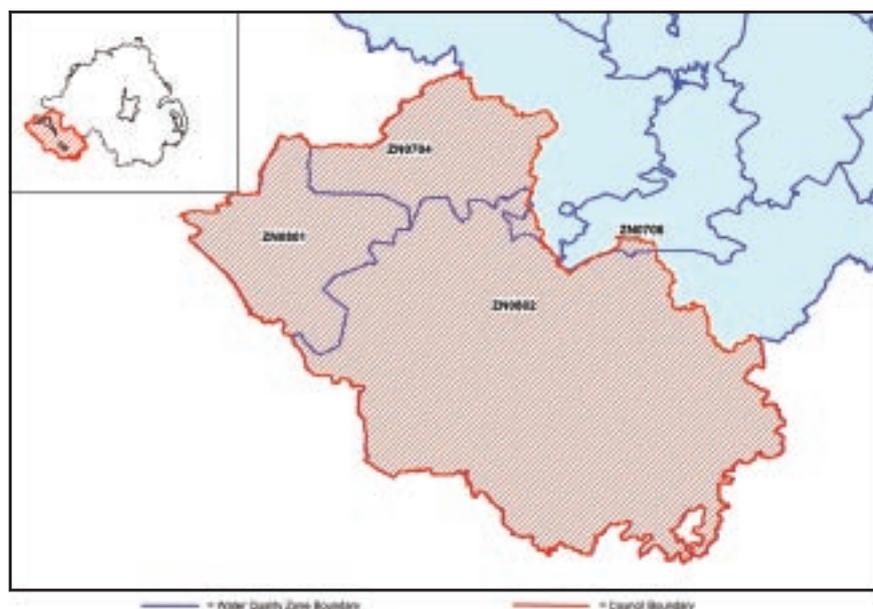
Zone Code	Zone Name	Zone Code	Zone Name
ZN0501	Moyola Magherafelt	ZN0901	Altmore Cabragh
ZN0502	Lough Fea Cookstown	ZN0902	Altmore Donaghmore
ZN0705	Lough Macrory Beragh	ZN1001	Shanmoy Dungannon
ZN0706	Lough Macrory Killyclogher	ZN1102	Seagahan Armagh
ZN0802	Killyhevlin Enniskillen	ZS0804	Ballydougan Craigavon

2010 water quality Capital Works Programmes affecting the council area:

Ballydougan to Newry Main Link Reinforcement
 Carland Bridge (Cookstown Rd) Road Realignment
 Carland Service Reservoir
 Castor Bay / Shanmoy Zone
 Castor Bay to Dungannon Strategic Trunk Mains
 Glencuil to Cabragh Strategic Link Watermain
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The continuing improvement in water quality in Dungannon and South Tyrone is largely due to the effect of the ongoing Watermains Rehabilitation Framework combined with the upgrade to Seagahan WTW. In the spring of 2011 Altmore WTW and Shanmoy Borewell WTW were removed from supply. Removing these WTW in conjunction with the ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Dungannon and South Tyrone council area over the next few years.

Fermanagh District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Fermanagh Council MZC	99.84%	99.72%

2010 water supply zones wholly or partially within the council area:

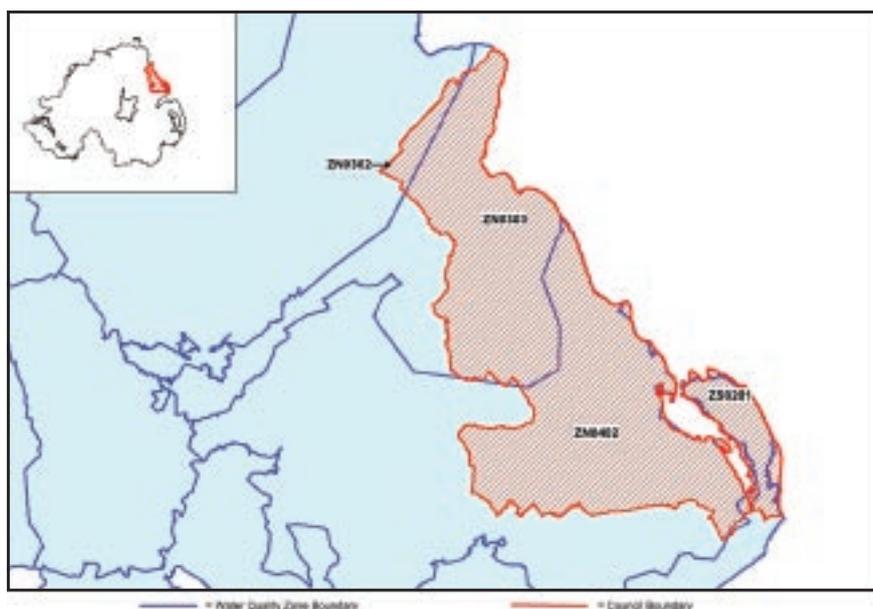
Zone Code	Zone Name	Zone Code	Zone Name
ZN0704	Lough Bradan Drumquin	ZN0801	Belleek Garrison
ZN0706	Lough Macrory Killyclogher	ZN0802	Killyhevlin Enniskillen

2010 water quality Capital Works Programmes affecting the council area:

Alleyhill Zone Watermain Improvements
 Derg - Omagh Area Transfer Pumps
 Effernan Road, Trillick, watermain Extension
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The water quality in the Fermanagh council area has reduced slightly between 2009 and 2010. This is largely due to a number of taste and odour exceedances during the summer when long retention times in the distribution system compounded by warmer weather gave rise to exceedances. Many of the exceedances attributed to water supply zones in the Fermanagh council area are actually outside the council boundaries, however it is impossible to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. The ongoing Killyhevlin WTW treatment optimisation and upgrade work at Lough Bradan WTW, combined with the Watermains Rehabilitation Framework, will continue to maintain and improve the quality of water in the Fermanagh council area over the next few years.

Larne Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Larne Council MZC	99.73%	99.63%

2010 water supply zones wholly or partially within the council area:

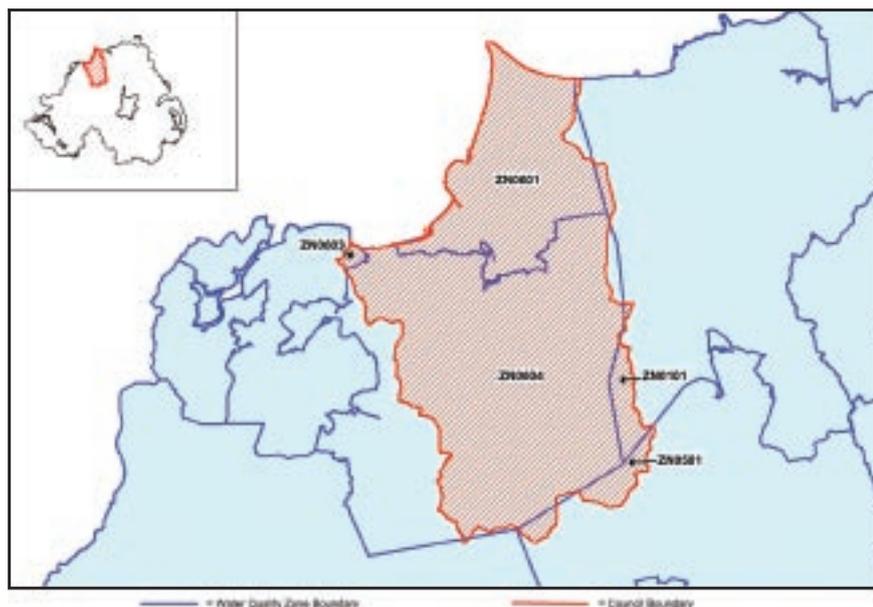
Zone Code	Zone Name	Zone Code	Zone Name
ZN0302	Dungonnell Glarryford	ZN0402	Killylane Ballynure
ZN0303	Dunore Point Ballymena	ZS0201	Dorisland Carrick

2010 water quality Capital Works Programmes affecting the council area:

Metering and Treatment of WTW effluents
Service Reservoir Enhanced Security

The water quality in the Larne council area has reduced slightly between 2009 and 2010. This is largely due to 2 Total Trihalomethane exceedances combined with a number of iron exceedances in Dorisland Carrick Zone. Many of the exceedances attributed to water supply zones in the Larne council area are actually outside the council boundaries, however it is not appropriate to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. The continuing optimisation of processes at Dungonnell and Killylane WTWs combined with the ongoing zonal studies leading to the Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Larne council area over the next few years.

Limavady Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Limavady Council MZC	99.82%	99.91%

2010 water supply zones wholly or partially within the council area:

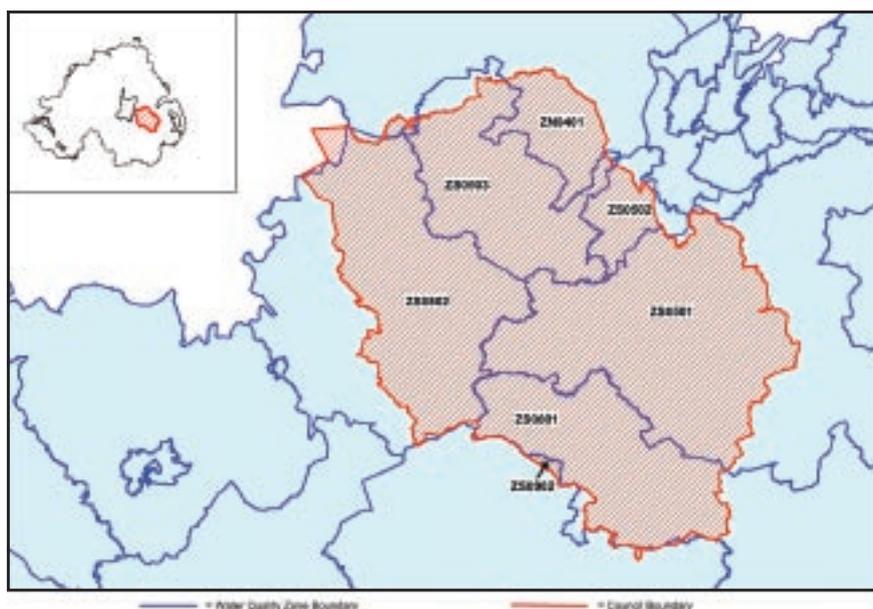
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0603	Carmoney Eglinton
ZN0501	Moyola Magherafelt	ZN0604	Caugh Hill Dungiven
ZN0601	Ballinrees Limavady	ZN0701	Derg Strabane

2010 water quality Capital Works Programmes affecting the council area:

Ballinrees to Limavady/Londonderry Supply Augmentation
 Brishey Springs Decommissioning, Dungiven
 Limavady District Area Plan: Stage 2, Roe Mill Road
 Limavady Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Service Reservoir Enhanced Security

The quality of water supplied to Limavady council area has improved slightly due to the effects of the Watermains Rehabilitation Framework. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Limavady council area over the next few years.

Lisburn City Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Lisburn City Council MZC	99.86%	99.85%

2010 water supply zones wholly or partially within the council area:

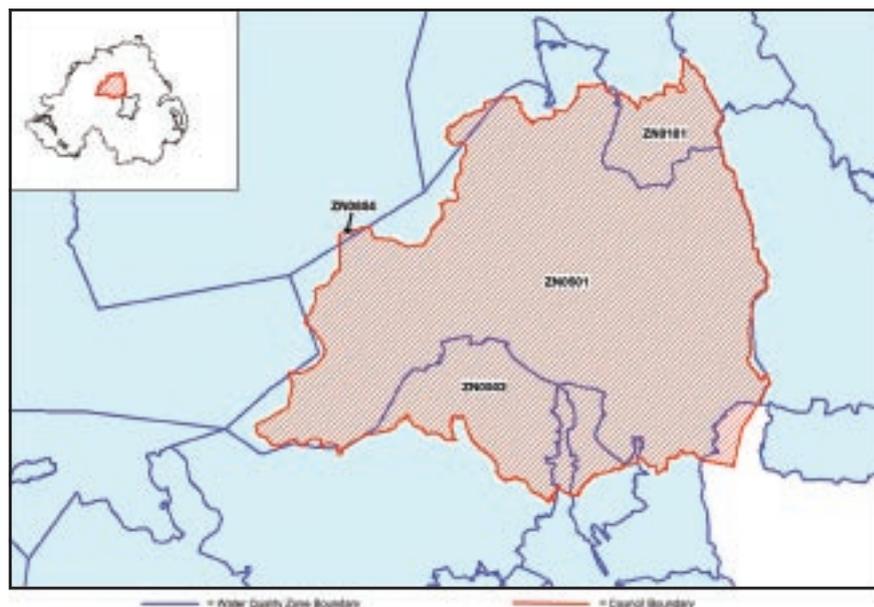
Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0503	Forked Bridge Stoneyford
ZS0108	Belfast Purdysburn	ZS0601	Drumaroad Ballynahinch
ZS0501	Drumaroad Lisburn	ZS0802	Castor Bay Lurgan
ZS0502	Forked Bridge Dunmurry	ZS0902	Fofanny Dromore

2010 water quality Capital Works Programmes affecting the council area:

Thornhill Road Dunmurry Watermain Extension
 Lisburn to R.O.I. Border Trunk Road Improvements
 Lisburn Town Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Security improvements at Keypoint Installations
 Service Reservoir Enhanced Security
 Strategic Link - Castor Bay to Belfast
 West Belfast / North Lisburn

The quality of water supplied to Lisburn council area has been consistent between 2009 and 2010. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Lisburn council area over the next few years.

Magherafelt District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Magherafelt Council MZC	99.64%	99.80%

2010 water supply zones wholly or partially within the council area:

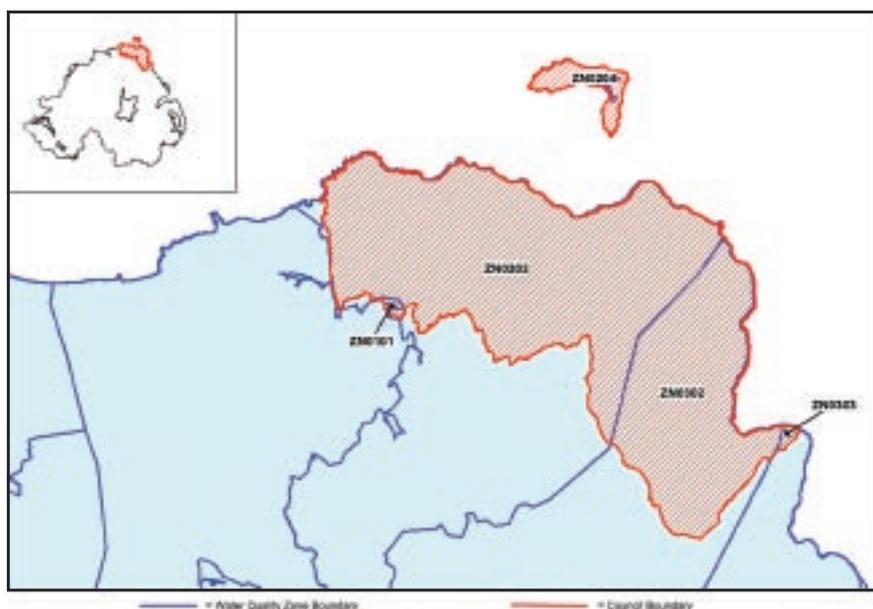
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0502	Lough Fea Cookstown
ZN0202	Altnahinch Bushmills	ZN0604	Caugh Hill Dungiven
ZN0304	Glarryford Ahoghill	ZN0701	Derg Strabane
ZN0501	Moyola Magherafelt		

2010 water quality Capital Works Programmes affecting the council area:

Bank Square, Maghera
 Magherafelt Road, Tobermore, Watermain Extension
 Metering and Treatment of WTW effluents
 Moyola Zone Watermain Improvements
 Service Reservoir Enhanced Security

The compliance for Magherafelt council area has been improved by the removal of Glarryford WTW from supply. This combined with the improved quality of water supplied from Moyola WTW along with the ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Magherafelt council area over the next few years.

Moyle District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Moyle Council MZC	99.82%	99.62%

2010 water supply zones wholly or partially within the council area:

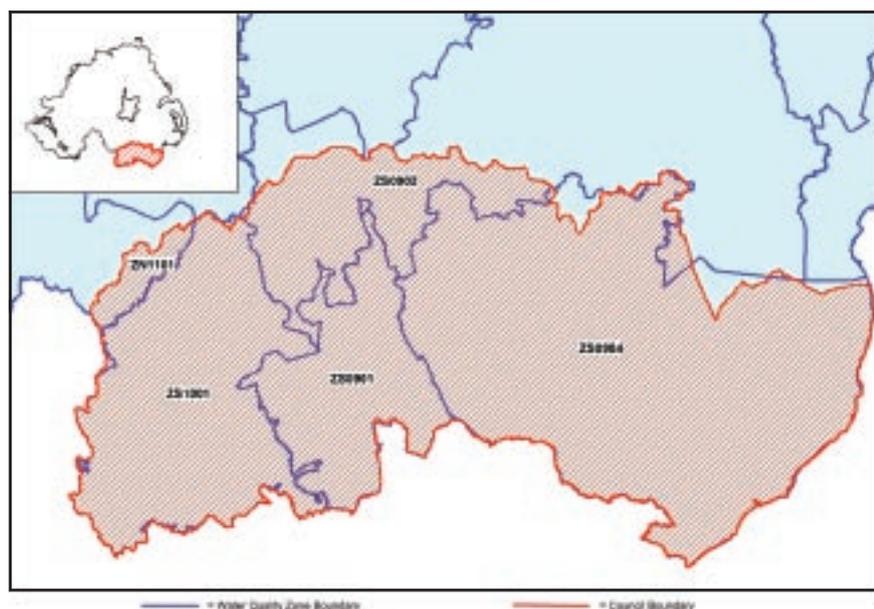
Zone Code	Zone Name	Zone Code	Zone Name
ZN0101	Ballinrees Coleraine	ZN0302	Dungonnell Glarryford
ZN0202	Altnahinch Bushmills	ZN0303	Dunore Point Ballymena
ZN0204	Rathlin Island		

2010 water quality Capital Works Programmes affecting the council area:

Ballycastle Zone Watermain Improvements
 Ballynahone Zone Watermain Improvements
 Loughguile Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Monaclough Service Reservoir Capacity Extension
 Portballintrae Zone Watermain Improvements
 Rasharkin Zone Watermain Improvements
 Service Reservoir Enhanced Security

The quality of water supplied to Moyle council area has decreased slightly between 2009 and 2010. This is largely due to 2 Total Trihalomethane exceedances combined with a number of iron exceedances in Altnahinch Bushmills Zone. Many of the exceedances attributed to water supply zones in the Moyle council area are actually outside the council boundaries, however it is not appropriate to take this into account when calculating the MZC as the MZC calculation is for the whole water supply zone and not just the portion of the water supply zone supplying a particular council area. The continuing optimisation of processes at Dungonnell WTW combined with the ongoing targeted Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Moyle council area over the next few years.

Newry & Mourne District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Newry & Mourne Council MZC	99.51%	99.84%

2010 water supply zones wholly or partially within the council area:

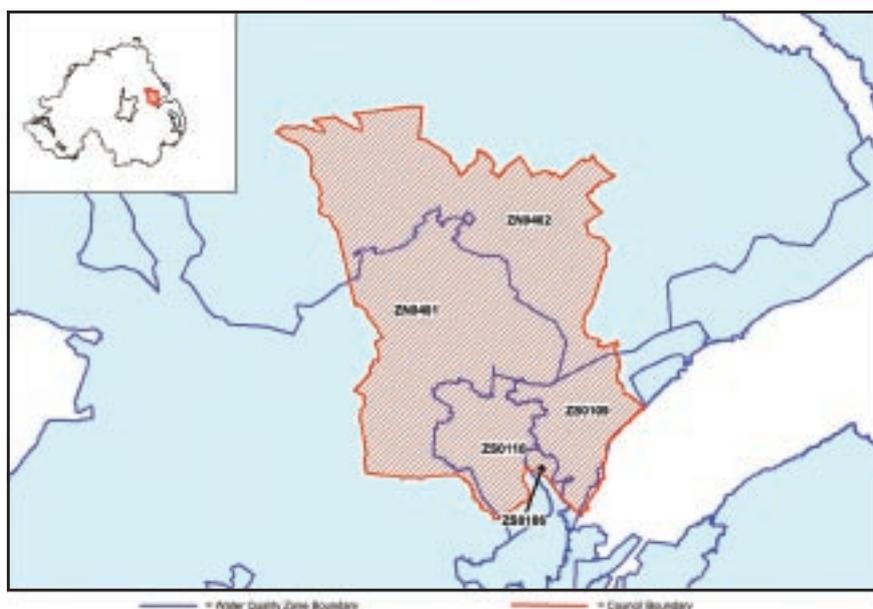
Zone Code	Zone Name	Zone Code	Zone Name
ZN1101	Clay Lake Keady	ZS0902	Fofanny Dromore
ZN1102	Seagahan Armagh	ZS0904	Fofanny Mourne
ZS0805	Ballydougan Gilford	ZS1001	Carran Hill Crossmaglen
ZS0901	Camlough Newry West		

2010 water quality Capital Works Programmes affecting the council area:

Ballintemple Zone Watermain Improvements	Jerrettspass Chlorination
Ballydougan to Newry Main Link Reinforcement	Lisburn to R.O.I. Border Trunk Road Improvements
Camlough/Ballintemple	Lough Ross Zone Watermain Improvements
Carran Hill Supply Zone Management Plan	Metering and Treatment of WTW effluents
Crieve Service Reservoir	Mourne Coast Zone Watermain Improvements
Crossan Road, Mayobridge. Watermain Extension	Newry Zone Watermain Improvements
Fofanny Banbridge Zone Watermain Improvements Phase 2	Security improvements at Keypoint Installations
Fofanny WTW EC Compliance	Service Reservoir Enhanced Security

The upgrade of Seagahan WTW along with the ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Newry and Mourne council area over the next few years.

Newtownabbey Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Newtownabbey Council MZC	99.66%	99.86%

2010 water supply zones wholly or partially within the council area:

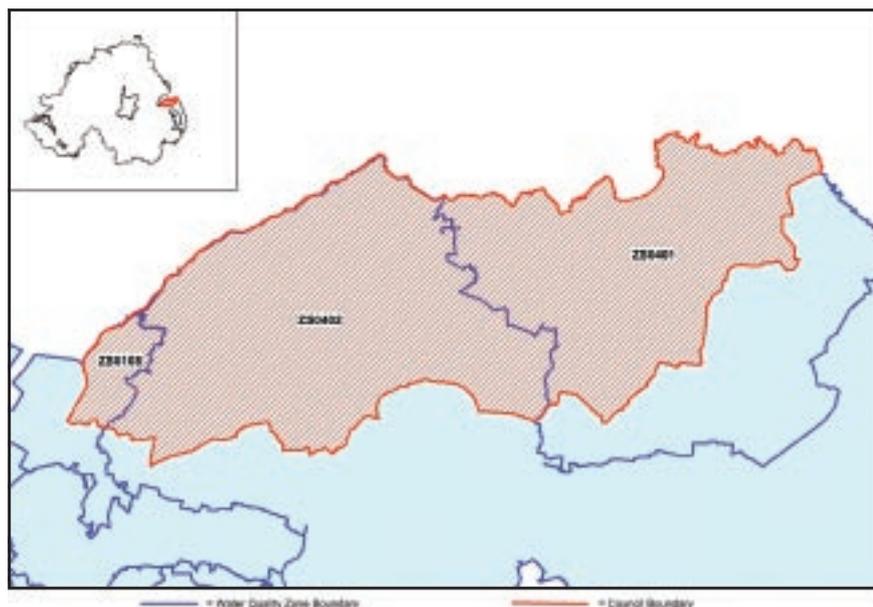
Zone Code	Zone Name	Zone Code	Zone Name
ZN0401	Dunore Point Antrim	ZS0109	Dorisland Whiteabbey
ZN0402	Killylane Ballynure	ZS0110	Dunore Point Glengormley
ZS0106	Belfast North	ZS0201	Dorisland Carrick

2010 water quality Capital Works Programmes affecting the council area:

Ballywonard Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 Newtownabbey Zone Watermain Improvements Phase 1
 Newtownabbey Zone Watermain Improvements Phase 2
 Service Reservoir Enhanced Security
 Whiteabbey Lower, Mains Replacement. Newtownabbey

The increase in water quality is largely due to a combination of treatment optimisation at Killylane WTW combined with the targeted Watermains Rehabilitation Framework. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the Newtownabbey council area over the next few years.

North Down Borough Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
North Down Council MZC	99.90%	99.85%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZS0108	Belfast Purdysburn	ZS0402	Drumaroad Comber
ZS0401	Drumaroad Bangor		

2010 water quality Capital Works Programmes affecting the council area:

Metering and Treatment of WTW effluents
 Newtownards Town Zone Watermain Improvements
 North Down Strategic Trunk Watermains
 North Down, Bangor Zone Watermain Improvements
 Portaferry, Ballyquinton area mains replacement
 Service Reservoir Enhanced Security

The quality of water supplied to the North Down council area has reduced slightly from 2009 to 2010. This is largely due to a number of iron exceedances for samples taken in the distribution system at the customer tap. The ongoing Watermains Rehabilitation Framework will continue to maintain and improve the quality of water in the North Down council area over the next few years.

Omagh District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Omagh Council MZC	99.66%	99.82%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0501	Moyola Magherafelt	ZN0704	Lough Bradan Drumquin
ZN0502	Lough Fea Cookstown	ZN0705	Lough Macrory Beragh
ZN0701	Derg Strabane	ZN0706	Lough Macrory Killyclogher
ZN0702	Glenhordial Omagh	ZN0802	Killyhevlin Enniskillen
ZN0703	Lenamore Greencastle	ZN0902	Altmore Donaghmore

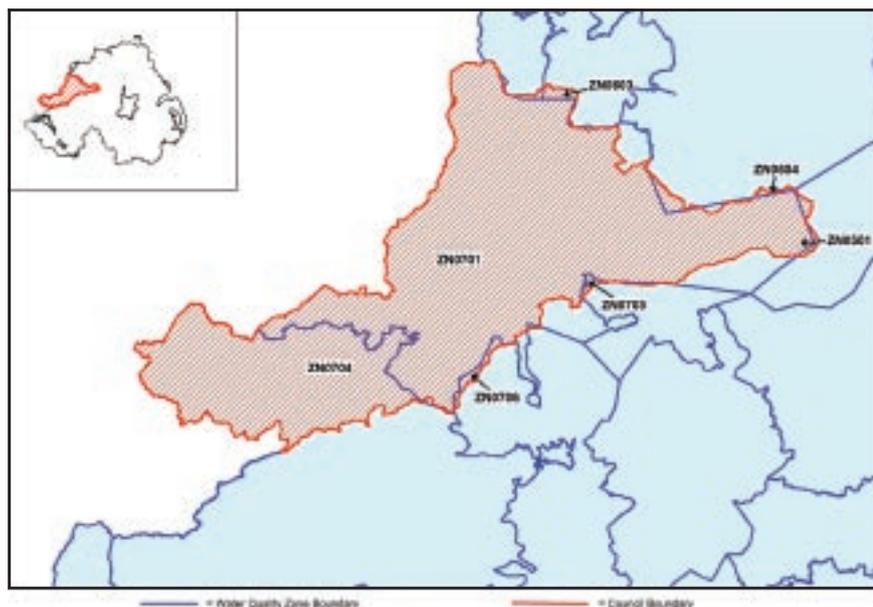
2010 water quality Capital Works Programmes affecting the council area:

Derg - Omagh Area Transfer Pumps
 Georgian Villas, Omagh Replacement Watermain
 Glenhordial WTW replacement of Camowen pumping main
 Killyhevlin to Lough Bradan Link Watermain
 Lough Bradan WTWs Upgrade
 Metering and Treatment of WTW effluents

North Tyrone Zone Watermain Improvements
 Rodgers Road, Tattykeel Watermain Extension
 Service Reservoir Enhanced Security
 Strule Intake For Derg WTW
 Tullywhisker to Newtownstewart Link Main

The ongoing Watermains Rehabilitation Framework has improved the quality of water supplied to Omagh council area. The ongoing Watermains Rehabilitation Framework along with the upgrading of Lough Bradan WTW will continue to maintain and improve the quality of water in the Omagh council area over the next few years.

Strabane District Council



Mean Zonal Compliance (MZC)

	2009	2010
Overall Northern Ireland MZC	99.74%	99.81%
Strabane Council MZC	99.68%	99.89%

2010 water supply zones wholly or partially within the council area:

Zone Code	Zone Name	Zone Code	Zone Name
ZN0501	Moyola Magherafelt	ZN0703	Lenamore Greencastle
ZN0603	Carmony Eglinton	ZN0704	Lough Bradan Drumquin
ZN0604	Caugh Hill Dungiven	ZN0706	Lough Macrory Killyclogher
ZN0701	Derg Strabane		

2010 water quality Capital Works Programmes affecting the council area:

Derg West Zone Watermain Improvements
 Metering and Treatment of WTW effluents
 North Tyrone Zone Watermain Improvements
 Service Reservoir Enhanced Security
 Strule Intake For Derg WTW

The ongoing Watermains Rehabilitation Framework has improved the quality of water supplied to the Strabane council area. The ongoing Watermains Rehabilitation Framework along with the upgrading of Lough Bradan WTW and treatment optimisation at the Derg WTW will continue to maintain and improve the quality of water in the Strabane council area over the next few years.

Appendix 5

Water Quality Incidents / Non-incidents

During 2010, there were 36 notifiable events of which 13 were categorised as non-incidents and 23 categorised as incidents by DWI:

Incidents 2010

Date	Area and Estimate of Population / Properties Potentially Affected	Nature and Cause of Event	Council Area
5 – 12 Jan 2010	Lough Bradan WTW (19,500 population)	This area of West Tyrone was severely affected as a result of the protracted freezing conditions at the end of December 2009. This had a direct impact on the WTW due to the increase in demand from within the Omagh Distribution system. This increased demand on the water supply led to an exceedance of the PCV level for aluminium in the final water and related supply area.	Omagh and Fermanagh
12 Jan – 2 Feb 2010	Warren Gardens, Lisburn	Water Quality exceedances following a burst water main and subsequent operational work involved in the repair. This led to disturbances both of mains deposits and stagnant water at dead ends.	Lisburn
11 – 25 Jan 2010	Belfast, Ballyward, Rostrevor	Odour exceedances caused by operational work on the mains distribution system carried out in response to the freeze / thaw conditions to maintain customer supplies.	Belfast, Lisburn, Castlereagh, Banbridge, Newry & Mourne
26 Jan – 16 Jun 2010	Derryork Road, Dungiven (1 property)	pH exceedance at 1 property was linked to cement-lined supply pipework.	Limavady
Jun 2010	ZN0802 Killyhevlin Enniskillen (63,000 population)	Taste and odour exceedances due to deterioration in raw water quality from Lough Erne following a period of long dry weather and low lake level. NI Water installed additional treatment at Killyhevlin WTW for odour removal during this period.	Fermanagh
23 Jul 2010	Fracture of water main on Springfield Road (4,000 properties)	Contractor fractured a water main on the Springfield Road which led to loss of supply to a number of customers fed from this trunk main. A large number of customers contacted NI Water as a consequence of the loss of supply and the event attracted subsequent media interest. Water quality samples taken following the repair of the trunk main and restoration of supply were all satisfactory.	Belfast
6 – 9 Aug 2010	Cappagh SR (700 population)	Elevated levels of iron, manganese and aluminium were detected in the final water from Cappagh Service Reservoir. Following an extensive investigation no obvious cause for the exceedance was determined and all subsequent samples taken were satisfactory.	Dungannon & South Tyrone
20 – 27 Aug 2010	Rathlin BH WTW (106 population)	Turbidity exceedances in the final water following disturbance of sediment due to low water level in the contact water tank at the borehole. NI Water has cleaned the contact tank following the exceedances to remove sediment. The bacteriological quality of the water was not affected by the turbidity exceedances.	Moyle
18 Aug – 2 Sep 2010	Tullybroom Road, Clogher (200 population)	Elevated levels of turbidity and iron were caused by external contamination to the NI Water distribution system due to illegal cross connection pipework. NI Water carried out a plumbing inspection and immediately isolated the supply to prevent further contamination. NI Water's Water Regulation Team ensured that all appropriate action was completed to dismantle the illegal connection and water quality samples were taken to ensure that the water supply was satisfactory following the remedial action taken..	Fermanagh
11 - 26 Aug 2010	ZN0802 Killyhevlin Enniskillen (63,000 population)	Taste and odour exceedances in the Killyhevlin WTWs supply area caused by long retention times in the distribution system compounded by warmer weather. These were isolated exceedances within the distribution system and did not reflect the quality of the water supply throughout the Killyhevlin supply area.	Dungannon & South Tyrone, Fermanagh
31 Aug – 1 Sep 2010	Forked Bridge WTW (76,000 population)	Disinfection plant problems at Forked Bridge WTW resulted in a lower than normal chlorine level in the final water into supply for a short period. Additional manual chlorination was carried out at the site and within the distribution system until the problem on site resolved. There were no water quality exceedances related to this Incident.	Belfast, Lisburn, Antrim

Date	Area and Estimate of Population / Properties Potentially Affected	Nature and Cause of Event	Council Area
7 Sep – 3 Nov 2010	ZN0902 Altmore Donaghmore Zone (6,500 population)	Pesticide (MCPA) exceedances due to increased level of MCPA in the raw water supply following period of heavy rain and run off from the catchment. The Altmore catchment has been particularly prone to elevated levels of MCPA in the past and consequently additional treatment was installed by NI Water [powdered activated carbon (PAC)] at the Works in order to reduce levels in the drinking water supplies. Altmore WTW was permanently removed from supply on 14 April 2011 and the area is now supplied from Castor Bay WTW.	Dungannon & South Tyrone
7 – 27 Sep 2010	Ballinrees WTW (103,000 population)	Pesticide exceedance (MCPA) due to a high level spike in the raw water source supplying the works following period of heavy rain and run off from the catchment. Treatment is in place at Ballinrees WTW to remove pesticides from the raw water. Work is ongoing to protect the impounding reservoir from pesticide pollution.	Coleraine, Limavady, Ballymoney
16 – 18 Sep 2010	V2306 Redhills SR (365 population)	Coliform bacteria exceedances at Redhills Service Reservoir and related supply area. No cause was determined following an extensive investigation. Redhills Service Reservoir was permanently removed from supply on 27 September 2010 and the area is now supplied via Mageraliskmisk SR.	Lisburn, Banbridge, Craigavon
5 Oct 2010	Five Mile Straight, Maghera (395 properties)	Customer complaints of discoloured water and subsequent local media interest. It is suspected the discolouration problem was caused during periods of high flow rates (high demand) for water following unauthorised use of hydrants and whilst mains repair work was carried out. The main is in poor condition and is scheduled for replacement under the Mains Rehabilitation programme.	Magherafelt
2 – 9 Dec 2010	Altmore WTW (8,900 population)	Treatment difficulties associated with extreme cold weather conditions led to aluminium exceedances in the final water and within the supply area. Altmore WTW was permanently removed from supply on 14 April 2011 and the area is now supplied from Castor Bay WTW.	Dungannon & South Tyrone
29 Dec 2010 – 3 Jan 2011	Caugh Hill WTW (74,000 population)	Treatment difficulties led to a turbidity exceedance in the final water during a period of increased demand on the water supply system caused by the Freeze / Thaw Incident.	Derry, Limavady, Strabane
27 Dec 2010 – 6 Jan 2011	All areas	Major interruption to Water Supply due to Freeze / Thaw Incident.	All areas
29 Dec 2010 – 4 Jan 2011	Dorisland WTW (124,000 population)	Treatment difficulties led to aluminium exceedances in the final water and related supply area during a period of increased demand on the water supply system caused by the Freeze / Thaw Incident.	Belfast, Newtownabbey Carrick
29 Dec 2010 – 3 Jan 2011	Lough Macrory WTW (29,000 population)	Treatment difficulties due to power supply interruptions and low raw water temperature led to an aluminium exceedance in the final water during a period of increased demand on the water supply system caused by the Freeze / Thaw Incident.	Cookstown, Dungannon & South Tyrone, Fermanagh, Omagh, Strabane
29 – 30 Dec 2010	Ballinrees WTW (105,000 population)	Treatment difficulties led to an aluminium exceedance in the final water during a period of increased demand on the water supply system caused by the Freeze / Thaw Incident.	Coleraine, Ballymoney, Limavady
5-10 Dec 2010	Dunore Point WTW (600,00 population)	Treatment difficulties led to an aluminium exceedance in the final water during a period of increased demand on the water supply system caused by the Freeze / Thaw Incident.	Belfast, Antrim, Ballymena, Castlereagh, Lisburn, Newtownabbey Larne, North Down, Ards
28 Dec 2010 – 5 Jan 2011	Cabragh/Gortlenaghan @ Cabragh Final Water Outlet (2,600 population)	Iron and manganese exceedances occurred in this final water after Cabragh Borewell was brought in as a temporary emergency supply due to sufficiency of supply issues caused by the Freeze / Thaw Incident. The use of this supply was kept to a minimum and only used intermittently during this period. Water quality was monitored daily while the borewell was in supply.	Dungannon & South Tyrone

Non-Incidents 2010

Date	Area and Estimate of Population / Properties Potentially Affected	Nature and Cause of Event	Council Area
11 Jan 2010	Lough Macrory WTW (29,000 population)	Short term treatment difficulties due to extreme cold temperatures led to a turbidity exceedance in the final water. The bacteriological quality of the water supply was satisfactory.	Omagh
29 Jan 2010	Altmore WTWs (14,000 population)	pH exceedance in the final water sample. Following extensive investigations the cause of the exceedance was not determined and all online monitoring showed the pH of the final water leaving the works to be satisfactory. Altmore WTW was permanently removed from supply on 14 April 2011 and the area is now supplied from Castor Bay WTW.	Dungannon
31 May 2010 – 1 Jun 2010	Dunore Point WTW (600,00 population)	Short term treatment difficulties led to a turbidity, iron and aluminium exceedance in the final water.	Belfast, Antrim, Ballymena, Castlereagh, Lisburn, Newtownabbey Larne, North Down, Ards
26 Jun – 3 Jul 2010	Salloon Road, Ballinamallard (1 property)	Coliform bacteria exceedances caused by internal plumbing problems led to a Boil Water Notice being issued - notice in place for 5 days.	Fermanagh
11 Aug 2010	Dungonnell WTW (68,000 population)	Turbidity exceedance due to unrepresentative sampling of the final water at Dungonnell WTW. The exceedance was shown to be unrepresentative of the water into supply from the WTW. Air trapped in the sample line to the final water sample tap caused scouring of the sample line and disturbance of deposits.	Ballymena
3 September 2010 – 14 March 2011	Camrrough WTW (21,500 population)	Turbidity exceedances caused by unrepresentative sampling due to the location of the final water sample tap. The exceedances were shown to be unrepresentative of the water into supply from the WTW. A new final water sample point has been installed in a more suitable location.	Newry & Mourne
27 September & 8 October 2010	Caugh Hill WTW (49,500 population)	Turbidity exceedances due to unrepresentative sampling. Operational activities to facilitate cleaning of the clear water tanks at Caugh Hill WTW caused scouring of the sample line to the final water sample point. The exceedances were shown to be unrepresentative of the water into supply from the WTW.	Limavady, Derry
15 October & 21 October 2010	Carmony WTW (42,000 population)	Turbidity exceedances due to unrepresentative sampling. Operational activities to facilitate cleaning of the clear water tanks at Carmony WTW caused scouring of the sample line to the final water sample point. The exceedances were shown to be unrepresentative of the water into supply from the WTW.	Derry
14 October 2010	Carran Hill WTW (12,000)	Oil Spill in the raw water source. The spill was successfully contained by booms deployed by NIEA. NI Water staff monitored the raw water and final water quality at Carran Hill WTW and additional water quality samples were taken as a precaution. There were no final water quality exceedances associated with this Event.	Newry & Mourne
20 – 21 October 2010	Lough Bradan WTW (20,000 population)	Turbidity exceedance due to unrepresentative sampling. The exceedance was shown to be unrepresentative of the water into supply from the WTW.	Omagh, Fermanagh
22 – 23 October 2010	Lough Macrory WTW (11,500 population)	Turbidity exceedance due to unrepresentative sampling. The most likely cause for this exceedance was disturbance of the sample line at the time of sampling due to operational activity related to cleaning of the clear water tank. The opening of valves possibly caused some minor scouring within the final water sampling line. The exceedance was shown to be unrepresentative of the water into supply from the WTW.	Omagh
13 – 14 December 2010	Drumaroad WTW (385,641 population)	Coliform bacteria exceedance. An extensive investigation was carried out and no reason for the exceedance was determined. All the re-samples taken at the WTW and within the distribution system were satisfactory.	Ards, Belfast, Castlereagh, Down, Lisburn, North Down
28 – 29 December 2010	Carmony WTW (42,000 population)	Turbidity exceedance due to unrepresentative sampling. The most likely cause for this exceedance was an air lock within the sample line which caused disturbance and scouring of the sample line. The exceedance was shown to be unrepresentative of the water into supply from the WTW.	Derry

Appendix 6

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

NI Water has now developed a comprehensive web page on the NI Water web site (www.niwater.com/newwaterregs.asp) for customers where they can download the regulations, guidance notes, information leaflets and notification forms. Both the leaflets and web pages advise customers on how the Regulations apply and what the Regulations will mean to them, the benefits of protecting drinking water supplies, their obligations under the Regulations, and the potential consequences of non adherence.

Before work begins on certain plumbing installations or alterations customers must first notify NI Water in writing. Ten days advance notice is required before work can commence, pending approval. Information on what installations require notice is set out on the NI Water web page. NI Water also promotes and advocates the benefits of using approved contractors who are members of the Plumbing Industry Licensing Scheme (PILS) as administered by the trade associated known as the Scottish and Northern Ireland Plumbing Employers Federations (SNIPEF).

NI Water has a dedicated team of 7 front line water regulation inspectors across the province headed by a Field Manager and Senior Engineer. NI Water has allocated each non domestic customer a fluid category rating derived from Standard Industrial Classification (SIC) codes, Water Regulation Advisory Scheme (WRAS) guidance, and the Water Regulation guidance on fluid categories. A proactive inspection programme will be carried out each year with inspection intervals based on national 'Best Practice' documentation issued to the water authorities by WRAS as accepted by the Department for Environment, Food and Rural Affairs (DEFRA).

The Water 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 is currently liaising with NI Water solicitors regarding the implementation of an enforcement framework and prosecution mechanism should the need arise as a result of non compliance with the regulations or in the event of a contamination incident.

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

NI Water Customer Base

Description	Number
*Total number of connected properties	806444
*Total number of new connections	5032

* Information source NI Water Annual Information Return 2011 (AIR11)

Enforcement Data

Staff and Training

Number of staff involved in enforcement.

Description	Number
Spending more than 75% of time	7
Spending between 50% and 75% of time	0
Spending between 25% and 50% of time	1

All Water Regulation team members including line management have attended one or more of the courses detailed below. As a minimum all Regulation enforcement staff are expected to have passed or be in the process of studying to achieve a pass in the City and Guilds (C&G) in Water Regulations for enforcement staff. Any change of staff will be conditional on new team members undertaking and passing the Water Regulation C&G qualification:

- C&G in Water Regulations for Enforcement staff
- C&G L8 legionella course

Promotion of the Regulations

NI Water undertook a mailing campaign in June 2010 informing over 400 organisations and stakeholder groups of the introduction of The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009. These groups included the 11 NI Departments, local government, regulators, educational establishments, farming organisations, professional construction organisations, housing organisations, consumer groups, health trusts, business sector organisations, plumbing organisations and suppliers. NI Water has also used plumbing trade shows and conferences as platform to speak on the topic of Water Regulations and the benefits of Approved Contractors.

A Water Regulation leaflet and web page has been established for both Domestic and Non Domestic customers to reference as well as a Water Regulation "Mailbox" to facilitate customer enquiries. The site contains Regulation specific background information, leaflets in PDF format and customer notification forms.

NI Water also has representation on the WRAS Board, Technical Committee and Technical Support Group national forums which meet at least 3 times per year.

NI Water seeks advice from WRAS on the interpretation of the Regulations where unusual installations are discovered, or where a dispute with an installer or supplier occurs regarding the interpretation of a particular Regulation. Participation on this national stage ensures that NI Water, like other water suppliers, is applying the Regulations consistently across our customer base. It also provides a very useful networking forum where NI Water and other water suppliers can discuss and share experiences relating to difficult and complex scenarios.

Notifications

Description	Number
*Total No. of water connection applications received	7016
Total number of written customer notifications other than those associated with new connections applications.	4
*Total No. of new connections completed	5032

* Information source NI Water Annual Information Return 2011 (AIR11)

In most cases customers must notify NI Water in advance of installing or making changes to the water systems within their premises. Owners, occupiers and plumbing installers must get approval from NI Water by giving advance notice in writing of their intentions. Advance notification forms can be obtained from the NI Water web site, 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 Regulations and are detailed under Regulation 5. NI Water will not unreasonably withhold consent for your work but it may be granted subject to conditions, which must be followed. If NI Water do not respond within 10 working days, consent is deemed to have been given. This does not alter the obligation upon the owner, occupier or installer to ensure that the Regulations are fully complied with.

NI Water like many other water suppliers is trying to raise customer awareness of the Regulations and the requirement to provide advance notice prior to the commencement of plumbing works. This will take time to achieve and this requirement will be detailed in all customer publications and communications.

Approved Contractors Scheme

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

NI Water recommends customers use approved plumbing contractors who are members of the Scottish and Northern Ireland Plumbing Employers Federation (SNIPEF) Plumbing Industry Licensing Scheme. To find a SNIPEF Licensed Plumber in your area simply enter your postcode or town on their web site www.needaplumber.org or contact SNIPEF on 0845 224 0391

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

Description	2009	2010
No of members in SNIPEF	714	765
No of members in Northern Ireland	78	87
No of members in Northern Ireland who are also members of the Approved Contractors Scheme	43	71
No of members in Northern Ireland awaiting approval as approved contractors or have been previously been members	35	16

Inspections (Other than those arising from Notification)

Description	Number
Total number of Domestic and Non Domestic Inspections	590
Contraventions	1648
Contraventions rectified	345
Outstanding contraventions	1303

Contraventions found on all property types can vary but typical contraventions and observations are:

- storage cisterns having the wrong type of Air Gap fitted;
- defective overflows running to waste in non visual areas;
- dead legs on pipe-work;
- insufficient numbers of servicing and drain valves on plumbing systems; and
- pipes not insulated and labelled.

The examples detailed can contribute to the waste of water through burst pipes during freezing periods and also the unnecessary draining down of entire plumbing systems to carry out localised minor plumbing works. Incorrect air gaps or faulty ball valves on cisterns can cause water to back flow or back siphon. This will contaminate the public water supplies if the water in the cistern has been stored for a prolonged period of time

As is the case with other water companies NI Water has a significant number of outstanding contraventions recorded. As the inspection programme is a risk based programme customers will be given varying time scales to 'make good' contraventions depending on the level of risk associated with the contravention. This measured approach allows customers time to make the necessary plumbing alternations and possibly time these with their annual maintenance of holiday periods.

NI Water stress that compliance with the Water Regulations will protect the individual and systems from the effects of incorrectly fitted pipework. This is a list of the benefits:

- Protection of the public, families, neighbours and local community from illness by preventing contamination of the water supply
- Protection from criminal prosecution and potentially a substantive fine
- Protection of employees – by protecting the drinking water they may consume and therefore their safety in the workplace
- Protection of businesses from criminal prosecution, adverse publicity and potentially substantive fines

Customers also need to ensure that the whole plumbing system is correctly installed and maintained to comply with the Water Regulations. They must take measures to prevent the contamination of drinking water and give advance notification of any plumbing installation work planned prior to work commencing.

Enforcement Actions

No enforcement notices were served on customers. This is attributed to the fact NI Water is proactively engaging and working with customers and designers at the planning stage. NI Water is also working with customers advising them on how reasonable adjustments can mitigate future risks and non compliance with the Regulations.

Disputes

No formal disputes were referred to arbitration.

General Information

Assessed number of high risk connections (i.e. Class 4 and 5 Fluid Category)

Estimate = 30,000-40,000 premises. This figure is quite high for the size and population of Northern Ireland but can be attributed in part to a relatively large rural economy.

The risk a property can potentially generate to the public water supply is listed in a range of Fluid Categories (FC's) ranging between 1 and 5. Properties are allocated FC's depending on the nature of their business or economic activity and these are standardised across the UK water industry. Ideally properties in the high risk FC4 AND FC5 categories should be inspected once every 5 years whereas those in FC1-3 should be inspected once every 10 years.

- FC1 – Wholesome water supplied by a water undertaker
- FC2 – Water whose aesthetic quality is impaired due to temperature, taste and odour
- FC3 – Fluid which represents a slight health hazard because of concentration of substances of low toxicity
- FC4 – Fluid which represents a significant health hazard because of the concentrations of toxic substances (chemicals, carcinogenic substances, insecticides, herbicides, environmental organisms)
- FC 5 – Fluid representing a serious health hazard because of the concentration of pathogenic organisms, radioactive or very toxic substances (faecal material, human waste, butchery or animal waste, pathogens from any other source).

A number of suspected contamination events were investigated during the year in the following:

- Co Tyrone x 2
- Co Down x 1
- Co. Armagh x 1

Whole Site Protection

The company is in ongoing discussions with some large non domestic customers regarding whole site protection arrangements. This is especially important where there is the potential for the customer to utilise alternative private water supplies. This requires customers to ensure that water supplied to their sites by NI Water will not return back to the main as a result of some activity on their site. Where a customer is boosting

pressure or is considering introducing a bore well supply then they must ensure they provide a suitable means to prevent back flow or back siphonage of water to the public supply. Whole site protection can be achieved by installing devices such as double check valves, reduced pressure zone valves and air gaps through the use of cisterns.

Whenever practicable, systems should be protected against backflow without the necessity to rely on mechanical backflow protection devices (valves), this can often be achieved by point of use protection such as a 'tap gap' above the spill over level of an appliance or sink. Whole site or zone protection devices should be provided on the supply or distributing pipe according to the level of risk as judged by NI Water and commensurate with the Fluid Category guidance contained within the Regulations and the Water Regulation Guide.

Reporting Year Recap

Since the formation of NI Water and the introduction of the new Water Regulations in August 2009 NI Water has:

- Formed and successfully trained a Water Regulation inspection team of 7 dedicated staff to City and Guilds standard for Water Regulation inspectors;
- Procured and implemented the use of a dedicated software system (Connect 2) to be used for driving a proactive (and reactive) risk based inspection programme, recording inspection results and required remedial actions;
- Devised the processes and literature necessary for the Water Regulation inspection, education and enforcement obligation as per obligations contained in the Water and Sewerage Services (NI) Order 2006;
- Developed a comprehensive Water Regulation strategy commensurate with 'Best Practice' across the UK - Copies of the 'Best Practice' manual can be supplied upon request by contacting **WaterLine 0845 7440088**;

- Commenced exploratory discussions with NI Water legal team regarding the development and implementation of an enforcement framework combining a prosecution mechanism;
- Promoted general awareness of the Regulations to customers through appropriate public and professional interfaces; and
- Introduced an Approved Plumbing Contractor scheme to Northern Ireland operated by the Scottish and Northern Ireland Plumbing Employers Federations (SNIPEF).

Looking Forward

In taking forward our enforcement role NI Water will:

- Continue to participate on the various WRAS forums;
 - Assist SNIPEF in the governance of the Approved Contractor's scheme;
 - Engage with District Councils and other relevant stakeholders to promote awareness of The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009;
- Further promote an increased customers awareness of how to contact and engage Approved Plumbing Contractors and the benefits of using them to raise plumbing standards in Northern Ireland safeguarding public water supplies; and
 - Ensure Water Regulation issues form part of any company publications and winter education campaigns.

Appendix 7

Glossary of Technical Terms

Aesthetic	Associated with the senses of taste, smell and sight.
Authorised Departure (AD)	A time limited authorised departure from the regulatory limit for certain parameters, provided that there is a planned programme of work at the water treatment works to improve the water quality and that there are no adverse health implications.
Authorised Supply Point	A sampling point within the distribution system authorised by the DWI for certain parameters, because the results of the analysis of such samples are unlikely to differ in any material respect from the results of the analysis of samples taken from customers' taps.
Catchment	The area of land that drains into a watercourse.
Chloramination	An alternative form of disinfectant, based on chlorine and ammonia, which provides a longer lasting residual disinfectant in the distribution system compared to free chlorine.
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.
Cryptosporidiosis	The illness produced by infection with <i>Cryptosporidium</i> .
Cryptosporidium	A protozoan parasite.
Determination	A single analytical result for a specific parameter.
Distribution systems	NI Water's network of mains, pipes, pumping stations and service reservoirs through which treated water is conveyed to customers.
Drinking Water Directive	European Council Directive (98/83/EC) relating to the quality of water intended for human consumption.
DWI	Northern Ireland Drinking Water Inspectorate - has an independent responsibility to audit drinking water quality compliance against the standards set in the Regulations.
DWSP	'Drinking Water Safety Plan' - based on a comprehensive risk assessment and risk management approach to all the steps in a water supply chain
Event	A situation affecting or threatening to affect drinking water quality.
Exceedance	Synonym for contravention (see above).
Faecal coliforms	A sub-group of coliforms, almost exclusively faecal in origin.
Filtration	The separation of suspended particulate matter from a fluid.
GPS	Global Positioning system - a satellite based location system which will give an accurate record of position.
Groundwater	Water from aquifers or other underground sources.

Hydrogen ion	A measure of the acidity or basicity related to the concentration of the hydrogen ion (also referred to as pH).
Incident	An event where there has been a demonstrable deterioration in the quality of drinking water.
Investment programme	Investment in improvement works to water treatment works and distribution systems.
LIMS	Laboratory Information Management System - the system used by NI Water to record and audit the results of the hundreds of thousands of samples collected each year.
Mains rehabilitation	Restoration or replacement of water mains pipework to a proper condition.
MCPA	MCPA is a selective hormone-type herbicide, which is absorbed by the leaves and to some degree the roots.
Mean Zonal Compliance	The assessment of water quality at a parameter level based on water supply zones.
Microbiological	Associated with the study of microbes.
m³/d	Cubic metres per day.
mg/l	Milligrammes per litre.
µg/l	Microgrammes per litre.
ml	Millilitre.
Ml/d	Megalitres per day (one Ml/d is equivalent to 1,000 m ³ /d or 220,000 gallon/d).
Oocyst	The resistant form in which Cryptosporidium occurs in the environment, and which is capable of causing infection.
Orthophosphoric acid	A chemical dosed in low concentrations at water treatment works to minimise the uptake of lead from old pipework into customers' water.
PAHs	A group of organic compounds known as polycyclic aromatic hydrocarbons, comprising, for the purposes of the Regulations, four substances: benzo(b)fluoranthene, benzo(k) fluoranthene benzo(ghi)perylene and indeno (1,2,3-cd) pyrene,
Parameter	A parameter is any substance, organism or property listed in the regulations.
Pathogen	An organism which causes disease.
PCV	See 'Prescribed concentration or value'.
Pesticides	Any fungicide, herbicide or insecticide or related product (excluding medicines) used for the control of pests or diseases.
Plumbosolvency	The tendency for lead to dissolve in water.
Prescribed Concentration or Value	The numerical value assigned to water quality standards (PCV), defining the maximum or minimum legal concentration or value of a parameter. In certain circumstances, the DWI may authorise a time limited departure from the regulatory value. See 'Authorised Departure'.
Protozoan parasites	A single celled organism that can only survive by infecting a host.
Public register	The information made available by NI Water to the public as required by regulation 34.
Regulations	The Water Supply (Water Quality) Regulations (Northern Ireland) 2010

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





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