

Drinking Water Quality in Northern Ireland, 2019

A Report by the Drinking Water Inspectorate for Northern Ireland



Sustainability at the heart of a living, working, active landscape valued by everyone.



Northern Ireland Environment Agency

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**Published by Northern Ireland Environment Agency
September 2020**

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Foreword

I am pleased to present the 24th annual report on the quality of drinking water in Northern Ireland. The Drinking Water Inspectorate's (DWI's) primary role is to protect public health through effective drinking water regulation.

In Northern Ireland over 99% of the population receive their drinking water from Northern Ireland Water Limited (NI Water). The remainder is served by private water supplies. This report provides an independent assessment of the quality of both public and private water supplies for the calendar year 2019.

Drinking water quality compliance is assessed against the European Directive on Drinking Water Quality which is enacted through national legislation. Overall public drinking water quality for 2019 remained high with 99.90% compliance, the same as 2018.

The report considers regulatory contraventions and drinking water quality events reported to us, including NI Water's management and investigation of these to ensure the continued provision of safe, clean drinking water. Information on consumer contacts made to NI Water is also contained in the report.

Whilst there were no major water quality events in 2019, the total number was the same as 2018. Two of the four *Cryptosporidium* events were categorised as Serious as oocysts were detected in distribution. *Cryptosporidium* should not be present in drinking water and when it is found, NI Water must initiate a full investigation and implement enhanced monitoring. Where *Cryptosporidium* was detected in drinking water, NI Water sought advice from the Public Health Agency, however the detections were not of sufficient concern to put restrictions in place.

The highest percentage of consumer concerns in 2019 again related to appearance of the water, particularly discolouration, which accounted for over 40% of total complaints. Taste and odour was the second highest category, with chlorinous taste accounting for almost 47% of these. It is important for consumers to have confidence in the public water supply and the regulatory standard requires it to be 'acceptable to the consumer' with 'no abnormal change'. NI Water must investigate these complaints in the same way as all other consumer contacts.

No new enforcement notices were issued to NI Water in 2019, however two enforcements remain in place requiring capital works to mitigate risks at water treatment works.

Private water supplies are used for a range of purposes, from domestic dwellings to large commercial and public premises such as food manufacturers and hospitals. These supplies are monitored to ensure public health protection, and overall compliance for 2019 was 99.29%, a slight increase from 99.11% in 2018, and slightly lower than for public water supplies. The number of supplies continues to increase, with 14 new supplies being registered in 2019.

As we move through the EU transition period, the work we undertake to actively contribute to safe, clean drinking water for the whole population remains our priority. I continue to embrace the challenges and seek the opportunities to ensure this is achieved. I trust you will find this report interesting, and a useful reference on drinking water quality in Northern Ireland.



Catriona Davis
Chief Inspector of Drinking Water
September 2020

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Executive Summary

This is the 24th report in a series published by the Drinking Water Inspectorate, acting in our role as the drinking water quality regulator for both public and private water supplies.

The report provides an independent assessment of the quality of drinking water provided by NI Water. It also presents details of the quality of private water supplies for which we have a regulatory responsibility and undertake a monitoring programme.

Public Water Supplies

Comprehensive monitoring is undertaken by NI Water to assess public drinking water quality, and compliance is based on the results of key tests carried out throughout the water supply chain: from water treatment works; service reservoirs; and consumers' taps. Compliance is assessed against EU and national standards.

In 2019 the overall public drinking water compliance remained consistently high at 99.90%, the same as 2018. The 0.10% non-compliance relates to 100 tests that failed to meet the required standard. Compliance at consumers' taps also remained high at 99.84% in 2019, similar to the 2018 compliance figure of 99.83%. However, of the 43 regulatory parameters tested, fourteen did not achieve full compliance. Those parameters failing to meet full compliance were: iron, total trihalomethanes (THMs), *Clostridium perfringens*, aluminium, nickel, odour, taste, bromate, lead, coliform bacteria, manganese, turbidity, pesticides – individual (MCPA) and *E. coli*.

The parameter with the lowest reported compliance in 2019 was iron at 98.89%. This is a decrease in compliance from the 98.94% reported for 2018. The regulatory standard for iron is set for aesthetic reasons, as levels above this can give rise to discoloured water, which is unacceptable to the consumer. The disturbance of sediment in old cast iron mains is often the cause of iron contraventions, and NI Water has a substantial mains rehabilitation programme to replace these and improve water quality in the longer term.

Total trihalomethanes (THMs) reported 99.00% compliance in 2019, a decrease from 99.48% in 2018. Raw water quality, operational practices at water treatment works, and water travelling longer distances thus spending more time in the distribution system, are contributing factors to the presence of THMs.

Aluminium compliance dropped from 99.74% in 2018 to 99.40% in 2019. Operational issues at water treatment works can often give rise to aluminium contraventions, which may later result in contraventions at consumers' taps due to disturbance of deposits in the distribution system.

Contraventions of microbiological parameters may indicate a failure in the treatment process or a breach in the integrity of the water supply system. A similar overall microbiological compliance figure at consumers' taps was reported in 2019 with 99.86% compared to 99.87% in 2018. *E. coli* was detected in one consumer tap sample with coliform bacteria in 13 samples, and *Clostridium perfringens* detected on two occasions within NI Water's regulatory monitoring for 2019.

All contraventions must be investigated by NI Water, and may in some cases be traced to distribution systems in domestic dwellings or within public buildings. In 2019, nine reported contraventions related to internal plumbing systems in domestic properties, namely: four coliform bacteria; one *E. coli*; two nickel; one lead; and one odour. NI Water investigated the cause of the contraventions and issued letters to consumers advising them of the contraventions and offering appropriate advice to protect public health.

The total number of water quality events (Annex 2) that occurred in 2019 was the same as 2018, with 52 events being reported to us by NI Water. Of these, we categorised two as Serious, 30 as Significant, eight as Minor and 12 as Not Significant.

The two Serious events were related to *Cryptosporidium oocysts* being detected in the final waters at Drumaroad and Dunore Point WTWs and in the related distribution systems. Of the 30 significant events reported, 20 occurred at 12 water treatment works and were primarily related to difficulties with the treatment process or a lack of effective treatment relating to aluminium, *Clostridium perfringens*, *Cryptosporidium*, individual pesticides (MCPA), odour and taste, THMs, and turbidity. Where *Cryptosporidium* was detected in drinking water, NI Water sought advice from the Public Health Agency (PHA), however the detections were not of sufficient concern to put restrictions in place. As part of the event assessment process, NI Water is required to implement mitigations as identified in its risk assessments for the management of its drinking water supplies. This ongoing evaluation should reduce the likelihood of similar future events.

To enable us to evaluate consumer confidence in the quality of drinking water, we receive information relating to consumer concerns and complaints from NI Water. In 2019, 63.9% of contacts related to the visual appearance. The total number of consumer contacts reported in 2019 was 5661 compared to 7468 in 2018, a significant decrease of 1807 (24.2%). This number of consumer contacts is more representative of previous years, with 2018 having experienced a spike due to a major water quality event.

Where necessary, we take enforcement action (Annex 4), to secure remedial action within specified timeframes. In 2019, DWI's approach to enforcement was reviewed and Notices were issued under The Water Supply (Water Quality) Regulations (Northern Ireland) 2017 (the Regulations) to replace the enforcements in place under the Water and Sewerage Services (Northern Ireland) Order 2006 (the Order). Three enforcements were revoked under the Order and reissued under the Regulations. These related to three water treatment works: (i) Derg WTW, to deal with ongoing contraventions of the individual pesticide, MCPA; (ii) Rathlin WTW, to deal with contraventions of the disinfection by-product, THMs; and (iii) Ballinrees WTW to deal with contraventions of the individual pesticide, MCPA. The Regulation 31(4) Notice issued for Rathlin WTW was complied with and revoked in December 2019. Previous Undertakings issued under the Order in 2018, were completed in 2019 in relation to (i) Glenhordial WTW, to deal with ongoing contraventions of the individual pesticide, MCPA; and (ii) Drumaroad WTW, to deal with contraventions of the aluminium standard.

In 2019, we worked closely with NI Water to support them in their regulatory requirement to review their risk assessment methodology to ensure consistency of the standard (BS:EN 15975-2¹) across the UK and Europe. All 23 risk assessments for their water treatment works were reviewed and updated.

¹ BS:EN 15975-2: concerning security of drinking water supply, guidelines for risk and crisis management

Private Water Supplies

The same drinking water quality standards apply for private water supplies as for the public water supply. Although less than 1% of the population receives water from a private supply, many more are exposed to them through their use in both commercial activities and public buildings. A number of premises in Northern Ireland that have a private supply also have a mains supply. Private supplies are used as an alternative to, or in conjunction with the public supply for a range of activities including food processing, holiday accommodation, and public buildings, mainly for economic reasons.

During 2019 our private water supply sampling programme monitored 174 sites, with 14 new sites being registered during that period. Samples at private water supplies are collected by Environmental Health staff, acting on our behalf.

Overall compliance for 2019 is reported as 99.29%, an increase from 99.11% reported for 2018. The regulatory requirements were not met on 108 occasions for 19 parameters, namely: coliform bacteria, enterococci, *E. coli*, *Clostridium perfringens*, hydrogen ion (pH), manganese, iron, nickel, copper, sulphate, sodium, total trihalomethanes (THMs), turbidity, boron, lead, bromate, ammonium, colour and radon.

Full compliance was achieved for 63% (109 sites) of the private water supplies tested in 2019. Of the 65 sites which did not comply with the regulatory standards, 45% (29 sites) contravened microbiological standards; 48% (31 sites) chemical standards; and 8% (five sites) failed to comply with both microbiological and chemical standards.

The presence of micro-organisms in a private water supply is indicative of contamination of the water either at source or at some point within the distribution system. In particular, the detection of *E. coli* or enterococci bacteria specifically indicates faecal contamination of a water supply and can be a risk to public health. These faecal indicators were found to be present in eight supplies during 2019, five small shared domestic supplies with no treatment and three commercial/public supplies, two of which had disinfection treatment in place at the time of sampling.

Iron and manganese continue to be chemical parameters with a high incidence of non-compliance at private supplies. In 2019, 15 sites were found to have contraventions for either iron or manganese or both. There were no pesticide contraventions identified at private water supplies in 2019.

All contraventions at private water supply sites are investigated and action taken dependent on the severity of the failure. In 2019, of the 108 contraventions identified, 61 (51 microbiological; 10 chemical) were notified to the PHA for health advice; resulting in new restrictions on water usage at 16 sites.

In 2019 we launched our new risk assessment application for use by councils when completing risk assessment site visits on our behalf. This new standardised risk assessment process assists in the effective identification and assessment of all risks associated with a private water supply.

We continue to work with owners and users of private water supplies to assist them in meeting their regulatory duty to provide safe, clean wholesome water by providing technical advice and guidance.

Looking Forward

The challenge of ensuring the provision of safe, clean, sustainable drinking water supplies into 2020 and beyond continues.

Planning for NI Water's next price control process (PC21), commenced in 2019. We will continue to work alongside NI Water, the Utility Regulator, the Department for Infrastructure and the Consumer Council as well as our Northern Ireland Environment Agency (NIEA) colleagues in monitoring the PC15 investment programme and agreeing the priorities for PC21. We acknowledge the financial constraints within NI Water's funding model and support the need for sufficient funding to ensure public health protection. We must ensure that the provision of safe, clean drinking water remains a key priority for NI Water.

We will ensure NI Water fully implements effective risk management throughout its network to meet regulatory requirements, effective from 2019, with necessary mitigations and action plans identified to protect public health.

[The Long Term Water Strategy for Northern Ireland](#), sets out key targets to maintain and improve drinking water quality, and DWI will continue its work with all stakeholders in the delivery of these goals.

Protecting the catchments from which water is abstracted not only improves the raw water quality and reduces potential contamination risks, it can also reduce the need for additional treatment. We will continue to work with colleagues in the NIEA and NI Water, in implementing the third cycle of the River Basin Management Plans (RBMPs). We will also work within this process in promoting the ongoing management of drinking water protected areas (DWPAs) and safeguard zones. We will continue to be represented on the Project Board for the 'Source to Tap' Interreg VA funded project focusing on the management of the Derg and Erne catchments.

Further development of our risk assessment application for private water supplies will continue to be taken forward in 2020 through the migration to a new platform for users and the continuing delivery of training and the provision of technical guidance to local council staff. This more consistent approach (BS:EN 15975-2¹) to risk assessment will facilitate effective risk management at these drinking water supplies and provide the foundation for a review of the processes for the regulation of private water supplies.

DAERA's key priorities going forward are COVID-19 recovery, EU Transition and Green Growth. DWI plays a key role, as all activities undertaken by the Department, from farming, food production, and environmental regulation all impact on the quality of the raw water sources used for both our public and private drinking water supplies.

It is vital that we collaborate with our colleagues and all stakeholders to ensure that the protection of public health through effective drinking water regulation continues for future generations.

Section 1

Public Water Supplies

Part 1

Drinking Water Quality



Part 1

Drinking Water Quality

- Overall drinking water quality compliance remains high at 99.90% (Overall microbiological compliance: 99.94%)
- Water quality at consumers' taps remains high at 99.84% compliance (Microbiological compliance at consumers' taps: 99.86%)
- 14 parameters did not achieve full compliance at consumers' taps
- Iron was the parameter with the lowest consumer tap compliance at 98.89%
- Discoloured water is still the main issue of concern to consumers

NI Water is a government-owned company with responsibility for supplying and distributing public drinking water throughout Northern Ireland.

Drinking Water Quality Testing

During 2019, NI Water sampled drinking water across Northern Ireland to test for compliance with the standards in The Water Supply (Water Quality) Regulations (Northern Ireland) 2017. The regulations require sampling programmes to be in place to ensure that water quality is monitored at: water treatment works (WTWs); service reservoirs (SRs); supply points¹; and consumers' taps in water supply zones (WSZs). A summary of the number of sites that were in service in 2019 are shown in Table 1.1

In 2019, 99,371 tests were carried out for a range of different parameters. A description of each parameter and its regulatory limit (or prescribed concentration or value [PCV]) is available on our [website](#).

Table 1.1: Number of sites in service in 2019

Sites	No. in service
Water treatment works	24
Service reservoirs	288
Supply points ¹	24
Water supply zones	51

Sampling and Analysis Frequencies

NI Water is required to meet specified sampling frequencies in demonstrating the wholesomeness of drinking water supplies. We undertake an assessment of these requirements throughout the water supply chain: at WTWs; SRs; and WSZs.

During 2019, out of the 99,371 tests carried out, we identified a shortfall of 119 individual tests. All 111 tests for Mercury and five out of the eight tests for Glyphosate were assessed as non-trivial. The significant shortfall on mercury analysis was due to analytical issues which meant the results could not be accredited. Analysis was carried out and the indicative results were satisfactory. The glyphosate shortfall was caused by analytical issues late in the year and there was insufficient time for NI Water to obtain the necessary replacement samples in 2019.

¹ a point, other than a consumer's tap, authorised for the taking of samples for compliance with the Regulations

Overall Drinking Water Quality

Compliance with the standards is important as contraventions may indicate a failure in the treatment process or a breach in the integrity of the water supply system which could pose a potential risk to human health. It also ensures that water quality meets aesthetic standards and is acceptable to consumers.

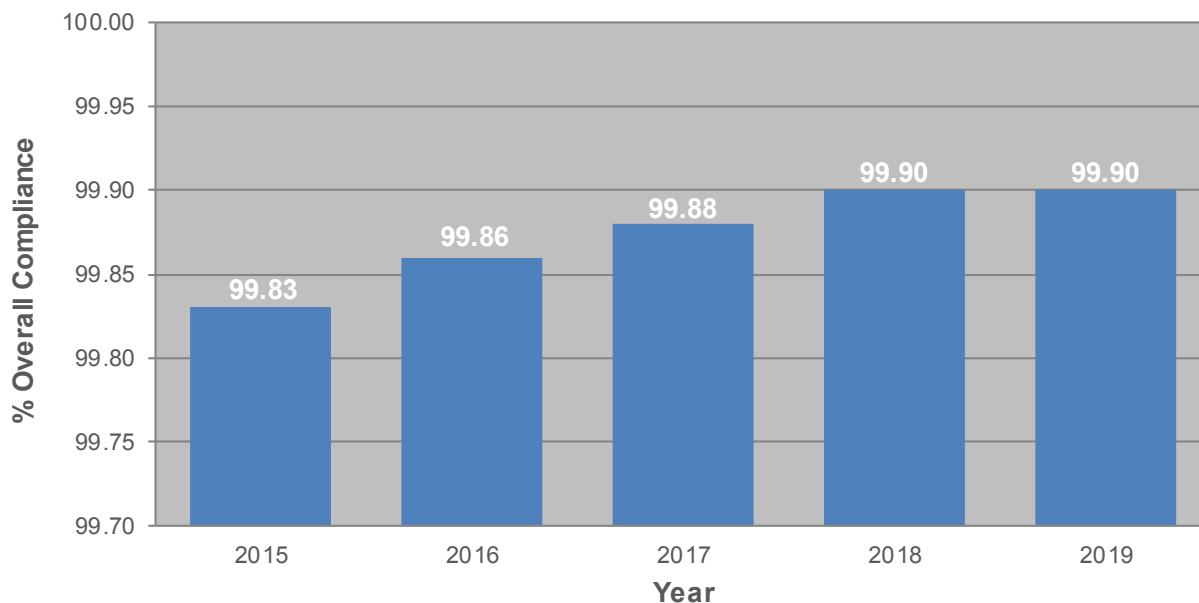
Of the 99,371 tests we used to assess overall compliance, 100 (0.10%) contravened the regulatory standards compared to 98 (0.10%) from 97,496 tests in 2018. Table 1.2 provides further information on these contraventions.

Table 1.2: Overall Drinking Water Quality in 2019

	No. of Tests	No. of Tests not Meeting the Standards	% Compliance
Water Leaving Water Treatment Works (WTWs)			
<i>E. coli</i>	6252	0	
Coliform Bacteria	6252	1	
Microbiological Total	12504	1	99.99
Nitrite	236	0	
Turbidity	6252	7	
Chemical Total	6488	7	99.89
Total (Microbiological and Chemical)	18992	8	99.96
Water in Service Reservoirs (SRs)			
<i>E. coli</i>	14923	0	
Coliform Bacteria	14923	13	
Total (Microbiological)	29846	13	99.96
Water at Consumers' Taps or Supply Points (WSZs)			
<i>E. coli</i>	5544	1	
Coliform Bacteria	5544	13	
Enterococci	400	0	
<i>Clostridium perfringens</i>	236	2	
Microbiological Total	11724	16	99.86
Zone Chemical Analysis	29329	61	
Supply Point Chemical Analysis	9480	2	
Chemical Total	38809	63	99.84
Total (Microbiological and Chemical)	50533	79	99.84
Overall Water Quality			
Overall Microbiological Quality	54074	30	99.94
Overall Chemical Quality	45297	70	99.85
Overall Drinking Water Quality	99371	100	99.90

The results confirm that overall drinking water quality in 2019, for the key parameters monitored at water treatment works, service reservoirs and consumers’ taps remains high at 99.90%, the same as last year. Figure 1.1 illustrates the percentage compliance over the last five years.

Figure 1.1: Overall Drinking Water Quality, 2015 – 2019



Water Quality at Consumers’ Taps

To assess the quality of water that is being supplied to consumers, we assess results of regulatory samples taken by NI Water from consumers’ taps. Table 1.3 shows the percentage compliance for 34 of the Schedule 1 (directive and national) parameters and nine of the Schedule 2 (indicator) parameters. Drinking water quality compliance at consumers’ taps was 99.84% in 2019, similar to last year (99.83%).

Fourteen parameters did not achieve full compliance at consumers’ taps in 2019: iron, total trihalomethanes (THMs), *Clostridium perfringens*, aluminium, nickel, odour, taste, bromate, lead, coliform bacteria, manganese, turbidity, pesticides - individual (MCPA) and *E. coli*.

Table 1.3: Consumer Tap Compliance 2019

Parameter	No. of Samples	No. of Tests not Meeting the Standards	% Compliance
Schedule 1 (Directive and National parameters)			
Iron	1984	22	98.89
Total Trihalomethanes	400	4	99.00
Aluminium	1984	12	99.40
Nickel	400	2	99.50
Odour	1984	8	99.60
Taste	1984	8	99.60
Bromate	400	1	99.75
Lead	400	1	99.75
Manganese	1984	2	99.90
Turbidity	1984	1	99.95
Other Pesticides	8960	2	99.98
E. coli	5544	1	99.98
1,2 dichloroethane	400	0	100.00
Antimony	400	0	100.00
Arsenic	400	0	100.00
Benzene	400	0	100.00
Benzo(a)pyrene	400	0	100.00
Boron	400	0	100.00
Cadmium	400	0	100.00
Chromium	400	0	100.00
Colour	1984	0	100.00
Copper	400	0	100.00
Cyanide	236	0	100.00
Enterococci	400	0	100.00
Fluoride	400	0	100.00
Mercury	289	0	100.00
Nitrate	400	0	100.00
Nitrite	400	0	100.00
PAH - Sum of four substances	400	0	100.00
Pesticides - Total Substances	236	0	100.00
Selenium	400	0	100.00
Sodium	400	0	100.00
Tetrachloroethene & Trichloroethene	400	0	100.00
Tetrachloromethane	400	0	100.00
Total (Schedule 1)	37953	64	99.83
Schedule 2 (Indicator parameters)			
<i>Clostridium perfringens</i>	236	2	99.15
Coliform bacteria	5544	13	99.77
Ammonium	1984	0	100.00
Chloride	400	0	100.00
Conductivity	1984	0	100.00
Hydrogen Ion (pH)	1984	0	100.00
Sulphate	400	0	100.00
Indicative Dose	24	0	100.00
Tritium	24	0	100.00
Total (Schedule 2)	12580	15	99.88
Overall Total	50533	79	99.84

Chemical/Physical Quality

Iron

The regulatory standard for iron is set for aesthetic reasons as levels above this can give rise to discoloured water. Corrosion of iron water mains is the most common reason for contraventions.

In 2019, iron was the chemical parameter which had the highest number of tests failing to comply with the standard. Of the 1,984 samples taken, 22 (1.11%) failed to meet the 200 µg/l standard. This represents a slight decrease in the compliance level achieved in 2018 with 20 of the 1,892 tests failing to comply, measuring a failure rate of 1.06%.

These were mostly due to the build-up, and subsequent disturbance, of deposits found within water mains. Where this is identified, there are a number of remedial measures which NI Water carry out. Figure 2.6 in Part 2 provides iron compliance figures for the last five years.

Trihalomethanes (THMs)

In 2019, there was a decrease in THM compliance to 99.00%, compared to the 99.48% reported in 2018. Further discussion on THMs is contained in Part 2.

Aluminium

In 2019, there was a decrease in aluminium compliance to 99.40%, compared to the 99.74% reported in 2018. Further discussion on aluminium is contained in Part 2.

Nickel

In 2019, there was a decrease in Nickel compliance to 99.50% compared to the 99.74% achieved in 2018. Nickel may occur naturally in some ground waters, but is rarely found in the mains water supply. However, contraventions of the standard (20 µg/l) do occur occasionally and the main source of nickel in drinking water is leaching from modern taps and other plumbing fittings.

Odour & Taste

The regulatory requirement for odour and taste is “Acceptable to consumers and no abnormal change”. DWI has issued guidance to NI Water on the interpretation of this regulatory requirement.

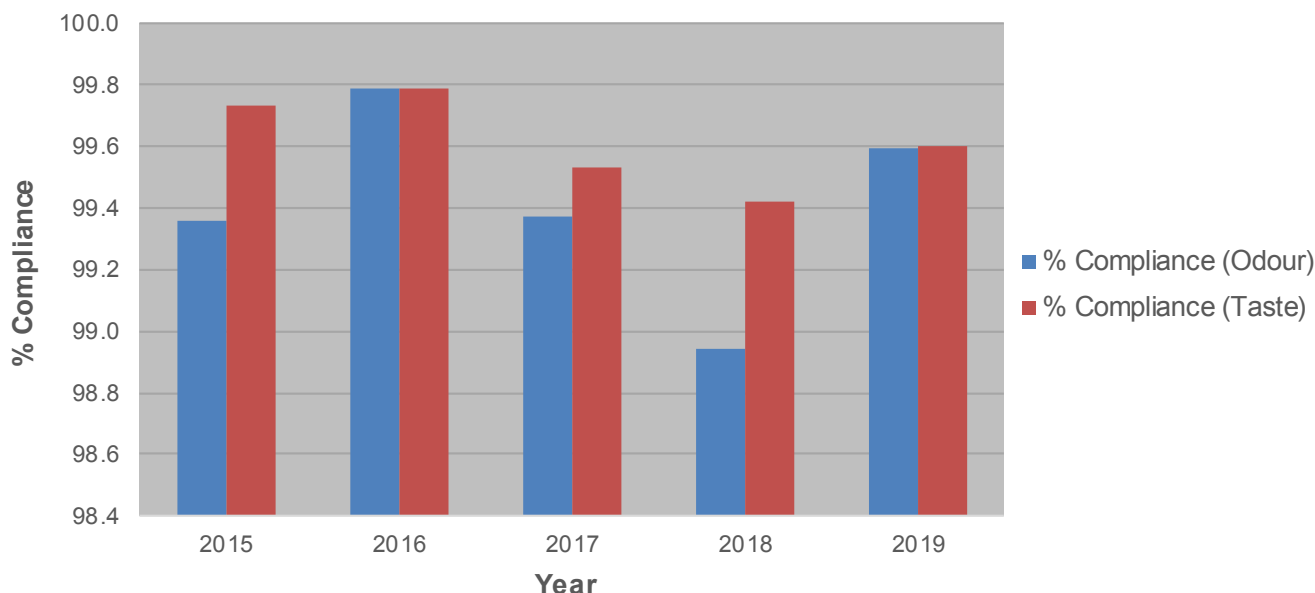
In 2019, odour and taste compliance was the same at 99.60%, an improvement on the 2018 compliance (98.94% for odour and 99.42% for taste). Odour and taste compliance over the last five years is shown in Figure 1.2. There is further information on odour and taste in the “Consumer Contacts” section later in this part of the report.

Bromate

Bromate can be formed during disinfection of drinking water as a result of a reaction between naturally occurring bromide and ozone. It can also be formed in the manufacture of sodium

hypochlorite disinfectant. There was only one contravention of the bromate standard in 2019. Following investigation by NI Water, no cause could be identified.

Figure 1.2: Percentage of Regulatory Tests Meeting the Odour & Taste Standards, 2015 – 2019



Lead

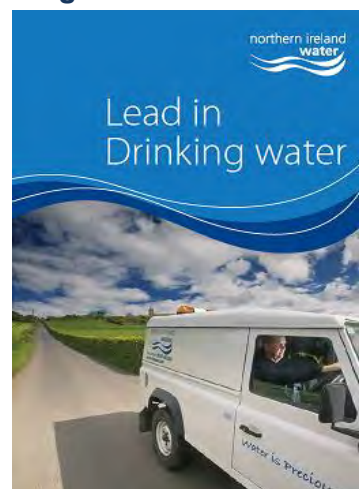
In 2019, lead improved from 98.71% compliance in 2018 to 99.75% compliance. However, it is recognised that the percentage lead compliance is prone to fluctuations and any increase or decrease can be unduly influenced by the low sampling frequency required by the regulations.

In 2019, of the 400 tests carried out for lead, only one (0.25%) contravened the standard of 10 µg/l. This contravention was related to lead pipework and/or fittings belonging solely to the consumer.

When a sample has contravened the standard and NI Water’s investigation finds the property’s service pipe contains lead, it notifies the consumer. It is the owner’s decision whether or not to replace their supply pipe and any other lead pipes within the property. A customer advice leaflet “[Lead in Drinking Water](#)” (Figure 1.3) can also be found on NI Water’s website.

The Regulations require NI Water to treat the water to reduce the risk of the concentration of lead being greater than 10 µg/l. NI Water have a Lead Strategy in place to deliver improved compliance for lead.

Figure 1.3 Lead Leaflet



Through the use of treatment and lead pipe replacement, the Strategy involves:

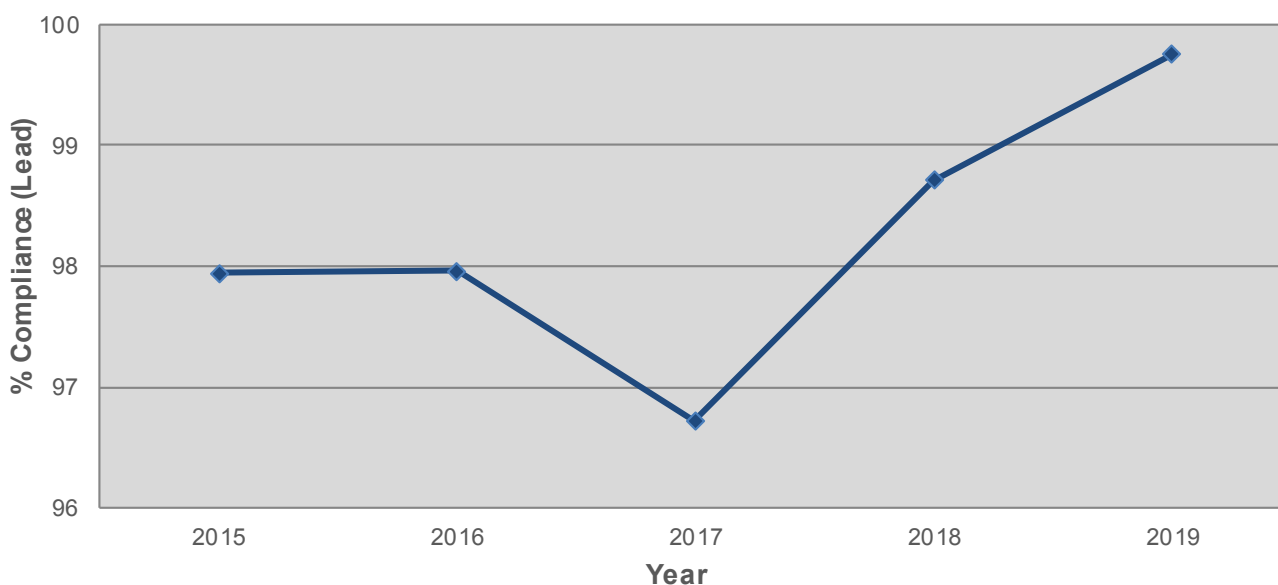
- optimisation of orthophosphoric acid dosing and pH control at WTWs to reduce the uptake of lead from pipes and fittings;
- monitoring lead, pH and phosphate levels throughout the distribution networks;

- regulatory requirement to replace lead service pipes where there is a lead failure, or at the request of the consumer; and
- targeted replacement of lead service pipes within identified hotspots

In addition to the sampling for lead compliance required by the Regulations, NI Water also undertakes a separate operational sampling programme. Results from this programme highlight that all water supply areas have achieved the optimisation target of 98% lead compliance in 2019.

Looking at the overall trend in lead compliance in Figure 1.4, there has been a gradual trend upwards. However, there was a decrease in compliance in 2017 and a significant amount of work is still required to ensure compliance continues to improve in 2020 and beyond.

Figure 1.4: Percentage of Regulatory Tests Meeting the Lead Standard, 2015 – 2019



Microbiological Quality

The overall safety of drinking water at consumers’ taps in 2019 is confirmed with a high level of microbiological compliance (99.86%), (see Table 1.1). This is a slight decrease in compliance from the 99.87% reported in 2018. There was one *E. coli* detected in a sample taken at a consumer tap in 2019, and coliform bacteria detected in 13 samples.

Clostridium perfringens was found in two samples taken in 2019 (compliance 99.15%) compared to 99.58% compliance in 2018.

Enterococci were not detected in any of the samples at consumers’ taps in 2019 (the same as 2018).

Domestic Dwellings Distribution Systems

NI Water's investigation into contraventions must determine if they are due to the internal distribution systems within domestic dwellings. Where this is identified it must inform the owner with details of the failure and provide appropriate advice in relation to actions the owner may take to rectify the contravention and protect public health. The investigations, where appropriate, should also ensure consumers' internal plumbing is compliant with The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009.

In 2019, there were nine contraventions reported to us which NI Water determined were due to the internal plumbing within domestic properties. These were related to the following parameters: four coliform bacteria; one *E. coli*; two nickel, one lead and one odour. These contraventions were investigated by NI Water and letters sent to consumers advising them of the contraventions and offering appropriate advice to protect public health.

Public Buildings Distribution Systems

At premises where water is made available to members of the public (such as schools, hospitals or restaurants) there were 597 samples taken during 2019. Of these, four contravened the standards: two for iron; one for coliform bacteria; and one for THMs.

NI Water must take appropriate action to rectify the failure where it is attributable to either the water supplied by it, or is a contravention of the Water Fittings Regulations. For any other failures within such premises, we are required to follow-up with the owners under The Water Supply (Domestic Distribution Systems) Regulations (Northern Ireland) 2010. If we assess the failure as likely to recur, or if it constitutes a potential risk to human health, a notice may be served on the owner to undertake the necessary actions to protect public health and bring the supply back into compliance.

Consumer Contacts

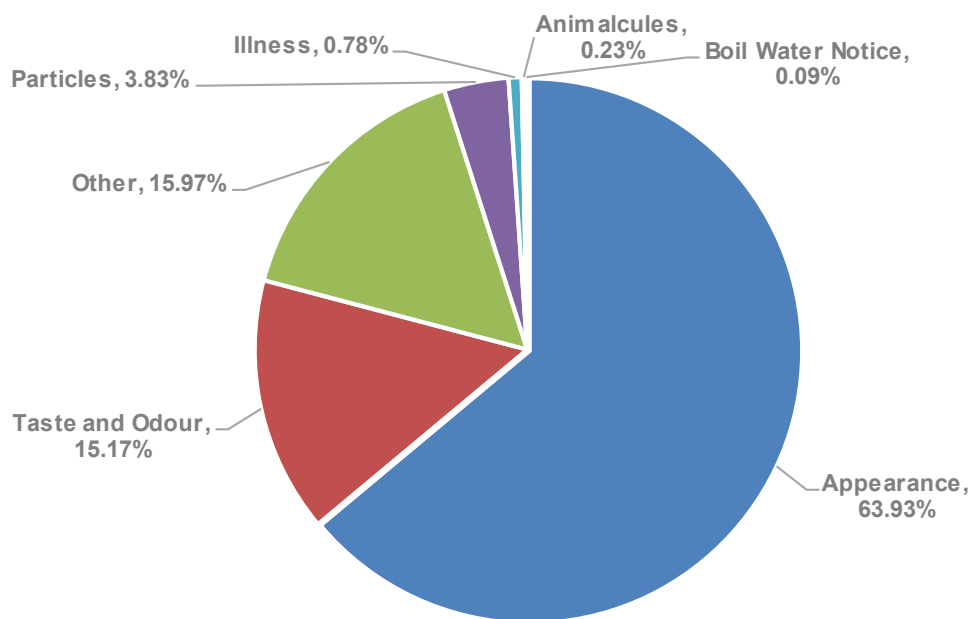
NI Water provides us with consumer contact information to help us assess consumers' satisfaction of their drinking water quality (Table 1.4 refers). The total number of consumer contacts reported in 2019 was 5661 compared to 7468 in 2018, a significant decrease of 1807 (24.2%). This decrease in the number of consumer contacts is more representative of previous years, with 2018 having experienced a spike due to a major water quality event (e.g. 5764 in 2017). We will continue to monitor the trends in consumer concerns.

Table 1.4: Water Quality Contacts received by NI Water in 2019

Contact Category	Contact Sub-Category	Number of Contacts
Appearance	Colour	2257
	General	65
	Hardness	9
	Stained Washing	7
	White - Air	889
	White - Chalk	392
Taste and Odour	Chlorinous	403
	Earthy/Musty	138
	Other	265
	Petrol/Diesel	32
	TCP	21
Illness		44
Particles		217
Animalcules		13
Boil Water Notice		5
Other	Water Quality Concern - Campaigns	2
	Water Quality Concern - Incident Related	199
	Water Quality Concern - Lifestyle	6
	Water Quality Concern - Pets/Animals	5
	Water Quality Concern - Sample	459
	Water Quality Concern - Lead	200
	Water Quality (No Concern) Fluoride	1
	Water Quality (No Concern) Other Information	16
	Water Quality (No Concern) Water Hardness	5
	Water Quality (No Concern) Water Quality Report	11
TOTAL		5661

The highest percentage of contacts and concerns continued to relate to the appearance of drinking water, with 63.9% in 2019 (63.4% in 2018). This is illustrated in Figure 1.5.

Figure 1.5: Consumer Contacts and Concerns received by NI Water in 2019



Appearance

Within the overall appearance categories there are a number of different sub-categories that are a cause of concern for consumers.

Colour

In 2019, as in every year, the majority of appearance concerns (62.4%) related to discoloured water. The most common cause of discoloured water concerns is an orange, brown or black discoloration caused by suspended particles of iron (orange/brown) and manganese (black).

Iron discoloration may occur through natural iron present in the raw water passing through inadequate treatment, from the treatment process, or from corrosion of cast-iron distribution mains as discussed earlier. Manganese is naturally present in some raw waters and may not be fully removed if treatment is inadequate.

White Water

'White water' is mainly caused by air dissolved in the water, making it appear cloudy or milky white. It can be caused by internal plumbing, burst water mains or when NI Water has been carrying out maintenance work on pipes. Where air is the cause, the cloudy appearance will clear in a glass of water from the bottom up.

Another cause of white water may be chalk. Chalk has a white powdery appearance and is made up of natural minerals found in water which forms what is known as 'hardness'. A glass of water containing chalk will take up to an hour to clear from the top downwards, leaving fine white sediment in the bottom of the glass.

'White water' accounted for 35.4% of appearance concerns in 2019.

Taste and Odour

All water sources contain naturally occurring minerals. Water also contains dissolved gases, such as oxygen and carbon dioxide, which give tap water a characteristic taste. One substance, which is added to drinking water for disinfection, is chlorine, and this can give rise to consumer complaints (see next section on Chlorinous).

Other taste and odours should not be present in drinking water for aesthetic reasons e.g. TCP or earthy/musty, or for health reasons e.g. petrol/diesel.

Taste and odour complaints accounted for 15.17% of the total consumer contacts in 2019.

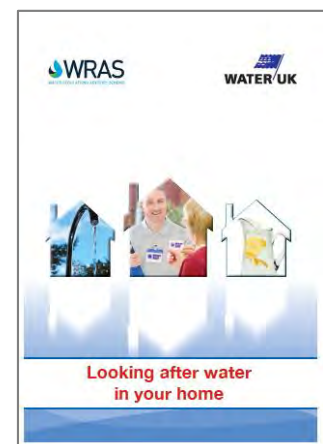
Chlorinous

Some individuals are more sensitive than others to the taste and odour of chlorine which is used to maintain hygienic conditions within the water supply network. 47% of taste and odour consumer contacts in 2019 were related to a chlorinous taste and odour in the water (24% in 2018). This marks a significant increase in chlorinous taste and odour complaints and NI Water should investigate the reason for such an increase.

Consumer Advice

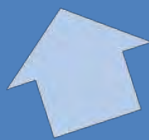
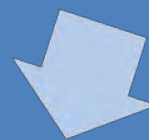
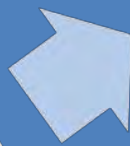
A useful consumer guide, '[Looking after water in your home](#)', was produced by the water industry to help you maintain and enjoy the quality of tap water once it enters your home.

It contains a number of household tips, from how to reduce unwanted taste and odours and address appearance issues, to advice on water filters and storage tanks.



Section 1
Public Water Supplies

Part 2
The Drinking Water Cycle



Part 2

The Drinking Water Cycle

- Catchment: There was an increased number of MCPA detections in 2019
- Treatment & Distribution: Aluminium and THM compliance both down in 2019
- Events: There were two Serious and 30 Significant Events reported in 2019
- Risk Management: NI Water have 23 Risk Assessments in place to cover each Water Treatment Works and associated supply area

This part of the report details our assessment of how NI Water manages the drinking water cycle, from the **catchment** to the **treatment** processes at Water Treatment Works (WTWs), through Service Reservoirs (SRs) and into the **distribution network** to supply **consumers**. It also summarises the risk management approach adopted by NI Water in ensuring that water supplies remain safe and wholesome throughout their journey to homes and businesses.

Catchments

NI Water mainly abstracts its raw water from 38 sources including rivers and loughs (57.2%), impounding reservoirs (42.7%), and one borehole which supplies a small population on Rathlin Island (0.1%).

NI Water is required to identify and assess all the potential risks within its catchments through a risk assessment process. As the potential list of contaminants within catchments is diverse, it must risk assess each catchment to determine the specific risks, and ensure appropriate mitigation is in place. It also undertakes a risk based annual monitoring programme to determine water quality within the catchment and at its abstraction points.

This monitoring plays an important role in providing information on the risks within the catchment and for the operational management of water treatment works to ensure treatment processes provide an effective barrier against the identified levels of contaminants.

Pesticides

During 2019, 38 individual pesticides were monitored by NI Water under its sampling programmes. There are two separate sampling programmes in place. The compliance programme is based on the set regulatory frequencies required to be monitored by NI Water for assessing compliance. There is also the operational programme to identify potential risks and assist in the operation of its treatment processes.

Within the compliance programme there were 236 samples taken for pesticides giving a total of 8960 individual determinations. In 2019, two samples contravened the standard for MCPA at Derg WTW.

During 2019, within the operational programme, NI Water reported ten MCPA contraventions, nine at Derg WTW and one at Glenhordial WTW. DWI has ongoing enforcement action in place requiring NI Water to put appropriate measures in place to mitigate against MCPA contraventions in the final water at Derg WTW. Similar enforcement action at Glenhordial WTW was completed in February 2019 and results from this works will be closely monitored and further action may be taken if deemed necessary. There is also enforcement action ongoing at Ballinrees WTW following the 12 contraventions for MCPA in 2017, with mitigations to be in place within agreed timeframes.

Water treatment works with contraventions for pesticides, both regulatory and operational, from 2015 to 2019 are summarised within Table 2.1.

There were a total of 12 MCPA contraventions reported from both compliance and operational sampling in 2019, a significant increase on the five contraventions in 2018.

Table 2.1: Pesticides Detected above the Regulatory Standard, 2015 – 2019

Water Treatment Works		2019	2018	2017	2016		2015
		MCPA	MCPA	MCPA	MCPA	Clopyralid	MCPA
W1701P	Ballinrees			12			1
W4722	Belleek						1
W2802	Carran Hill					1	
W2308P	Castor Bay					1	
W4501	Derg	11	5	6	7		3
W4541	Glenhordial	1		4			
W4701	Killyhevlin						8
W2514	Seagahan						1

NI Water liaise with the Northern Ireland Environment Agency's (NIEA's) Pollution Control Team regarding pesticide detections, usage, and the control measures in place within drinking water catchments. There are a range of mitigation and control measures for pesticides which NI Water has in place, including liaison with relevant stakeholders through Water Catchment Partnerships. NI Water is also developing catchment management plans and implementing sustainable catchment management solutions. Where catchment solutions alone are unable to reduce the risks sufficiently, NI Water must ensure that it has appropriate treatment processes in place.

Water Treatment

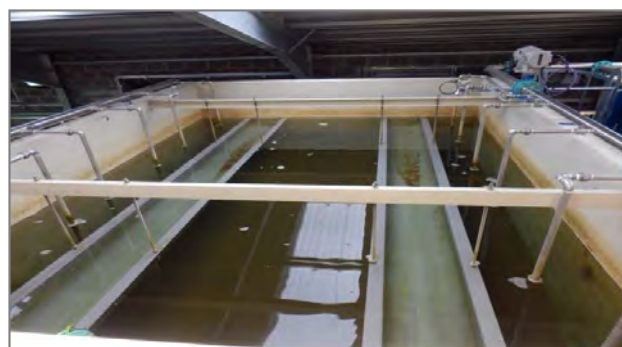
Water treatment processes normally include the physical removal of potential contaminants by using chemical coagulation/flocculation, sedimentation or flotation (Figure 2.1), and filtration (Figure 2.2) before disinfection. Additional treatments such as ozone dosing and GAC (Granular Activated Carbon) filtration can also be required to remove unpleasant tastes and odours, and for pesticide reduction.

An important measure of the effectiveness of treatment is the assessment of the water quality throughout the treatment process and the quality of the final water leaving the works.

Figure 2.1: Flotation Stage



Figure 2.2: Filtration Stage



In Table 2.2, two sets of parameters are used to assess the effectiveness of water treatment processes: process control parameters; and disinfection parameters.

Table 2.2: Water Quality at Water Treatment Works, 2019

Parameters	Place of Sampling	Total No. of Tests in 2019	No. of Tests not Meeting the Standards in 2019	% of Tests Meeting the Standards	
				2019	2018
Process Control Parameters					
Aluminium	WSZ	1984	12	99.40	99.74
Trihalomethanes	WSZ	400	4	99.00	99.48
Disinfection Parameters					
Coliform bacteria	WTW	6252	1	99.98	99.97
<i>E. coli</i>	WTW	6252	0	100	100
Turbidity	WTW	6252	7	99.89	99.94
Indicator Parameter					
<i>Clostridium perfringens</i>	WTW	236	2	99.15	99.58

WSZ = Water Supply Zone (consumertap sample)

Process Control Parameters

Process control parameters are used to measure the effectiveness of treatment, and are based on a selection of chemical parameters relevant to the processes in place at the water treatment works.

In 2019, results from the compliance monitoring programme, shown in Table 2.2, reported continuing non-compliances for two of the process control parameters: aluminium and trihalomethanes (THMs).

Aluminium

Aluminium compliance, which is measured at consumers' taps, was lower in 2019 with 12 regulatory contraventions (0.60%) reported compared to five (0.26%) in 2018. Figure 2.3 demonstrates the levels of aluminium compliance over the last five years.

Operational sample results and outputs from on-line monitors often highlight elevated aluminium levels at WTW before they become apparent in distribution. In many cases the remedial

measures taken by NI Water in response to these early detections prevent, or limit the impact of, water quality events.

Overall, there were seven Significant events at four water treatment works in 2019 relating to elevated levels of aluminium – see Annex 2 for details. Although these events do not always directly correlate with regulatory contraventions at consumers’ taps at the time of the event, they can lead to the accumulation of aluminium in the distribution system and contribute to contraventions at a later date.

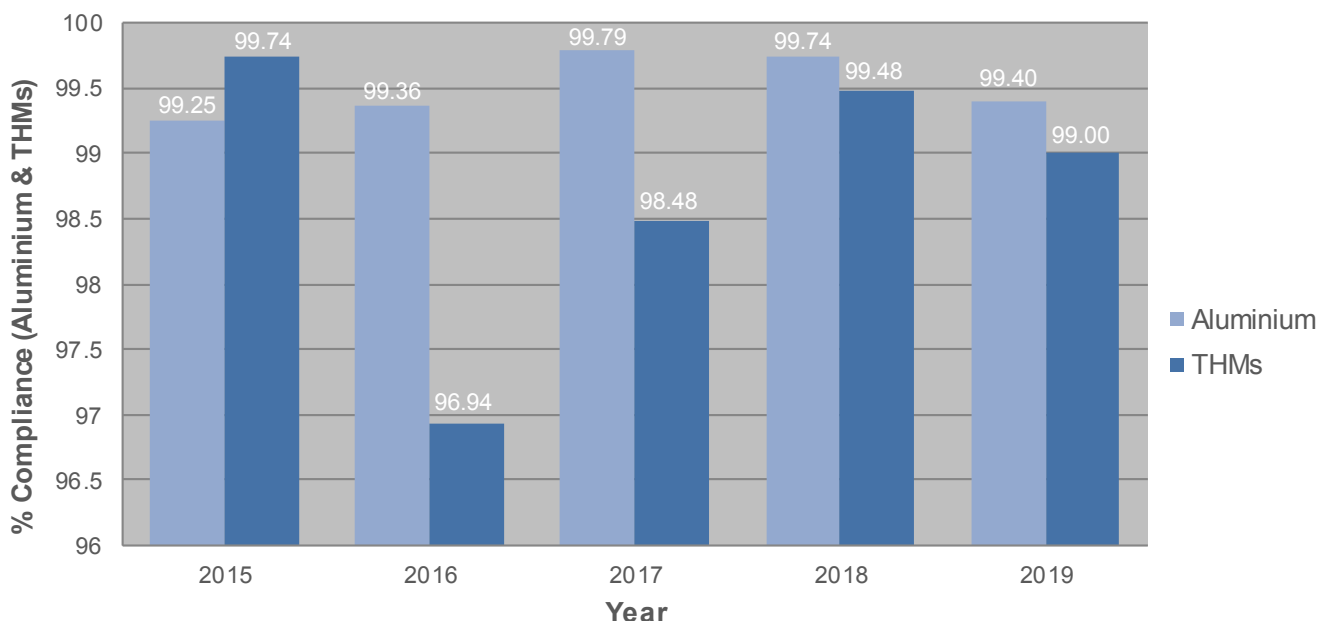
It is disappointing to note that there were over twice as many aluminium contraventions in 2019 as for 2018. NI Water must constantly review its operational practices at its treatment works and take whatever measures are necessary to improve this level of compliance. This may include improvements to the treatment processes currently being considered through a price control process (PC21).

Trihalomethanes (THMs)

THMs are a group of disinfection by-products that form when naturally occurring organic substances combine with chlorine, which is added to disinfect the water and make it safe to drink. Effective and well managed treatment processes reduce the levels of these organics, which are directly related to the level of THMs that occur in the final water.

Figure 2.3 displays the levels of THM compliance over the last five years. There has been a decrease in compliance in 2019 with four samples (1.0%) contravening the standard of 100 µg/l, compared to the two samples (0.52%) in 2018.

Figure 2.3: Percentage Compliance for Aluminium & THMs at Consumers’ Taps, 2015 – 2019



There are a number of reasons for THM non-compliance including: the quality of the raw water; the performance of the water treatment works; the condition of the networks; and the length of time water spends in the distribution system (residence time). NI Water must ensure that good operational practices prevail within the catchments and at water treatment works. It is also

important that there is careful management of the storage levels in service reservoirs and the distribution network is adequately maintained. NI Water must also ensure a suitable disinfection policy is in place to further improve THM compliance in the future.

There were two Significant events at WTWs in 2019 relating to elevated levels of THMs – see Annex 2 for details.

Disinfection Parameters

The parameters, coliform bacteria, *E. coli* and turbidity (Table 2.2 refers) look at the effectiveness of disinfection and pathogen removal. To safeguard consumers from the risk of microbiological organisms being present in drinking water, effective disinfection is fundamental to treatment works' operation. Testing for *E. coli* and coliform bacteria at water treatment works provides a level of assurance that water is being adequately treated to ensure safe, clean drinking water. In 2019, NI Water reported 100% compliance for *E. coli* and 99.98% compliance for coliform bacteria at its water treatment works.

Turbidity is caused by finely suspended particles in the water and these must be removed by effective water treatment in preparation for the disinfection process. It is a regulatory requirement that turbidity values are below 1 NTU before disinfection takes place. There was a slight decrease in compliance with the turbidity standard in 2019 (99.89% compared to 99.94% in 2018). Seven turbidity contraventions occurred at six water treatment works in 2019. Of these, four were assessed as being Significant events. Two of the events also involved aluminium contraventions following treatment difficulties; and the other two occurred at the same WTW following operational work.

Indicator Parameter

Clostridium perfringens

Clostridium perfringens can be used in association with other parameters to assess the effectiveness of the water treatment processes. This organism is a spore-forming bacterium that is exceptionally resistant to unfavourable conditions in the water environment such as extremes of temperature and pH; and disinfection by chlorination.

In 2019, of the 236 tests carried out for *Clostridium perfringens*, two contravened the standard. NI Water investigated but was unable to determine a cause for these contraventions.

Distribution

The water distribution network in Northern Ireland is extensive, consisting of 288 service reservoirs (SRs) and 26,837 km of mains pipe. Water mains transfer drinking water from the water treatment works to service reservoirs and onwards to the consumer. Service reservoirs provide storage close to the point of distribution to help ensure that sufficient water is available to meet the varying demands of consumers.

In Table 2.3, two measures are used to assess the water quality within a distribution system: reservoir integrity and distribution networks.

Table 2.3: Water Quality Indicators within the Distribution System

Parameters	Place of Sampling	No. of Tests in 2019	No. of Tests not Meeting the Standards in 2019	% of Tests Meeting the Standards in 2019	% of Tests Meeting the Standards in 2018
Reservoir Integrity					
Coliform bacteria	SR	14923	13	99.91	99.95
<i>E. coli</i>	SR	14923	0	100	99.98
Distribution Networks					
Turbidity	WSZ	1984	1	99.95	100
Iron	WSZ	1984	22	98.89	98.94
Manganese	WSZ	1984	2	99.90	99.95

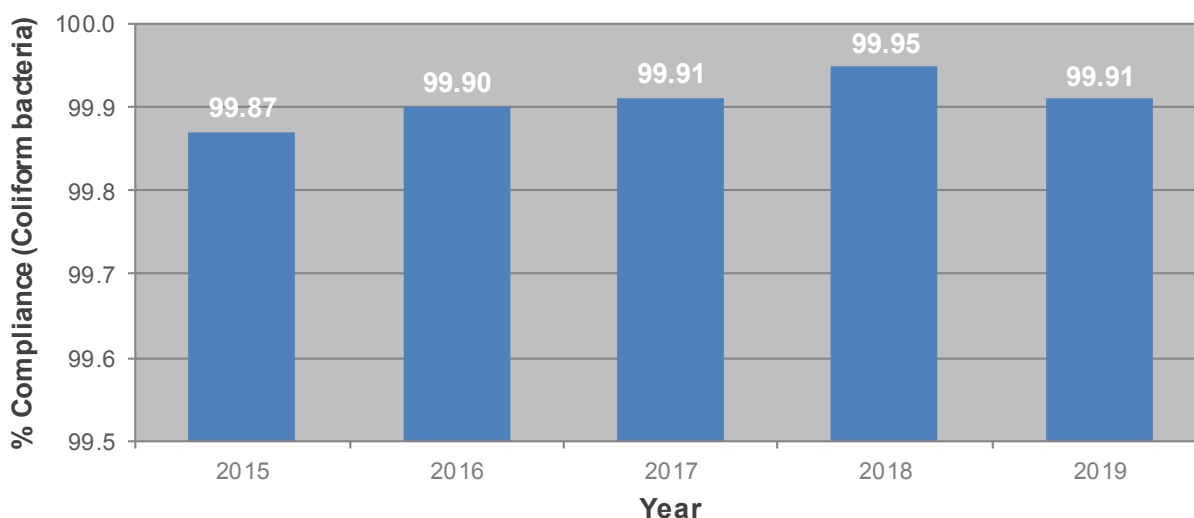
Service Reservoirs

Samples are collected weekly at every service reservoir. Rathkeel Service Reservoir is shown in Figure 2.4. It is a regulatory requirement that at least 95% of samples collected annually from each reservoir are free from coliform bacteria. The 288 reservoirs sampled in 2019 all met this requirement. Figure 2.5 shows coliform bacteria compliance was 99.91% in 2019, a slight decrease on 99.95% reported in 2018 which represented the highest compliance on record. Coliform bacteria were detected on 13 occasions at 13 (4.51%) different service reservoirs which is an increase on the eight detections reported in 2018. *E. coli* was not detected at any service reservoirs in 2019. This is an improvement on 2018 when *E. coli* was detected on three occasions at three different service reservoirs.

Figure 2.4: Service Reservoir



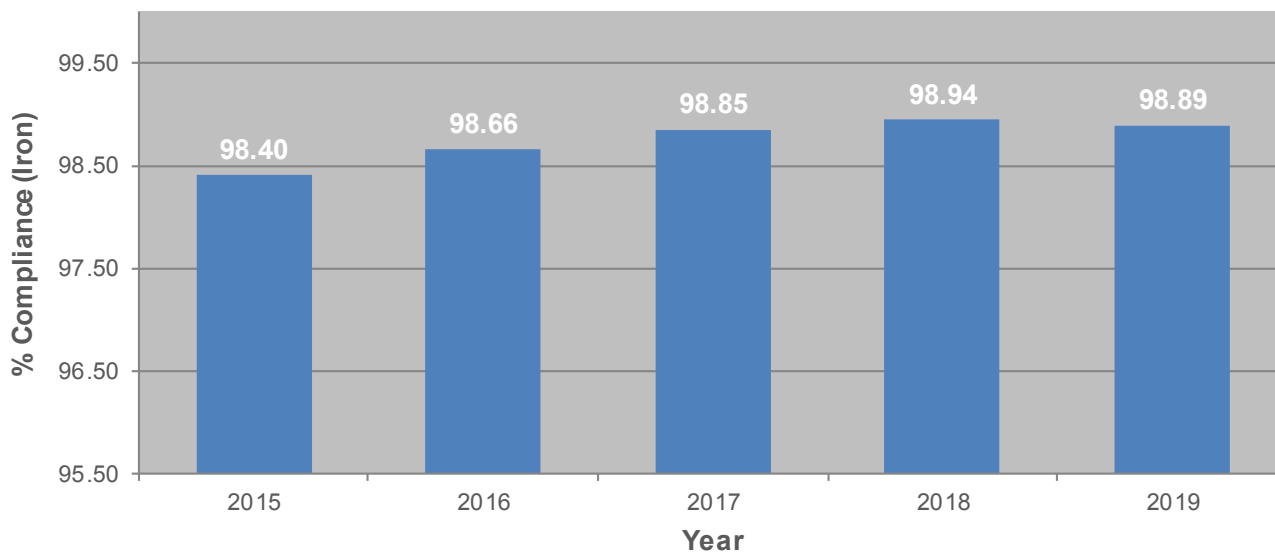
Figure 2.5: Percentage Compliance of Coliform Bacteria at Service Reservoirs, 2015 – 2019



Water Mains

In 2019 a total of 1984 samples taken from consumers’ taps were tested for iron. Of these, 22 (1.11%) contravened the regulatory standard of 200 µg/l. This reflects a slight decrease in compliance from 2018 when there were 20 (1.06%) contraventions reported as illustrated in Figure 2.6. It is noteworthy that half of these iron contraventions occurred in the Dorisland Carrick Zone. NI Water has investigated this issue but the contraventions occurred over a wide area and no specific reason has been identified.

Figure 2.6: Percentage Compliance of Iron in Distribution, 2015 – 2019



Many of the mains delivering water to consumers’ taps are made of cast iron and the deterioration of older mains may result in consumers receiving discoloured drinking water due to the presence of iron and manganese. NI Water has an ongoing Water Mains Rehabilitation Programme and this enables corrective action to be taken on a priority basis to improve the water quality being supplied to consumers. A typical new mains installation is shown in Figure 2.7.

Figure 2.7: New mains installation



Events and Risk Management

Drinking Water Quality Events

NI Water inform us of events that have affected, or are likely to affect, drinking water quality or sufficiency, and subsequently there may be a risk to consumers’ health. Each event is assessed into one of five categories based on increasing severity: Not Significant, Minor, Significant, Serious or Major. It is important that lessons are learnt from events and any necessary remedial action is undertaken. For events categorised as significant or above the risk assessments in place for each water supply system are required to be reviewed.

Fifty two events were reported to us in 2019. Of these, we categorised two as Serious; 30 as Significant; eight as Minor; and 12 as Not Significant.

The two serious events were related to *Cryptosporidium* oocysts being detected in the final waters at Drumaroad and Dunore Point WTWs and in the related distribution systems. In both cases, the most probable cause of these events was *Cryptosporidium* oocysts in the raw water not being removed by the treatment processes. *Cryptosporidium* should not be present in drinking water and when it is found NI Water must initiate a full investigation and implement enhanced monitoring. NI Water sought advice from the Public Health Agency, however the detections were not of sufficient concern to put restrictions in place.

There were 20 Significant events at 12 WTWs (Altnahinch; Ballinrees; Castor Bay; Caugh Hill; Derg; Dorisland; Drumaroad; Glenhordial; Killyhevin; Killylane; Rathlin and Seagahan) in 2019. The majority of these events were due to treatment difficulties or lack of adequate treatment relating to aluminium, *Clostridium perfringens*, *Cryptosporidium*, individual pesticide (MCPA), odour & taste, THMs and turbidity contraventions. Annex 2 provides further information on the two Serious and 30 Significant events in 2019.

Risk Management

NI Water is required to carry out a risk assessment of each water supply system. This is part of the drinking water safety plan (DWSP) methodology adopted by NI Water. It is a 'source to tap' approach in the management and control of the potential risks. The assessments are required to be kept under review, to ensure ongoing risks are adequately controlled and any new or emerging risks are properly identified. We monitor these plans to ensure, where risks are identified, there are control measures in place to ensure the protection of public health. There are 23 risk assessments in place covering all of NI Water's drinking water supplies.

Regulatory Control

The Technical Audit Process

Through a process of technical audits we check NI Water's compliance with statutory obligations and best practice. We operate a risk-based approach to technical audit which takes into consideration factors such as water quality monitoring, events and previous audits. The recommendations from technical audits form part of the risk management approach in protecting drinking water supplies. A summary of the 2019 Technical Audit Programme is detailed in Annex 3.

Enforcement Action

In order to protect, maintain and improve drinking water supplies, NI Water has investment programmes and systems of work in place to manage risks. These are driven by NI Water's assessment of need, and large scale investments are managed through the current Price Control Process (PC15). However, there are occasions when it is necessary for DWI to take enforcement action against NI Water. When enforcement is taken forward it is done so to ensure future compliance and to protect public health through the provision of safe clean drinking water.

In 2019, DWI's approach to enforcement was reviewed and Notices were issued under The Water Supply (Water Quality) Regulations (Northern Ireland) 2017 (the Regulations) to replace the enforcements in place under the Water and Sewerage Services (Northern Ireland) Order 2006 (the Order). Three enforcements were revoked under the Order and reissued under the Regulations. These related to three water treatment works: (i) Derg WTW, to deal with ongoing contraventions of the individual pesticide, MCPA; (ii) Rathlin WTW, to deal with contraventions of the disinfection by-product, THMs; and (iii) Ballinrees WTW to deal with contraventions of the individual pesticide, MCPA. The Regulation 31(4) Notice issued for Rathlin WTW was complied with and revoked in December 2019. Previous Undertakings issued under the Order in 2018, were completed in 2019 in relation to (i) Glenhordial WTW, to deal with ongoing contraventions of the individual pesticide, MCPA; and (ii) Drumaroad WTW, to deal with contraventions of the aluminium standard. The details of enforcements in place during 2019 are contained in Annex 4.

Section 2

Private Water Supplies



Section 2

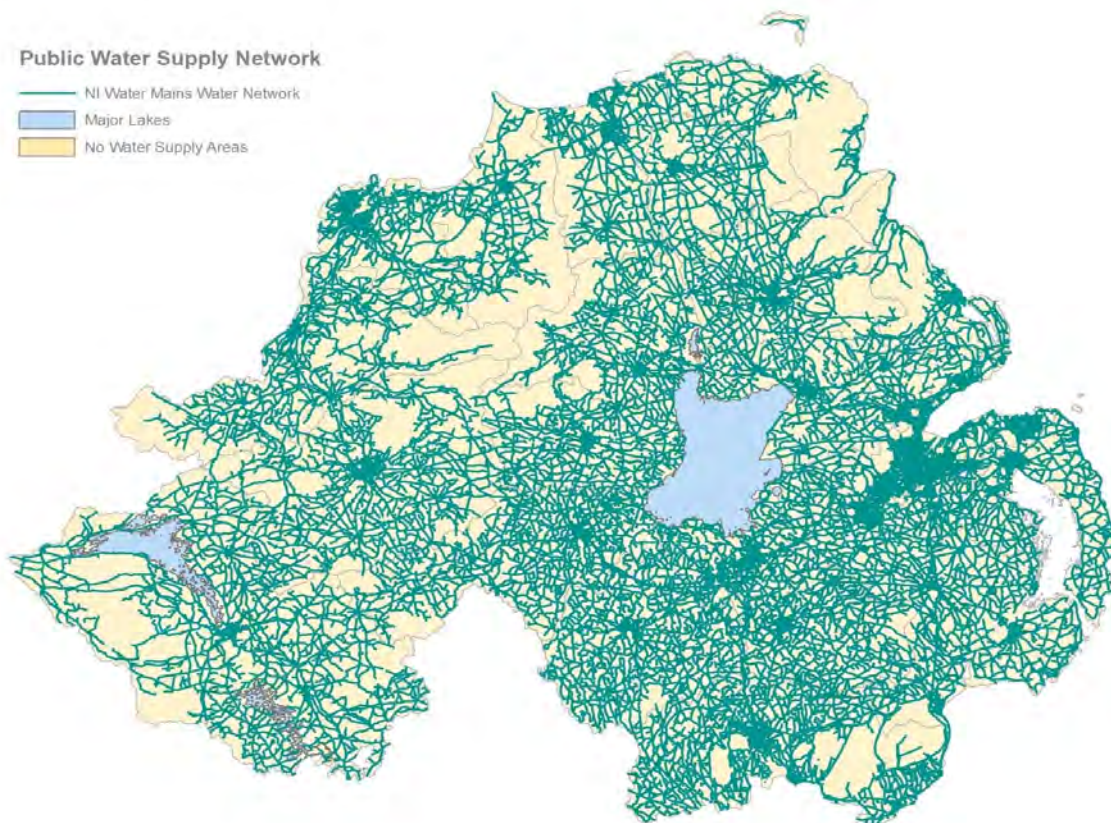
Private Drinking Water Supplies

- 174 registered private water supplies in 2019, including 14 new supplies
- 81% are commercial / public supplies; and 19% are small domestic supplies
- 99.4% of the supplies are from groundwater sources
- Of the 15,162 tests taken, 99.29% complied with the regulatory standards
- Full compliance was achieved at 63% of registered private water supply sites
- 45% of non-compliant sites showed microbiological contraventions, 48% chemical contraventions and 8% had both microbiological and chemical contraventions

NI Water supplies water to over 99% of the Northern Ireland population; the remainder is served by private water supplies. The extent of the NI Water mains network is shown in Figure 1.1. The areas of no water supply are those where domestic properties are most likely to be served by a private water supply.

Consumers often assume the water they are drinking is from the public water supply. However, although the number of people directly served by a private supply may be small, many more people are exposed to them through their use in both commercial activities and public buildings.

Figure 1.1: NI Water Mains Network (and no water supply areas)



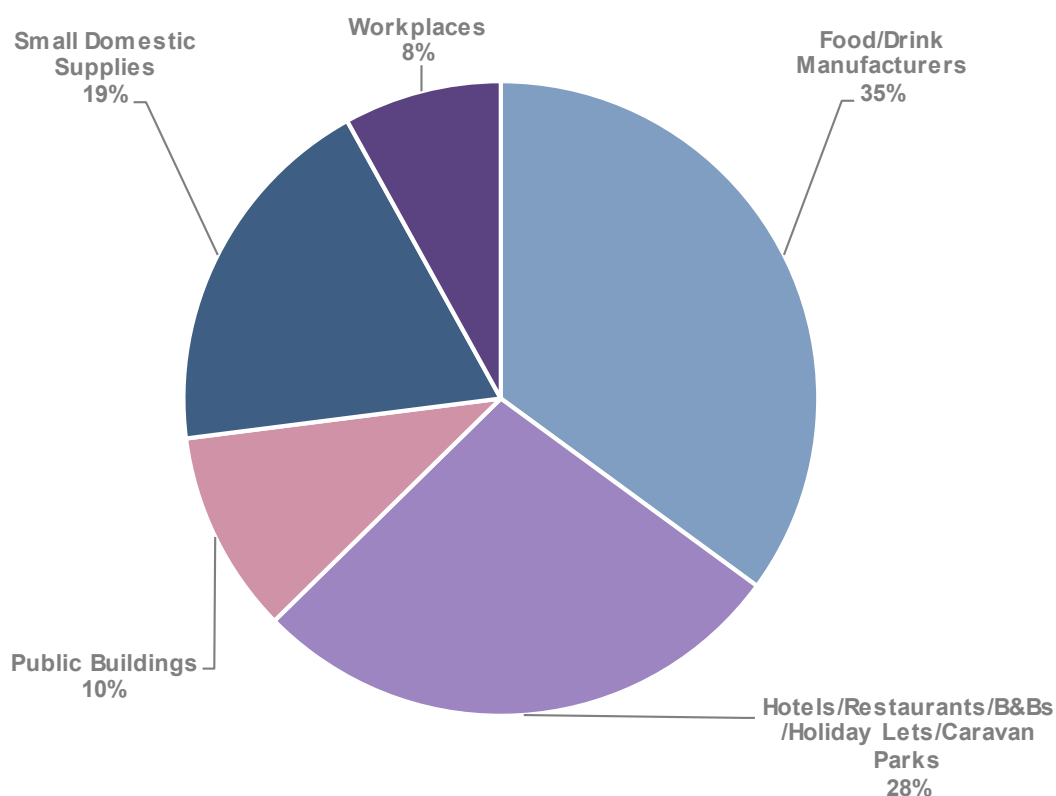
Private water supplies are often used as an alternative to or in conjunction with the public water supply at a range of sites such as:

- food and drink manufacturers;
- public buildings including hospitals, workplaces and universities; and
- within the hospitality industry such as hotels, restaurants, or tourist accommodation.

Register of Supplies

There was a total of 174 private water supplies on our register in 2019 which required monitoring under The Private Water Supplies Regulations (Northern Ireland) 2017. The categories of these supplies are presented in Figure 1.2. It is estimated there are approximately a further 1,200 supplies to single private dwellings which are not required to be monitored under the regulations. The Environmental Health Departments of local councils test these supplies on request.

Figure 1.2: Categories of Private Water Supplies in Northern Ireland in 2019



Private water supplies may be drawn from either surface or groundwater sources. Surface sources can include streams, rivers and reservoirs; groundwater sources include wells, boreholes and springs. Presently, 99.4% of registered private supplies in Northern Ireland are from groundwater sources, most commonly, boreholes.

Monitoring of Supplies

An annual sampling programme is in place for each registered supply. The frequency of the sampling and the range of parameters tested for are determined by the type of the supply and the volume of water used or population served. Samples at private water supplies are collected by Environmental Health staff, acting on our behalf.

Of the 174 private water supplies on our monitoring schedule for 2019, 81% are commercial/public supplies; and 19% are small domestic supplies (groupings of two or more houses). A breakdown of the numbers and sizes of private water supplies in 2019 is shown in Table 1.1.

Table 1.1: Numbers and Types of Private Water Supplies in 2019

Types of Private Water Supplies - Volume (m ³ /day)	Number of Supplies	Frequency of Sampling (per annum)
(i) Commercial/Public Supplies		
>1000 ≤2000	2	10
>100 ≤1000	21	4
>10 ≤100	57	2
≤10	61	1
(ii) Small Domestic Supplies (two or more dwellings)		
≤10	33	1
TOTAL	174	

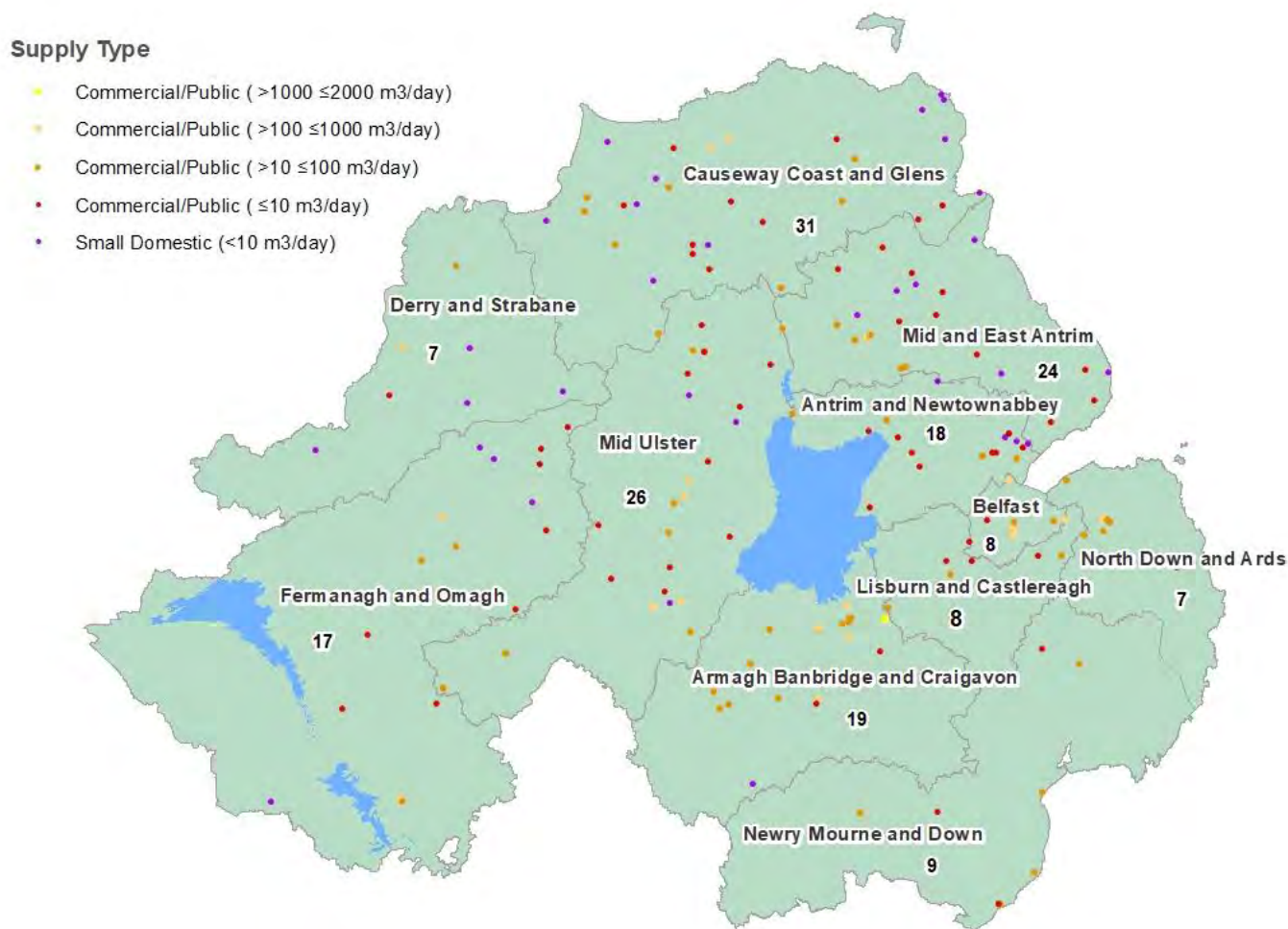
During 2019, four sites were removed from the sampling programme as they no longer met the criteria to be registered and the type of supply or frequency of sampling was updated for some sites throughout the year or as a consequence of the annual review of registered supplies. In addition, a total of 14 new supplies registered with us, these were:

- one food/drink manufacturer;
- three B&Bs/hostels;
- two workplaces;
- one leisure centre;
- two hotels; and
- five small domestic supplies serving two or more properties.

Although the sampling frequency for compliance sampling is set within the regulations, many supplementary samples are taken throughout the year during follow-up investigations. In addition, where necessary, sites can be put on an increased sampling frequency for a set period of time to monitor any parameters identified as a risk in the supply. During 2019, a total of 89 ancillary samples were collected. The results of the individual tests of these samples are not included in the calculation of the overall compliance for private water supplies.

A breakdown of registered supplies in Northern Ireland in 2019, categorised by size, is shown in Figure 1.3. The 2019 sampling programme included premises using private water supplies in all eleven council areas.

Figure 1.3: Distribution of Registered Private Water Supplies by Council Area in 2019



 The number of private water supplies in each council area (due to the small scale of the map all sites are not distinguishable).

Risk Assessment

The regulations require a risk assessment to be carried out for each supply to identify areas where there may be potential risks to the water quality. This assessment includes the whole private water supply system, from source to the point where the water is used. These assessments are required to follow the same standard (BS:EN 15975-2¹) as is used for the risk assessment of the public water supply.

The risk assessments of private water supplies are undertaken by Environmental Health staff, acting on our behalf. To ensure consistency of approach and competency, a web based application developed for the risk assessment of private water supplies was rolled out to local councils in early 2019 and training was subsequently delivered to relevant council staff.

A review of private water supplies requiring a risk assessment was undertaken in 2019 to prioritise their completion. Consequently, a total of 30 risk assessments were progressed or completed on the new web application during 2019.

¹ BS:EN 15975-2: concerning security of drinking water supply, guidelines for risk and crisis management

The information gathered through the risk assessment process is used to provide sites with an action plan to mitigate identified risks and to assist sites with the ongoing management of their water supplies. It can also be used to fine-tune the monitoring requirements for each site.

Overall Drinking Water Quality

Drinking water regulations in Northern Ireland apply equivalent water quality standards to private drinking water supplies as to public water supplies. The number of private water supplies registered with us in 2019 was higher than in 2018, therefore, the overall number of parameters analysed for in 2019 was higher than in the previous year. However, with the full implementation of the changes to parameter suites, introduced in the 2017 regulations, there was a slight reduction in the overall number of microbiological parameters analysed in 2019.

The results in Table 1.2 show that, out of a total of 15,162 tests carried out in 2019, 99.29% met the regulatory standards. The regulatory requirements were not met on 108 occasions for 19 parameters, namely: coliform bacteria, enterococci, *E. coli*, *Clostridium perfringens*, hydrogen ion (pH), manganese, iron, nickel, copper, sulphate, sodium, total trihalomethanes (THMs), turbidity, boron, lead, bromate, ammonium, colour and radon.

Table 1.2: Overall Water Quality in Private Water Supplies in 2019

Parameters	Determinations in 2019		
	Total Number of Tests	Number of Tests not Meeting the Standards	% Compliance
Coliform bacteria	306	34	88.89
<i>Clostridium perfringens</i>	139	5	96.40
<i>E. coli</i>	306	8	97.39
Enterococci	175	4	97.71
Microbiological Total	926	51	94.49
Manganese	271	18	93.36
Hydrogen ion (pH)	307	15	95.11
Iron	271	6	97.79
Nickel	140	2	98.57
Copper	140	2	98.57
Lead	140	2	98.57
Sulphate	140	1	99.29
Sodium	140	1	99.29
Trihalomethanes (THMs)	140	1	99.29
Boron	140	1	99.29
Bromate	140	1	99.29
Turbidity	307	2	99.35
Ammonium	154	1	99.35
Colour	271	1	99.63
Other parameters	11142	0	100.00
Chemical Total	13843	54	99.61
Radon	112	3	97.32
Radioactivity	281	0	100.00
Radiochemical	393	3	99.24
Overall Total	15162	108	99.29

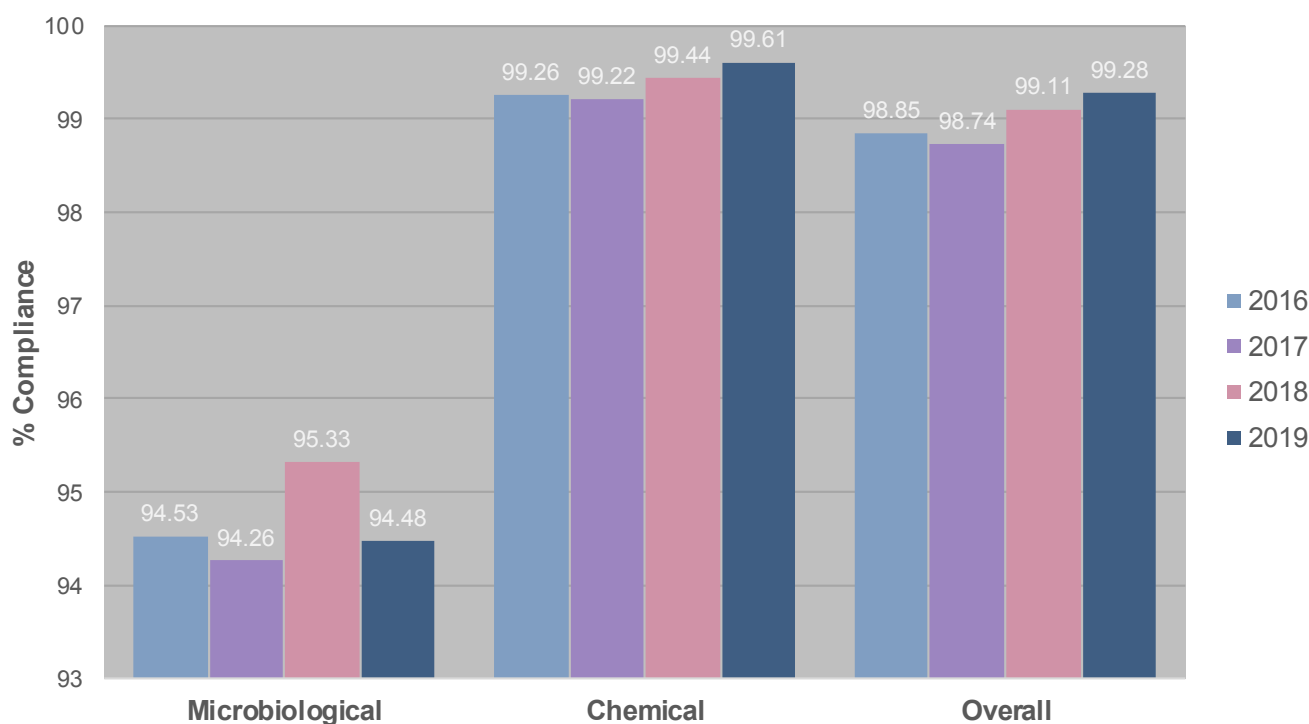
Under the private water supplies regulations, the sampling frequency and suites of parameters analysed at a private water supply may be adjusted based on previous test results and any identified risks. As a consequence, many commercial/public supplies had been analysed for a reduced suite of chemical parameters from 2012 to 2017. To carry out a review of this position, all supplies were returned to their full monitoring requirements in 2018 and this continued for 2019.

Microbiological contraventions account for 51 (47.22%) of the 108 contraventions at private water supplies in 2019. There has been a decrease in the level of overall microbiological compliance reported as 94.49% in 2019 compared to 95.33% in 2018 though it remains above the 94.26% reported in 2017, as illustrated in Figure 1.4.

Contraventions of the chemical standards have been reported for a range of parameters listed in Table 1.2. Overall, the number of chemical contraventions decreased from 70 in 2018 to 54 in 2019. Consequently, there was an increase in chemical compliance for 2019, 99.61% compared with 99.44% in 2018, also illustrated in Figure 1.4.

As with previous years, where the chemical standards have not been met, they relate mainly to contraventions for manganese, hydrogen ion and iron.

Figure 1.4: Comparison of Compliance in Private Water Supplies, 2016 - 2019



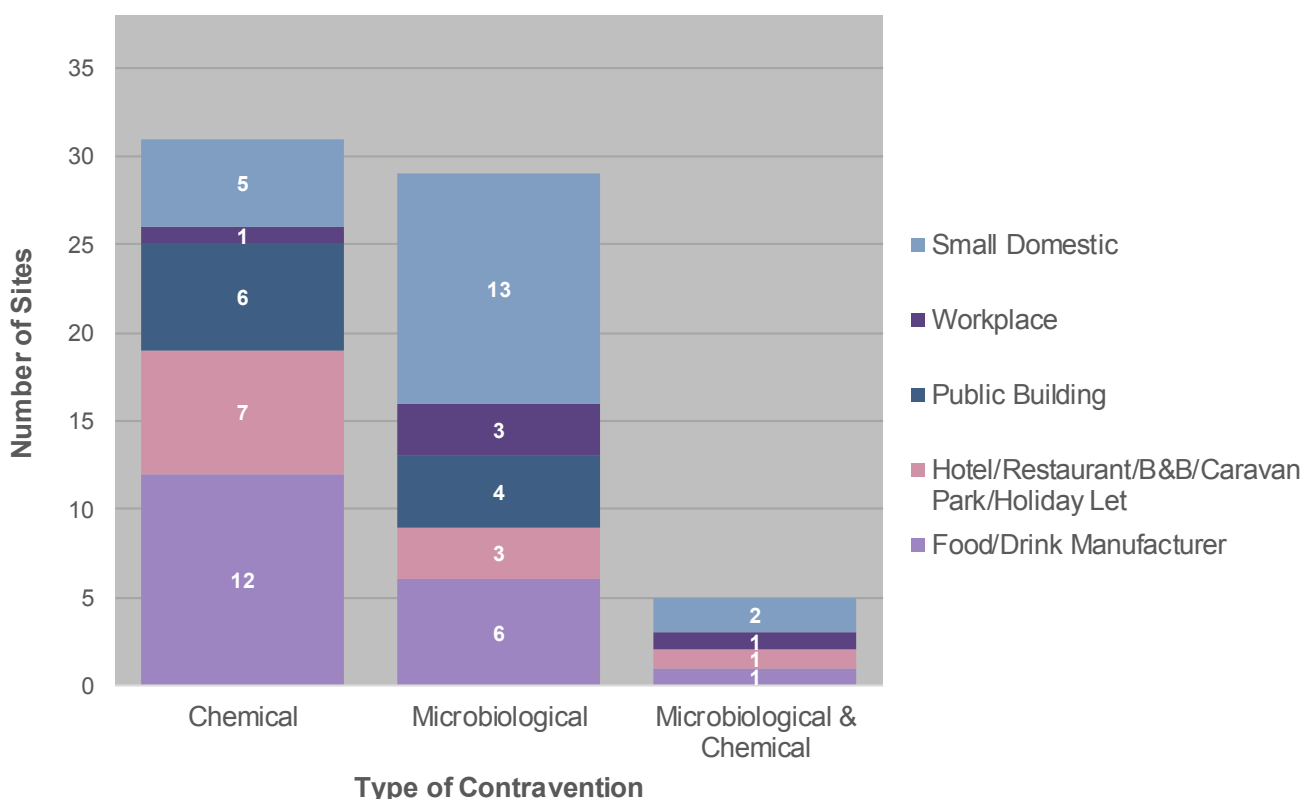
Full compliance was achieved for 63% (109 sites) of the private water supplies tested in 2019. Of the 65 sites which did not comply with the regulatory standards, 45% (29 sites) contravened microbiological standards; 48% (31 sites) chemical standards; and 8% (five sites) failed to comply with both microbiological and chemical standards.

The categories of these non-compliant sites, presented in Figure 1.5, show that 84% chemical only contraventions occurred at commercial/public sites such as food/drink manufacturers, hotels, or holiday lets whereas for the microbiological only contraventions 45% were at small shared domestic supplies and 55% were at commercial/public sites.

The significance of each contravention not only depends on the category or size of the sites but often, more importantly, on the purpose for which the water is used at the sites. In summary, for the 65 sites which did not comply with all the drinking water standards in 2019:

- 49 use the private water supply as the primary source of drinking water;
- 8 use the supply as an ingredient in food or drink; and
- 8 are used for the washing of equipment and surfaces in contact with food or drink.

Figure 1.5: Categories of Non-Compliant Private Water Supply Sites in 2019



Factors Affecting Drinking Water Quality

Different aspects of the water supply chain contributed to the microbiological and chemical water quality contraventions reported in 2019 such as: catchment (including source protection); treatment; distribution; and sampling point (tap) issues.

Micro-Organisms

The presence of micro-organisms in a private water supply is indicative of contamination of the water either at source or at some point within the distribution system. In particular, the detection of *E. coli* or enterococci bacteria specifically indicates faecal contamination of a water supply

and can be a risk to public health. These faecal indicators were found to be present in eight supplies during 2019, five small shared domestic supplies with no treatment and three commercial/public supplies, two of which had disinfection treatment in place at the time of sampling.

Rural water supplies in the vicinity of where animals graze or manure is spread are most at risk. This is particularly prevalent at times of heavy rainfall, when water may run directly off farmland and carry micro-organisms into unprotected private supplies. Guidance on source protection is available in the [Private Water Supplies Technical Manual](#).

Poor microbiological quality also highlights where there is a lack of suitable treatment or the treatment installed is not being operated and maintained appropriately. The quality of the raw water is a key element in selecting the correct treatment for a private water supply which may require pre-treatment prior to disinfection.

Metals

Some groundwaters may contain high levels of naturally occurring iron and manganese. Iron levels can also be raised due to deterioration of cast iron pipe work and/or storage tanks within the distribution system. In 2019, 15 sites reported contraventions for one or both of these metals.

High levels of iron and manganese may affect the appearance, taste or smell of the water resulting in turbidity, colour, taste, and odour contraventions and discoloration or staining of water fittings. It can also affect treatment systems, such as ultra-violet lamps, due to metal deposits causing a reduction in their effectiveness for disinfection. Sites are encouraged to purge wells/boreholes, clean out storage tanks and flush through pipe work or, where required, replace parts of their distribution network to reduce the levels of iron in their supplies.

In 2019, two sites had copper contraventions due to stagnation of water in the supply network: one due to a water source being out of service for some time prior to sampling and the second site as a result of the sample point used not being in regular use. Two sites had nickel contraventions both due to newly fitted sample taps. Two sites had a lead contraventions due to the presence of old lead pipe work.

Lead, and other heavy metals such as nickel and copper, are usually detected at elevated levels due to corrosion of pipe work or fittings, especially if the source water is naturally acidic, and/or due to the use of inappropriate fixtures and fittings. The regulations specify that only products and substances approved for use with drinking water supplies should be used.

Details of [approved products](#) are available through the Drinking Water Inspectorate for England and Wales website.

Pesticides

There were no pesticide contraventions detected in 2019, however, trace levels of a range of individual pesticides, below the regulatory limit of 0.10 µg/l, were detected at 77 sites.

Actions in the Event of Failure

Contraventions are investigated through site visits conducted by Environmental Health staff and the collection of follow up samples. Depending on the nature and significance of the contraventions, it may also be necessary for us to carry out a site inspection. Site visits ensure owners/users of the supply are provided with practical advice on source protection and treatment options and best practice for the management of their water supply to reduce the potential risks of contamination.

Any contraventions at supplies, where the water is used as an ingredient in food production or as drinking water, and that are considered as a potential risk to health, are reported to the Public Health Agency (PHA) for appropriate health advice. Where necessary, the regulations contain a provision to issue Notices which can be used to restrict or prohibit the use of a supply.

Out of the 108 contraventions identified in 2019, 61 were notified to PHA for advice: 51 microbiological and 10 chemical. As a consequence, new restrictions in the use of the private water supply were put in place at 16 sites to protect public health. In addition, restrictions on use were initiated at a further one site as a result of unacceptable taste or odour.

These restrictions of private water supplies can include switching to, or blending with, the public water supply (where this is available), 'Boil Water Before Use' notifications, and 'Do Not Use' instructions.

Removal of these restrictions requires investigation into the cause of the water quality contravention, completion of work to remedy any issues identified and the achievement of two consecutive satisfactory resamples. Accordingly, the restrictions were removed at 12 sites and a further one site ceased using the borehole supply within the business.

We continue to work with the owners and users of private water supplies and Environmental Health staff to bring the remaining supplies into compliance. Priority is given to advancing improvements to the water quality through: provision of advice and guidance; agreeing action plans (particularly at the larger commercial/public sites); and promotion of water safety plans for the ongoing management of these supplies.

We have a duty to ensure compliance with the water quality standards in The Private Water Supplies Regulations (Northern Ireland) 2017. Our approach, where there is no known health risk, is initially through informal negotiations. However, where necessary, we may take formal enforcement action to secure compliance and ensure a safe, clean supply of drinking water from private water supplies.

Annexes

Annex 1 Glossary

Annex 2 Events

Annex 3 Technical Audit Programme

Annex 4 Enforcement Orders



Annex 1

Glossary and Definition of Terms

Aesthetic	associated with the senses of taste, smell and sight.
Animalcule	a tiny or microscopic life form.
Catchment	the area of land that drains into a watercourse.
Clopyralid	a herbicide used for controlling broad-leaved weeds such as docks and creeping thistle in grassland.
<i>Clostridium perfringens</i>	a spore-forming bacterium which is exceptionally resistant to unfavourable conditions in the water environment.
Coagulation	a process employed during drinking water treatment to assist in the removal of particulate matter.
Coliforms	a group of bacteria which may be faecal or environmental in origin.
Contravention	a breach of the regulatory requirement.
Cryptosporidium oocyst	a protozoan parasite.
Determination	an analysis for a specific parameter.
Drinking Water Standards	the prescribed concentrations or values listed in the Regulations.
Enterococci	a sub-group of faecal streptococci commonly found in the faeces of humans and warm-blooded animals.
<i>Escherichia coli</i> (<i>E. coli</i>)	a type of faecal coliform bacteria commonly found in the intestines of animals and humans. The presence of <i>E. coli</i> in water is a strong indication of recent sewage or animal waste contamination.
Event	a situation affecting, or threatening to affect, drinking water quality.
Faecal Coliform	a sub-group of coliforms, almost exclusively faecal in origin.
Filtration	the separation of suspended particulate matter from a fluid.
Flocculation	a process where colloids come out of suspension in the form of floc or flakes.

Glyphosate	a herbicide used to control broadleaved weeds and grasses amongst crops.
Granular Activated Carbon (GAC)	an absorbent filtration media used to remove trace organic compounds from water.
Groundwater	water from aquifers or other underground sources.
Hydrogen ion (pH)	gives an indication of the degree of acidity of the water. A pH of 7 is neutral; values below 7 are acidic and above 7 are alkaline. A low pH water may result in pipe corrosion. This is corrected by adding alkali during water treatment.
Impounding reservoir	is a reservoir of stored water that may be used when supply is insufficient.
Incident	an event where there has been a demonstrable deterioration in the quality of drinking water
Indicator Parameter	something that is measured to check that the control measures, such as water treatment, are working effectively.
Leaching	to lose, or cause to lose, soluble substances by the action of a percolating liquid.
MCPA	a herbicide used for controlling broad-leaved weeds in grass or cereal crops.
Microbiological	associated with the study of microbes.
m ³ /d	cubic metres per day.
µg/l	micrograms per litre (one millionth of a gram per litre).
Parameters	the substances, organisms and properties listed in Schedules 1 and 2, and regulation 2 of the Regulations.
Pathogen	an organism which causes disease.
Pesticides	any fungicide, herbicide, insecticide or related product (excluding medicines) used for the control of pests or diseases.
Prescribed Concentration or Value (PCV)	the numerical value assigned to drinking water standards, defining the maximal or minimal legal concentration or value of a parameter.
Raw Water	water prior to receiving treatment abstracted for the purpose of drinking water provision.
Remedial Action	action taken to improve a situation.

Sedimentation	the tendency for particles in suspension to settle out of the water under the influence of gravity.
Service Pipe	pipe that connects the consumer's property to NI Water's main. It comprises two parts: the communication pipe which is the connection from the water main to the consumer's property boundary (normally at the outside stop tap); and the supply pipe which runs from the boundary of the property to the consumer's inside stop tap.
Service Reservoir	a water tower, tank or other reservoir used for the storage of treated water within the distribution system.
Supply Point	a point, other than a consumer's tap, authorised for the taking of samples for compliance with the Regulations.
Trihalomethanes (THMs)	a group of organic substances comprising, for the purposes of the Regulations, four substances: trichloromethane (also known as chloroform), tribromomethane (also known as bromoform), dibromochloromethane and bromodichloromethane.
Water Supply Zone	a pre-defined area of supply for establishing sampling frequencies, compliance with standards and information to be made publicly available.
Wholesome/ Wholesomeness	a concept of water quality which is defined by reference to standards and other requirements set out in the Regulations.

Annex 2 – Events

Serious Drinking Water Quality Events in 2019

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

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
20/01/19 – 15/02/19	Drumaroad WTW (427,990 population)	Elevated levels of aluminium occurred in the works final water due to treatment difficulties. An enforcement notice was already in place at the time of this event.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
04/02/19 – 07/02/19	Drumaroad WTW (427,990 population)	<i>Clostridium perfringens</i> were detected in the works final water and Ballykine SR. There were treatment issues at Drummaroad WTW at the time of these contraventions. Further samples taken in relation to this event were satisfactory.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
09/02/19 – 10/02/19	Castor Bay WTW (406,556 population)	A contravention of the turbidity standard occurred in the final water at Forked Bridge WTW. The elevated turbidity was caused by treatment difficulties at Castor Bay WTW which supplies Forked Bridge final water.	Armagh Banbridge Craigavon District; Belfast City; Lisburn & Castlereagh City; Mid-Ulster District; and Newry Mourne & Down District.
29/04/19 – 23/09/19	Derg WTW (38,989 population)	Contraventions of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment. There is an ongoing enforcement notice issued by the Inspectorate in relation to this matter.	Derry City & Strabane and Fermanagh & Omagh District.
04/05/19 – 11/05/19	Killymore SR (1066 properties)	Following a burst on the Tullywhisker to Rathkelly trunk main, there were difficulties achieving a permanent repair. Tankering was required over a number of days to maintain supply from Rathkelly and Killymore SRs. Bottled water was provided to consumers who were unable to be kept on supply.	Derry City & Strabane.
15/05/19 – 16/12/19	Rathlin WTW (296 population)	The elevated level of bromoform (produced by the disinfection of the raw water which has a high bromide level) in the works final water led to trihalomethane (THM) contraventions and WHO Index values for THMs > 1. An enforcement notice was closed by the Inspectorate in December 2019 following completion of the required remediation measures.	Causeway Coast & Glens Borough.
28/05/19 – 03/06/19	Ballybogey Road, Ballymoney (2 properties)	Coliform bacteria contraventions led to “Boil Water before Use until Further Notice” advice being issued to two properties. The contraventions occurred following a burst main caused by a third party contractor.	Causeway Coast & Glens Borough.

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
29/05/19 – 01/06/19	Dorisland WTW (137,571 population)	A <i>Cryptosporidium</i> oocyst was detected in the works final water. All subsequent samples were satisfactory.	Antrim & Newtownabbey Borough; Belfast City; and Mid & East Antrim Borough.
04/06/19 – 06/06/19	Ballybracken Drumdarragh SR (384 properties)	Following a burst at the inlet to Ballybracken Drumdarragh SR, tankering into the SR was required to increase storage levels and maintain the supply to consumers.	Mid & East Antrim Borough.
05/06/19 – 07/06/19	Killylane WTW (54,597 population)	Contraventions of the aluminium parameter occurred in the works final water due to treatment issues caused by operational work at the site.	Mid & East Antrim Borough.
11/06/19 – 02/07/19	Ballinrees WTW (181,270 population)	Odour contraventions occurred in the works final water and related supply area following issues with the treatment process.	Causeway Coast & Glens Borough and Derry City & Strabane.
18/06/19 – 23/06/19	Clooney Road & Carnamuff Road, Ballykelly (2 properties)	Coliform bacteria contraventions following operational work led to “Boil Water before Use until Further Notice” advice being issued to two properties.	Causeway Coast & Glens Borough.
27/06/19 – Present (awaiting mains replacement)	Mill Road, Kilcoo (4 properties)	Samples taken in response to consumer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains.	Newry Mourne & Down District.
01/07/19 – 12/09/19	Seafin Road, Ballyronee (8 properties)	Samples taken in response to consumer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains. The main was replaced in September 2019 and samples are now satisfactory.	Newry Mourne & Down District.

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
11/07/19 – 12/07/19	Rathlin WTW (296 population)	A turbidity contravention occurred in the works final water following excavation work relating to a new treatment process on the site.	Causeway Coast & Glens Borough.
18/07/19 – 15/08/19	Seagahan WTW (37,940 population)	Contraventions of the aluminium and turbidity parameters (above the Health Notification Values) occurred in the works final water following treatment difficulties. DWI audited this works and made a number of recommendations and suggestions.	Armagh Banbridge Craigavon District.
06/08/19 – 14/08/19	Glenhordial WTW (12,040 population)	A contravention of the individual pesticide standard for MCPA occurred in the works final water due to insufficient treatment.	Fermanagh & Omagh District.
22/08/19 – 30/08/19	Kennaught Terrace, Limavady (26 properties)	<i>E. coli</i> and coliform bacteria contraventions led to “Boil Water before Use until Further Notice” advice being issued to 26 properties. The contraventions were probably caused by local contamination which occurred during operational work in the area.	Causeway Coast & Glens Borough.
19/08/19 - Present	Ballymageough Road, Kilkeel (5 properties)	Samples taken in response to consumer complaints contravened the iron and turbidity standards (above the Health Notification Values) due to the condition of the iron mains.	Newry Mourne & Down District.
23/08/19 – 26/08/19	Drumaroad WTW (427,990 population)	Elevated levels of aluminium occurred in the works final water due to treatment difficulties. An enforcement notice was already in place at the time of this event.	Belfast City; Lisburn & Castlereagh City; Newry, Mourne & Down District; and North Down & Ards Borough.
31/08/19 – 08/09/19	Killylane WTW (54,597 population)	Elevated aluminium levels occurred in the works final water following treatment difficulties.	Mid & East Antrim Borough.

Significant Drinking Water Quality Events in 2019

Date of Significant Event	Area and Estimate of Population/ Properties Potentially Affected	Nature and Cause of Significant Event	Associated Council Area(s)
03/09/19 – 04/09/19	Ballinrees WTW (181,270 population)	Contraventions of the aluminium and turbidity standards occurred in the works final water, and in the related distribution system. This was caused by treatment process difficulties.	Causeway Coast & Glens Borough and Derry City & Strabane.
04/09/19 – 17/09/19	Park View, Cloughoge, Newry (8 properties)	Contamination of the mains water supply occurred following a burst main caused by a third party contractor. The contractor was involved in a clean-up operation following a fire. There were taste, odour and appearance complaints from consumers.	Newry Mourne & Down District.
23/09/19 – 11/11/19	Caugh Hill WTW (79,029 population)	Contraventions of the trihalomethanes (THMs) parameter occurred in the works final water and related supply area following treatment difficulties.	Causeway Coast & Glens Borough and Derry City & Strabane.
27/10/19 – 15/11/20	Killylane WTW (54,597 population)	A contravention of the aluminium parameter occurred in the works final water. Following an investigation, NI Water were unable to identify the cause of the contravention.	Mid & East Antrim Borough.
28/10/19 – 29/10/19	Altnahinch WTW (33,310 population)	A contravention of the turbidity parameter occurred in the works final water following operational work to clean the Clear Water Tank.	Causeway Coast & Glens Borough.
30/10/19 – 15/11/19	Killyhevlín WTW (80,001 population)	<i>Cryptosporidium</i> oocysts were detected in the works final water. Following an investigation, NI Water were unable to identify the cause of the contraventions.	Fermanagh & Omagh District.

Significant Drinking Water Quality Events in 2019

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

Annex 3

Technical Audit Programme

In 2019, the technical audit programme of the public water supplies was completed as detailed in Table 3.1 and we acknowledge NI Water's continued co-operation during the audits. NI Water has implemented or provided comment on, the recommendations and suggestions we provided in our audit reports.

The following table provides a summary of our 2019 Inspection Programme.

Table 3.1: Summary of the 2019 Inspection Programme

Date of Audit	Location	Audit Activity	Number of Recommendations ¹	Number of Suggestions ²
13/03/19	Lough Fea WTW	To check that good operational practice is used in the water treatment process.	9	6
28/03/19	Sampling Procedures	To check the sampling technique and ensure sample points are fully compliant.	5	12
12/11/19	Laboratory Information Management System	To check that data is adequately managed by the 'Laboratory Information Management System'.	6	0
09/12/19	Drumaroad WTW	To check that good operational practice is used in the water treatment process.	6	5
12/12/19	Seagahan WTW	To check that good operational practice is used in the water treatment process.	6	8

¹ Recommendations are made where, in our opinion, action is required to avoid a foreseeable risk or a breach of a regulatory duty. If such a breach occurs, then we may consider 'enforcement action'. A formal written response from NI Water is required.

² Suggestions are made in relation to matters which relate to best practice.

Annex 4

Enforcement Orders

The DWI Section of the [DAERA website](#) publishes details of all Enforcement actions.

Table 4.1: Summary of Enforcement Actions 2019

Type of Enforcement	Water Treatment Works (WTW)	Reason for Undertaking Or Notice	Summary
CPEO/18/01	Glenhordial WTW	Contravention of the regulatory standard for the herbicide, MCPA	This was issued on the 31/01/2018. The associated Undertakings were completed in February 2019.
CPEO/18/03	Drumaroad WTW	Contravention of the regulatory standard for Aluminum	This was issued on 30/11/18. The associated Undertakings were completed in December 2019.
PEO/18/01	Castor Bay WTW	Contravention of the standard for Odour	The Undertakings were completed on 16/04/20 and the PEO closed in May 2020.
Regulation 31(4) Notice 01/19	Derg WTW	Contravention of the regulatory standard for the herbicide, MCPA	This was issued on 12 March 2019, following the revocation of the previous Provisional Enforcement Order PEO/16/01 on the same date. The Notice required NI Water to introduce Powdered Activated Carbon (PAC) to the treatment process to mitigate against MCPA contraventions by the 30 June 2020. It was revoked on 30 June 2020 and a new Regulation 31(4) notice requiring NI Water to install a form of treatment to mitigate against MCPA contraventions by 31 March 2022 was issued on that date.

Type of Enforcement	Water Treatment Works (WTWs)	Reason for Undertaking Or Notice	Summary
Regulation 31(4) Notice 02/19	Rathlin WTW	Contravention of the regulatory standard for THMs (Trihalomethanes Total)	This was issued on 12 March 2019, following the revocation of the previous Consideration of Provisional Enforcement Order CPEO/18/02 on the same date. The required remedial measures were completed in November 2019 and the Notice revoked in December 2019.
Regulation 31(4) Notice 03/19	Ballinrees WTW	Contravention of the regulatory standard for the herbicide, MCPA	This was issued on 12 April 2019, following the revocation of the previous Consideration of Provisional Enforcement Order CPEO/17/01 on the same date. The Notice requires NI Water to introduce Powdered Activated Carbon (PAC) to the treatment process to mitigate against MCPA contraventions by 18 December 2020 .

Useful Information

(To access the information click on the links below)

[Regulatory Framework](#) – provides details and links to current legislation relating to drinking water quality.

[Drinking Water Quality Tables](#) – provides details of drinking water compliance within individual water supply zones.

Drinking Water Advice and Guidance for [Public](#) and [Private](#) Supplies – provides a list of links for consumers and professionals requiring further information on drinking water quality.

[Useful Contacts](#) – provides a list of organisations and contact details related to drinking water.

Request for Feedback on this Report

Did you find what you were looking for?

The Drinking Water Inspectorate is constantly aiming to improve the standard of information provided in this report.

Any views or opinions you may have would be highly valued by us and we would greatly appreciate your feedback.

Any feedback can be provided by either

Email: dwi@daera-ni.gov.uk

or

Post: **Drinking Water Inspectorate
Northern Ireland Environment Agency
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