



Quarterly Report APPENDIX

WAB



Water Advisory Body

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Membership and Functions

The Water Advisory Body (the WAB) is established under statute. The WAB consists of five members:



Paul McGowan
Chairperson



Martin Sisk



Miriam McDonald



Donal Purcell



Michelle Minihan

Improving the transparency and accountability of Irish Water

Our overall function is to advise the Minister on the measures needed to improve the transparency and accountability of Irish Water for the purpose of increasing the confidence of members of the public in Irish Water. The WAB's functions are set out in the Water Services Act 2017.

Irish Water's Strategic Funding Plan is a public document and available on Irish Water's website www.water.ie.

This report sets out the WAB's view on how Irish Water is performing against its own Strategic Funding Plan. Each report is prepared for the Oireachtas and is published on the WAB's website - www.wateradvisorybody.ie.

The Legislative Basis for the Water Advisory Body

The Water Advisory Body (the WAB) is an independent statutory body established under Part 7 of the Water Services Act 2017. The WAB was formally established on 1 June 2018. The Act provides for a 5-member board with a member appointed from each of three specific organisations (the Commission for Regulation of Utilities, the Environmental Protection Agency and An Fóram Uisce) and two members appointed through the Public Appointments Service process. The Water Advisory Body held its first meeting on 13 July 2018.

Part 7 of the Act also outlines the function and reporting arrangements for the WAB. The substantive functions of WAB set out in the 2017 Act are:

- a) To advise the Minister on the measures needed to improve the transparency and accountability of Irish Water for the purpose of increasing the confidence of members of the public in Irish Water.
- b) To furnish, on a quarterly basis, a report to the Committee on the performance by Irish Water in the implementation of its Strategic Funding Plan with particular regard to the following:
 - a. Infrastructure delivery and leakage reductions;
 - b. Cost reduction and efficiency improvements;
 - c. Improvements in water quality, including the elimination of boil water notices;
 - d. Procurement, remuneration and staffing policies;
 - e. Responsiveness to the needs of communities and enterprise.

The WAB is also required to provide an annual report to the Minister on the performance of the WAB's functions during the period since its establishment.

2.1 Infrastructure Delivery and Leakage Reductions Indicators

2.1.1 Performance Indicator 1 - Leakage

Brief Explanation

The 'unaccounted for water' numbers for 2015 to 2018 includes:

- ▶ Unbilled water including;
 - Other water used by Irish Water.
 - Water used by fire services and other unbilled use.
- ▶ Apparent losses;
 - Water used at connections not recorded on Irish Water's system.
 - Under-recorded use by homes and businesses because of, for example, broken water meters and data handling errors.
- ▶ Real Losses on the public network from leaks and overflows, commonly referred to as network leakage¹.

Irish Water recently implemented a leakage management system in line with international best practice. As a result, for 2019, Irish Water has made some improvements to how it is reporting water losses. Within the 'Unbilled water' portion of 'Unaccounted For Water' Irish Water now has an estimate for "Other water used by Irish Water" (such as water use at its treatment plants) and reassigned this water use to the "Non-Domestic Demand" figure. Irish Water has also estimated 'water used by fire services and other unbilled use' and reassigned this use to "Unrecorded Connections". Within the 'Apparent losses' portion of 'Unaccounted For Water', Irish Water has provided and separately identified an estimate for 'water used at connections not recorded on Irish Water's system' ("Unrecorded Connections"), thereby reducing the 'Apparent losses' portion of 'Unaccounted For Water'. Furthermore, Irish Water has also estimated a value for 'Under-recorded Use by Customers' in homes and businesses because of, for example, broken water meters and/or data handling errors and included this under-recorded use at homes and businesses in the domestic and non-domestic demand figures respectively.

Separately identifying and reassigning these water demand use categories in this way has the effect of increasing the domestic and non-domestic demand figures (although other factors, such as demand growth, impacts these figures) and lowering the 'Unaccounted For Water' figure thereby providing a better estimate of "Real Losses" or, the amount of water that is lost to leaks on Irish Water's system.

A further breakdown of the water demand use categories in line with the definition set out in the Technical Note below will be provided in future reports.

1 **Source:** Irish Water Capital Investment Plan 2017 to 2021 – Monitoring Report No. 3

It should be noted that the leakage calculation does not include water lost due to leaks that occur on the customer's premises. Where this occurs, Irish Water provides a First Fix Scheme to assist and encourage domestic customers to fix leaks that occur on their property. The First Fix Scheme is included as a separate performance indicator in this section.

Why we focus on this Performance Indicator

Reducing the level of real water losses ensures that water sources are conserved and that revenue is not spent on treating large quantities of drinking water that is ultimately lost and not used by customers. The WAB will use the leakage metric to measure the performance of Irish Water in ensuring water delivered through its distribution network is not lost to customers.

TECHNICAL NOTE

LEAKAGE

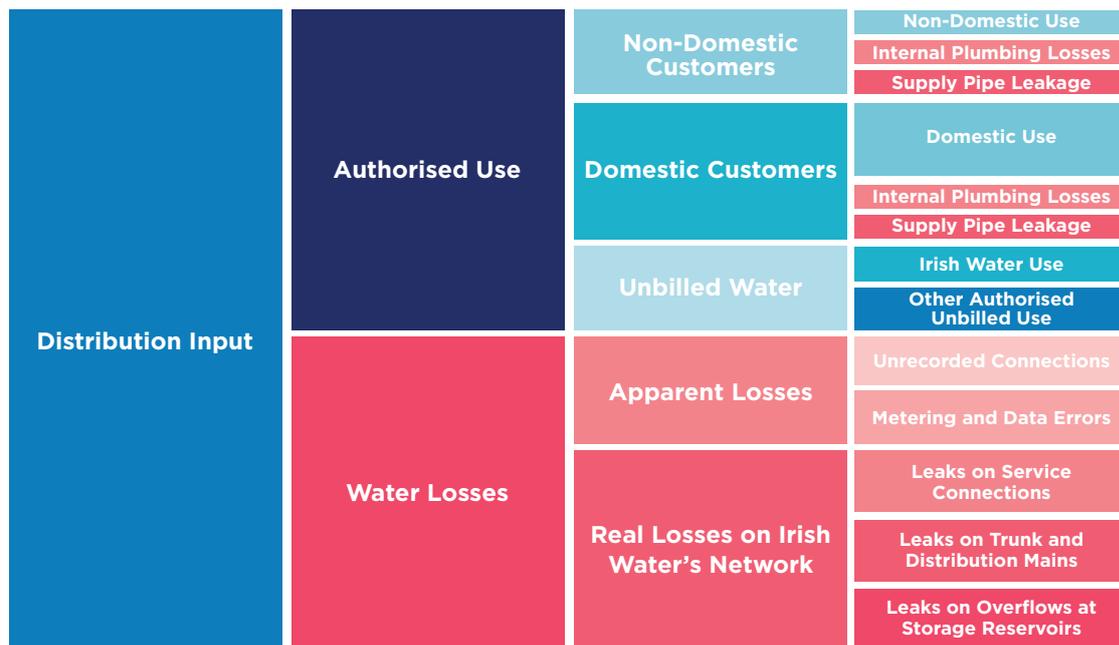
Figure 1 illustrates the water balance and captures how the total volume of water entering into the network ('distribution input') is apportioned between 'authorised use' (across domestic, non-domestic and unbilled water use) and 'water losses' (which is subdivided into 'apparent losses' and 'real losses').

Real losses on Irish Water's network, commonly referred to as leakage, includes leaks on trunk mains and distribution pipes, leaks on service connections and leaks and overflows at storage reservoirs. There are two approaches to determining leakage on the public network. The first looks at a top down water balance where the water entering the network is assigned to water losses and water use based on metering information and well-reasoned estimates.

In addition to this, water losses should be estimated using a bottom-up approach by monitoring demand at a time when customer use is low which is typically at night. During a period of low, predictable customer use, flow into District Metered Areas is monitored for a continuous period of at least one hour. This flow is then allocated between public network losses, customer supply pipe losses and customer use and then converted from hour to day with an adjustment made for variations in pressure between day and night. Estimates of losses on trunk mains and service reservoirs are then added to the calculated District Metered Area losses to provide an estimate of total losses on the public network.

A final leakage number can then be reported by reconciling differences in the top-down and bottom-up approach to leakage estimation and applying robust statistical analysis in line with best international practice.

Figure 1
Components of Water Demand



2.1.2 Performance Indicator 2 - First Fix Scheme

Brief Explanation

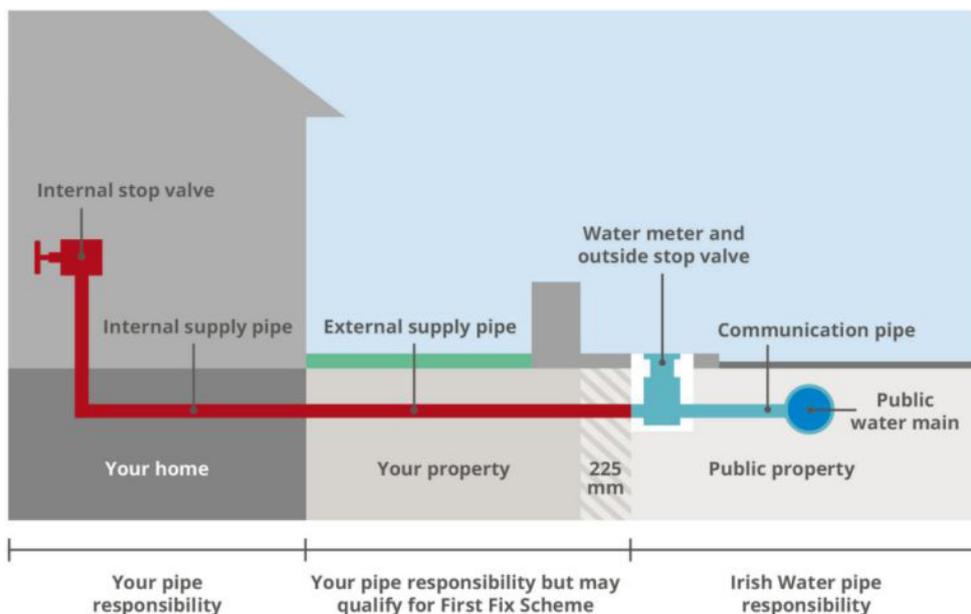
In 2015 Irish Water introduced the First Fix Scheme to tackle leakage on domestic customers' properties.

Under Irish Water's First Fix Scheme, metered domestic customers are notified when Irish Water suspects a leak is occurring within the boundary of their property. A leak alarm notifies Irish Water that there is a constant flow of six or more litres of water per hour for a continuous period of 48 hours or more. Irish Water may then offer domestic customers a free leak investigation and free leak repair for leaks on the external customer supply pipe.

The 'external customers supply pipe' is outside of the customer home but within the boundary of the customer property, as illustrated in Figure 2. Customers are responsible for fixing leaks on pipes located within the customer home ('internal supply pipe').

Figure 2

Irish Water's First Fix Scheme - Pipe Responsibility



Irish Water reports key data from the First Fix scheme each quarter. These reports are published on Irish Water's website. It provides information on the number of leak investigations carried out and the number of leak repairs completed. Irish Water also provides information on how many leak investigations identified leaks that did not qualify for the scheme, the amount of money that Irish Water spends on the scheme and litres of water saved per day through the scheme.

The WAB notes that earlier this year, the Commission for Regulation of Utilities has made a decision to expand the schemes scope to make it available to a greater number of customers. The CRU has decided to expand the scheme to unmetered customers, mixed-use customers with a predominant domestic use, customers with a shared service connection and unregistered customers. Please see section X of the Quarterly Report No.2 2021 for more information on the CRU's decision on the First Fix Scheme Policy².

² CRU21040a-First-Fix-Scheme-Policy-Decision-Paper-April-2021.pdf

Why we focus on this Performance Indicator

Reducing drinking water loss through the First Fix Scheme helps to conserve water and can help to reduce the amount of money Irish Water spends on treating and supplying water that is ultimately leaked and not used by customers.

The rate of repairs carried out by Irish Water through the First Fix scheme is an important indicator of the performance of Irish Water in ensuring water delivered through its distribution network is not lost through leakage from the customers' premises.

TECHNICAL NOTE

WHY THE FIRST FIX SCHEME IS IMPORTANT

Reducing drinking water loss through the First Fix Scheme helps to:

- ▶ conserve water;
- ▶ reduce the amount of money Irish Water spends on treating and supplying water that is ultimately leaked and not used by customers; and
- ▶ allows Irish Water to manage better risks and uncertainty in supplying drinking water (such as faster demand growth than anticipated when planning and designing water infrastructure).

2.1.3 Performance Indicator 3 - Remedial Action List (Water)

Brief Explanation

The Environmental Protection Agency publishes the Remedial Action List. This is a list of public water supplies in need of significant corrective action, usually at the treatment plant. Public water supplies are added to the Remedial Action List for a variety of reasons including ongoing failure to comply with drinking water quality standards or inadequate treatment levels.

Why we focus on this Performance Indicator

The number of supplies on the list, and the population that these supplies serve, are important as they indicate the progress of Irish Water in ensuring public drinking water supplies are safe and secure. When Irish Water has demonstrated that the supply is safe and secure, it can be removed from the Remedial Action List.

TECHNICAL NOTE

REASONS FOR ADDING A DRINKING WATER SUPPLY TO THE REMEDIAL ACTION LIST

Public water supplies can be added to the Environmental Protection Agency's Remedial Action List for one or more of the following reasons:

- ▶ Persistent failure to comply with the standards for priority parameters such as E.coli, trihalomethanes, aluminum, pesticides or turbidity;
- ▶ Inadequate treatment of the water supply, for example, where there is no treatment other than chlorination available for a surface water supply;
- ▶ Monitoring results or compliance checks carried out by the Environmental Protection Agency indicate a lack of operational control at the treatment plant; or
- ▶ The Health Service Executive has identified a supply where improvements are required.

2.1.4 Performance Indicator 4 - Priority Urban Area List (Wastewater)

Brief Explanation

The Environmental Protection Agency publishes a Priority Urban Area List. This is a list of urban areas that most urgently need improvement in the waste water treatment provided. An urban area can be added to the Priority Urban Area List for a number of reasons including failing to meet EU sewage treatment standards or because waste water is having a harmful effect on water quality in rivers, lakes or coastal waters.

Why we focus on this Performance Indicator

The number of urban areas on the list is important as it is an indicator of the performance of Irish Water in ensuring that waste water generated within communities is not polluting our water or creating a health risk. When Irish Water has provided an appropriate level of waste water treatment for an urban area, the area can be removed from the list. This is determined by the Environmental Protection Agency.

The number of supplies on the list, and the population that these supplies serve, are important as they indicate the progress of Irish Water in ensuring public drinking water supplies are safe and secure. When Irish Water has demonstrated that the supply is safe and secure, it can be removed from the Remedial Action List.

TECHNICAL NOTE

REASONS FOR AN URBAN AREA BEING INCLUDED ON THE PRIORITY URBAN AREA LIST

The Priority Urban Area list is a list of urban areas that most urgently need improvement in the waste water treatment provided. Improvement in the level of treatment provided to an urban area may be required for various reasons including:

- ▶ it is failing to meet EU sewage treatment standards;
- ▶ it is discharging raw sewage because there is no treatment plant;
- ▶ it is a key pressure on the water quality of rivers or lakes;
- ▶ it is impacting negatively on bathing water;
- ▶ an improvement (i.e. an increase in treatment level) is needed to protect Pearl Mussels.

2.1.5 Performance Indicator 5 - Lead service connections replaced

Brief Explanation

Lead is a harmful substance that can be found in drinking water when it dissolves from lead pipework, mains connections and plumbing fittings. While there are no lead water mains in Ireland, there are still some lead pipes remaining in the public network (these connect the water mains to individual houses or groups of houses). The presence of lead pipes or fittings in a property depends mainly on the age of the pipe.

Why we focus on this Performance Indicator

Where lead is found in drinking water, its consumption is harmful to people.

The “National Lead Strategy”³, published by the Government in 2015, sets out that lead in drinking water is both the responsibility of water suppliers and property owners. Irish Water, as the water supplier for public water supplies, is therefore responsible for lead pipework in the water distribution network. This is known as public side lead. The rate of replacement of lead services in the water distribution network is an important indicator of the performance of Irish Water in ensuring water delivered through its distribution network is safe for consumption. As part of its Leakage Reduction Programme, Irish Water is planning to remove all remaining lead pipes from the public water network.

TECHNICAL NOTE

ADVERSE HEALTH EFFECTS OF LEAD

There are many acute and chronic effects of lead exposure. At very high levels of exposure, lead can cause damage to most organs in the body, particularly the kidneys and central nervous and blood systems.

However, studies over the last 30 years have shown that lead can affect health as a result of ongoing exposure to lower levels of lead. In particular, the evidence indicates that chronic exposure to low levels of environmental lead can adversely affect cognitive development in children. Chronic exposure to lead can also cause:

- ▶ renal toxicity;
- ▶ disturbances in cardiac conduction and rhythm and increase in blood pressure;
- ▶ hepatic damage;
- ▶ anemia and other hematological effects;
- ▶ reproductive and developmental toxicity;
- ▶ gastrointestinal disturbances.

Source: Environmental Protection Agency - Health Services Executive Joint Position Paper Lead in Drinking Water; 2013

³ <https://www.housing.gov.ie/water/water-quality/lead-drinking-water/national-lead-strategyjune-2015>

2.1.6 Performance Indicator 6 - Mains replacement rate (for water mains)

Brief Explanation

Irish Water has approximately 63,000km of water mains distributing treated drinking water around the country. In 2015, Irish Water reported that the average age of the water mains infrastructure in Ireland was estimated at 65 to 85 years, while cast iron mains in some of our cities and towns were estimated to be up to 140 years old.

Given the age profile of the drinking water infrastructure, the mains replacement rate carried out by Irish Water is an important performance indicator. The mains replacement rate is calculated by dividing the length of water mains replaced in a year by the total length of water mains served by Irish Water.

Why we focus on this Performance Indicator

The maintenance (including replacement) of water mains is important as it supports the provision of a secure, quality supply of treated drinking water to customers. If water mains are not appropriately maintained, Irish Water's customers can experience low water pressure, reduced water quality and water supply interruptions due to pipes bursting. Burst pipes add to the amount of water lost through leakage.

2.2 Improvements in Water Quality, including the elimination of Boil water notices

2.2.1 Performance Indicator 7 - Overall compliance with microbiological indicators for drinking water

Brief Explanation

Microbiological indicators measure the level of bacteria in drinking water. These are the most important health indicators of drinking water quality, particularly the presence of *E. coli* in water. The presence of this bacterium in drinking water is a good indication that a water supply has been contaminated.

Why we focus on this Performance Indicator

Irish Water is responsible for the production, distribution and monitoring of drinking water in public water supplies. Where monitoring shows a failure to meet the water quality standards for drinking water in a public water supply, Irish Water is required to take action. When Irish Water notes a microbiological failure it must notify the Environmental Protection Agency and investigate why it happened. It must also consult the Health Services Executive to confirm if the failure might impact the health of any person who drinks the water. This may result in, for example, a boil water notice being issued.

This indicator is important, therefore, as it reflects whether treatment plants managed by Irish Water are operating correctly and that drinking water supplies are safe and secure from bacterial contamination. Under normal circumstances the WAB expects to see a compliance rate of close to 100%.

TECHNICAL NOTE

RISKS OF *E. COLI* IN DRINKING WATER

E. coli is an indicator organism, the presence of which in drinking water indicates that the supply has become contaminated with human or animal waste or that the disinfection systems is not operating adequately. The presence of *E. coli* in drinking water is an indication that other more harmful micro-organisms may be present and that action is urgently required to identify the cause of the failure and to ensure that treatment is improved to adequately disinfect the water.

Source: Environmental Protection Agency Advice Note No. 3 - *E. coli* in Drinking Water

Figure 8

Percentage of Samples complying with the E.coli Standard



In general, the WAB notes that compliance with the microbiological standards is high as illustrated in Figure 8, which shows that compliance has remained over 99% in the period 2014 – 2019. The Environmental Protection Agency produces an annual report, which gives an overview of the quality of drinking water in public water supplies. The reports are based on the assessment of monitoring results reported to the Environmental Protection Agency.

During 2019, seven public water supplies showed samples which failed to meet the standards for E. coli. One of these failed due to issues at the treatment plant where the disinfection system failed, while issues with sampling or contamination of the consumers' taps were suspected in the remainder. Further information is available in the Environmental Protection Agency's "Drinking Water Quality in Public Supplies 2019" report⁴. This is a slight increase from 2018 when 6 supplies failed the standard for E. coli.

⁴ <https://www.epa.ie/pubs/reports/water/drinking/drinkingwaterqualityinpublicsupplies2019.html>

2.2.2 Performance Indicator 8 - Boil Water Notices

Brief Explanation

If a public water supply becomes contaminated with bacteria or a pathogen, a Boil Water Notice may be issued. A Boil Water Notice is a formal notice issued to all households and businesses in an area advising them that drinking water from the public water supply is not safe to drink unless it is boiled and cooled beforehand. Irish Water must notify the Environmental Protection Agency when a failure in water quality is noted. However, Irish Water will usually only issue a Boil Water Notice after consulting with the Health Services Executive, the statutory authority on public health matters, to confirm if the failure might impact on people's health.

Why we focus on this Performance Indicator

The number of Boil Water Notices issued is an important indicator of drinking water quality and as a measure to protect public health of customers. The number of people affected by Boil Water Notices issued, therefore, is an important indicator as to whether Irish Water is ensuring public drinking water supplies are safe and secure.

Under normal circumstances the WAB expects that no consumer should be on a long-term Boil Water Notice. Boil Water Notices should be kept at low levels and for as short a period as possible.

TECHNICAL NOTE

REASONS WHY A BOIL WATER NOTICE MIGHT BE ISSUED

The most common reason for issuing a Boil Water Notice would be where routine testing of the drinking water supply has shown the presence of harmful bacteria (such as E. coli), or pathogens such as Cryptosporidium.

- ▶ In some cases a Boil Water Notice may be imposed where there is a risk of contamination but where test results are yet to be confirmed.
- ▶ Boil Water Notices that remain in place for greater than 30 days are classified as long-term notices.

2.2.3 Performance Indicator 9 - Compliance of Urban Waste Water Treatment (UWWT); Plants with Environmental Protection Agency discharge licences

Brief Explanation

The objective of waste water treatment is to collect the waste water generated within communities, remove the polluting material, and then release the treated water safely back into the environment. Without such treatment, the waste water produced would pollute our waters and create a health risk. A waste water discharge licence is required for treatment plants that are discharging from areas with a population equivalent of 500 or more.

Why we focus on this Performance Indicator

The percentage of population served by waste water treatment plants that are compliant with their discharge licence is an important indicator of the performance of Irish Water in ensuring that our treatment plants are not polluting our water or creating a health risk. Untreated waste water, commonly referred to as raw sewage, can be contaminated with harmful bacteria and viruses. This can pose a health risk to people who come into contact with contaminated water and can threaten aquatic ecosystems and the amenity value of our waters.

2.3 Responsiveness to the needs of Communities and Enterprise

2.3.1 Performance Indicator 10 – Ease of Contact

Brief Explanation

Supplying water for consumption and managing wastewater are Irish Water’s core functions. How it interacts with its customers is an important indicator of its overall performance and is important in engendering trust in the organisation. As set out below, there are four parts to this performance indicator. Each part relates to the experience customers receive when contacting Irish Water.

Why we focus on this Performance Indicator

Irish Water deals with large volumes of customers on a daily basis. Customers usually contact Irish Water when something has gone wrong and are looking for a response. These customer contact indicators reflect the interaction that a customer has with Irish Water and allows an assessment of Irish Water’s performance through its contact centre.

TECHNICAL NOTE

COMPONENTS OF EASE OF CONTACT

There are four components to the ease of telephone contact performance indicator:

- ▶ Ease of telephone contact – call abandonment rate: This indicator is defined as the percentage of calls that are abandoned while a caller is waiting in the queue to speak to a customer service agent, having been directed through the Interactive Voice Recognition system;
- ▶ Ease of telephone contact – Customer Satisfaction Score: This indicator is defined as Irish Water’s performance in a Customer Survey conducted by an independent research company engaged by Irish Water;
- ▶ Ease of contact – speed of telephone response: This indicator is defined in two parts as follows:
 - a) Telephone Service Factor 1 = Total number of calls answered by an agent within 20 seconds of entering the queue to speak to an agent ÷ total number of calls that enter the queue to speak to an agent.
 - b) Telephone Service Factor 2 = (Total number of calls picked up by the Interactive Voice Recognition system and do not progress to the queue + calls answered by an agent within 20 seconds of entering the queue to speak to an agent) ÷ total number of calls received. For clarity, the total number of calls received by the contact centre comprises the number of calls dealt with in the IVR + the number of calls abandoned in the IVR + the number of calls placed in a queue to speak to an agent.

2.3.2 Performance Indicator 11 - Irish Water Customer Complaints management

Brief Explanation

Customer complaints handling refers to the rate at which Irish Water resolves complaints that customers have made regarding some aspect of the service they received from Irish Water.

Irish Water has published a complaint handling Code of Practice, for both domestic and non-domestic customers of Irish Water. Irish Water's Code of Practice must comply with the Domestic and Non-Domestic Customer Handbooks, which set out the required levels of customer service and customer protection measures that Irish Water must provide to its customers.

This Code of Practice on complaint handling defines a complaint as “the expression (through various channels, letter, email, phone call, physical claim) of a customer's dissatisfaction and his/her explicit expectation for a response or resolution.”

The Commission for Regulation of Utilities has included a metric in its Performance Assessment Framework on which Irish Water is required to report:

- ▶ the number of complaints responded to within five working days with either a resolution or an outline plan for proposed resolution; and
- ▶ the number of complaints on which a final decision was issued within two months.

Why we focus on this Performance Indicator

This performance indicator focuses on two components of the code:

- ▶ the number of complaints responded to within five working days with either a resolution or an outline plan for proposed resolution; and
- ▶ the number of complaints on which a final decision was issued within two months.

By monitoring these indicators, the WAB is able to measure Irish Water's performance in responding to complaints it receives. Monitoring this metric will also encourage appropriate response times when customers contact Irish Water with a complaint.

Glossary of Terms

Agglomeration – an agglomeration is an urban settlement (village, town or city area) which is connected through a pipe network to a wastewater treatment plant.

Chlorination – Water chlorination is the process of adding chlorine or chlorine compounds such as sodium hypochlorite to water. In particular, chlorination is used to prevent the spread of waterborne diseases.

Cryptosporidium – A disease-causing protozoon widely found in surface water sources.

E.Coli – Coliforms, specifically *Escherichia coli* (E. coli), are the universal indicator microorganisms of faecal contamination of water. These bacteria, which are of definite faecal origin (human and animal), are excreted in vast numbers and their presence in a water supply is proof that faecal contamination has occurred and is a definite indication that pathogens may be present.

Pathogen – Microorganisms that can cause disease in humans, other organisms or animals and plants. They may be bacteria, viruses, or protozoa and are found in sewage, in runoff from animals, farms or rural areas populated with domestic and/or wild animals, and in water.

Population Equivalent – in waste-water treatment the population equivalent is a reference that describes the specific load of a wastewater treatment plant.

Remuneration – Reward for employment in the form of pay, salary, or wage, including allowances, benefits (such as company car, medical plan, pension plan), bonuses, cash incentives, and monetary value of the noncash incentives.

Trihalomethanes – Trihalomethanes are a group of four chemicals formed, along with other disinfection by-products, when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water.

Trunk Mains – Trunk water supply pipelines deliver bulk water from one part of the system to another, often aided by pumping. As such, trunk mains are larger in diameter than reticulation mains, are not networked and have fluctuating pressures.

Turbidity – Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particulates. The more total suspended solids in the water, the murkier it seems and the higher the turbidity. Turbidity is considered as a good measure of the quality of water.

