Quarterly Report

1

WAB

Water Advisory Body

OCTOBER 2019

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Contents

Executive Summary

This is the first quarterly report published by the Water Advisory Body in relation to its function of reviewing the implementation by Irish Water of its Business Plan.

The Water Advisory Body was established on 1 June 2018. The purpose of the Water Advisory Body (the WAB) is to advise the Minister on measures needed to improve the transparency and accountability of Irish Water; and to report, on a quarterly basis to an Oireachtas Committee on the performance by Irish Water in the implementation of its Business Plan.

A set of performance indicators has been selected to represent the activity of Irish Water in relation to the performance of its functions. Data in respect of these indicators are collated and published as part of the quarterly reports of the WAB in order to provide objective information on performance. This information is relevant to Irish Water itself, to track its own performance over time, but also to further inform both the Minister for Housing, Planning and Local Government and the Oireachtas on the performance of Irish Water.

The detailed findings of this report are set in section 2 and key events in section 3. The following findings from the report are of note:

- **Leakage -** By any measure, Ireland's leakage rate is unacceptable and needs to be a focus for Irish Water in the future. The WAB will continue to monitor the level of unaccounted for water until the end of this year until Irish Water makes its leakage metric available for assessment.
- **First Fix Scheme -** Drop-off in the number of leak repairs completed under First Fix Scheme from mid-2016.
- **Remedial Action List (Water) -** Irish Water has an action plan in place to remediate the drinking water supplies that are currently included on the Remedial Action List.
- **Priority Urban Area List (Wastewater) -** The WAB notes and accepts the Environmental Protection Agency's view that Ireland is not addressing the deficiencies in its waste water treatment infrastructure at a fast enough pace.
- **Lead service connections replaced -** Irish Water aims to remove all public-side lead pipework by 2026, and has set specific targets in that context.
- **Mains replacement rate (for water mains) -** Although Irish Water's mains replacement rate of 0.33% is within a range comparable with other similar entities, the WAB agrees with the Commission for Regulation of Utilities view that Irish Water's replacement rate will need to be higher given Irish Water's infrastructure is likely to be older and in worse condition on average.
- **Overall compliance with microbiological indicators for drinking water -** In general, the WAB notes that compliance with the microbiological standards is high.

- **Boil Water Notices -** The WAB notes the significant decline in long term boil water notices in Quarter 4 2017, followed by a significant increase in early 2018 is a result of a single supply being temporarily removed from the list. A situation where the removal of a boil water notice followed by the subsequent reinstatement in a short period to time, of that notice is a cause for concern for the WAB given the impact it can have on the confidence the public have in the reported level of boil water notices.
- **Compliance of Urban Waste Water Treatment (UWWT); Plants with Environmental Protection Agency discharge licenses -** Overall, compliance for urban waste water treatment is very low.
- **Ease of Contact -** Customer Satisfaction Scores for the three years to 2017 are on an upward trend, telephone service factors showed some dis-improvement in the same time period.
- **Irish Water Customer Complaints Management -** Irish Water has yet to report to the Commission for Regulation of Utilities under these two metrics in relation to complaints management. Irish Water has stated that it will be reporting on these metrics by the end of 2019.

Part 1
Introduction

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

Paul McGowan
Chairperson

Sharon Kennedy

Miriam McDonald

Darragh Page

Martin Sisk

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 Business Plan is a public document and available on Irish Water's website www.water.ie. Every three months the WAB prepares a report on Irish Water. This report sets out the WAB's view on how Irish Water is performing against its own business plan. Each report is prepared for the Oireachtas and is published on the WAB's website – www.wateradvisorybody.ie. This is the first quarterly report of the WAB.

Performance Indicators in this Report

The WAB has chosen a set of performance indicators. In this report, we explain each indicator and why it is important. It is important to the WAB, in choosing performance indicators, that they are a useful reflector of performance and that they can be used to monitor Irish Water's performance. The WAB will keep these performance indicators under review to make sure that they remain relevant and continue to be good measures of performance.

There are some areas of interest to the WAB where data are not available. These include cost reduction and efficiency improvements, procurement, remuneration and staffing policies of Irish Water.

The absence of data will require the WAB to take a different approach to measuring performance in the following areas.

Cost reduction and efficiency improvements

In relation to measuring cost reduction and efficiency improvements, the WAB will use the Commission for Regulation of Utilities Revenue Control Report on Irish Water, July 2019 to facilitate and inform discussion on how indicators in these areas might be developed. This Report was published for consultation by the Commission for Regulation of Utilities in July 2019, with a decision on Irish Water's revenue allowance expected to be published in Quarter 4 2019.

Irish Water procurement, remuneration and staffing policies

In relation to procurement, remuneration and staffing policies the Water Advisory Body proposes that Irish Water commission an independent audit on these policy areas, reporting directly to the WAB.

Structure of this Report

This report is structured as follows -

Part 2: Key Performance Indicators

Part 3: Other Key Events

Part 4: The WAB's commentary on Key Indicators and Conclusions.

TECHNICAL NOTE

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 business 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.

Part 2
Key Performance Indicators

The WAB has selected eleven performance indicators, each measuring the performance of Irish Water under a different heading.

These headings are –

- infrastructure delivery and leakage reductions (6 indicators);
- improvements in water quality (3 indicators); and
- the responsiveness of Irish Water to the needs of communities and enterprise (2 indicators).

For each indicator chosen, the WAB has included a brief explanation, the reason why the indicator is important and recent data and commentary as to how Irish Water is performing in relation to the indicator. Where available, the targets that Irish Water is working to in relation to each indicator are also set out.

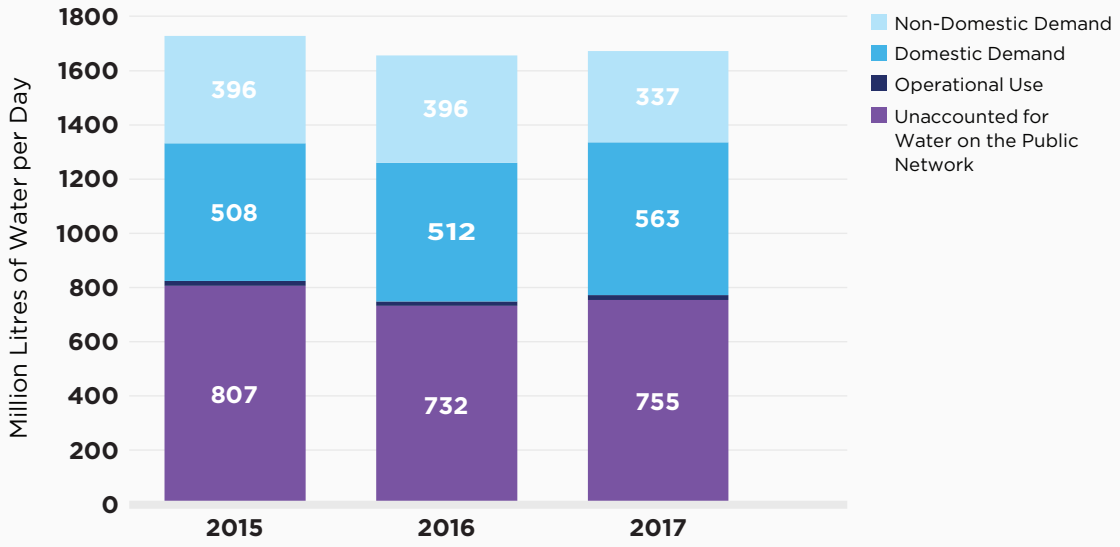
The WAB will continue to refine indicators to ensure they remain a useful measure of the performance of Irish Water.

Indicators to measure Irish Water's performance in respect of cost reduction and efficiency improvements, procurement, remuneration and staffing policies have yet to be developed. In relation to procurement, remuneration and staffing policies the WAB proposes that Irish Water commission an independent audit on those policy areas. The independent body commissioned to undertake the audit will report directly to the WAB. Following an assessment of the audit by the WAB, performance indicators for these areas will be developed for inclusion in a later report. As already mentioned, the WAB will use the Commission for Regulation of Utilities Revenue Control Report, July 2019 on Irish Water to facilitate and inform discussion on how indicators might be developed to measure cost reduction and efficiency improvements in Irish Water.

2.1 Infrastructure Delivery and Leakage Reductions Indicators

2.1.1 Performance Indicator 1 - Leakage

Figure 1
Annual Average Daily Water Demand (millions of litres or Megalitres of water per day)



Brief Explanation

The technical definition of leakage or "Real Water Losses" is set out in the technical note below. Leakage, or Real Water Losses, is the loss of drinking water on the public side of the water supply network and is measured in millions of litres per day.

To date, Irish Water has not been in a position to report on this metric. It expects this position to change by the end of 2019.

In the meantime, Irish Water has been reporting on "Unaccounted- for-Water" which is the sum of Real Water Losses, Apparent Losses and Unbilled Water.

"Unaccounted for Water" is calculated as the difference between the volume of water supplied into the water supply network and the volume of water that is delivered to customers' premises.

"Unaccounted for Water" comprises of a number of items:

- Unbilled water including;
  - All water used by Irish Water.
  - Other unbilled use including, for example, water used by fire services.

- Apparent losses;
  - Water used at connections not recorded on Irish Water's system.
  - Under-recorded use by customers because of, for example, broken water meters and data handling errors.
- Real Losses on the public network from leaks and overflows.[1]

Irish Water has advised that with the roll out of its leakage management system, it will be in a position to provide the Commission for Regulation of Utilities with a calculated value for leakage later in 2019.

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 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. Until the leakage metric is available at the end of 2019, the WAB will use the level of "Unaccounted for Water" to measure the performance of Irish Water in ensuring water delivered through its distribution network is not lost to customers.

Figure 1 shows the annual average daily water demand in Ireland from 2015 to 2017. As can be seen from the graph, a significant proportion (46%) of the average daily water demand is classed as "Unaccounted for Water" in 2017.

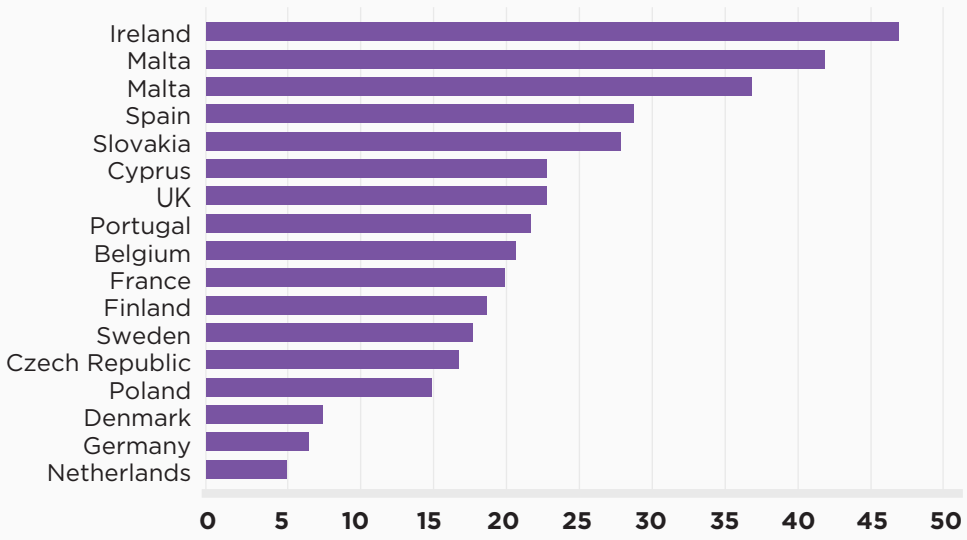
Commentary

"Unaccounted for Water" on the public network, has risen from 732 megalitres per day in 2016 to 755 megalitres per day in 2017. In 2017, 755 megalitres equated to 46% of all water distributed. The percentage of unaccounted for water has remained largely the same over the period 2015 – 2017. To place this in context, Figure 2 provides "leakage" percentage levels for comparison across a number of European countries.

1 Source: Irish Water Performance Assessment Framework - 2017 Implementation Update – published 22 July 2019. https://www.cru.ie/wp-content/uploads/2019/07/CRU19089-Irish-Water-Performance-Assessment-Framework-2017-Implementation-Update.pdf

Figure 2

Percentage of water lost to leaks across selected European countries



Source: BBC article - Reality Check: Have water companies cut leaks by a third? (6 August 2018). https://www.bbc.com/news/business-45033486. This article references the EurEau Report "Europe's water in figures – An overview of the European drinking water and waste water sectors" – 2017 edition

By any measure, Ireland's leakage rate is unacceptable and needs to be a focus for Irish Water in the future. The WAB will continue to monitor the level of "Unaccounted for Water" until the end of this year when Irish Water makes its leakage metric available for assessment.

TECHNICAL NOTE

LEAKAGE

Figure 3 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').

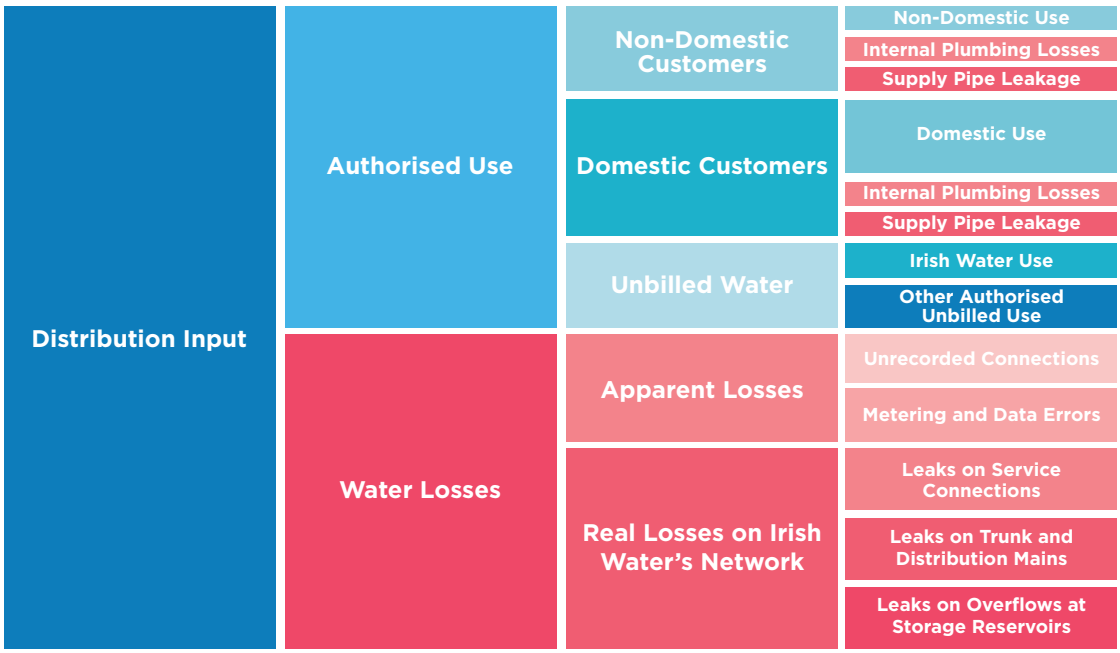
Real losses on Irish Water's network, commonly referred to as leakage, includes leaks on trunk mains and distribution pipes, leaks on service connections and leaks and overflows at storage reservoirs. There are two approaches to determining leakage on the public network. The first looks at a top down 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 3

Components of Water Demand



2.1.2 Performance Indicator 2 - First Fix Scheme

Figure 4
Combined total of Irish Water and Customer Leak Repairs completed each Quarter

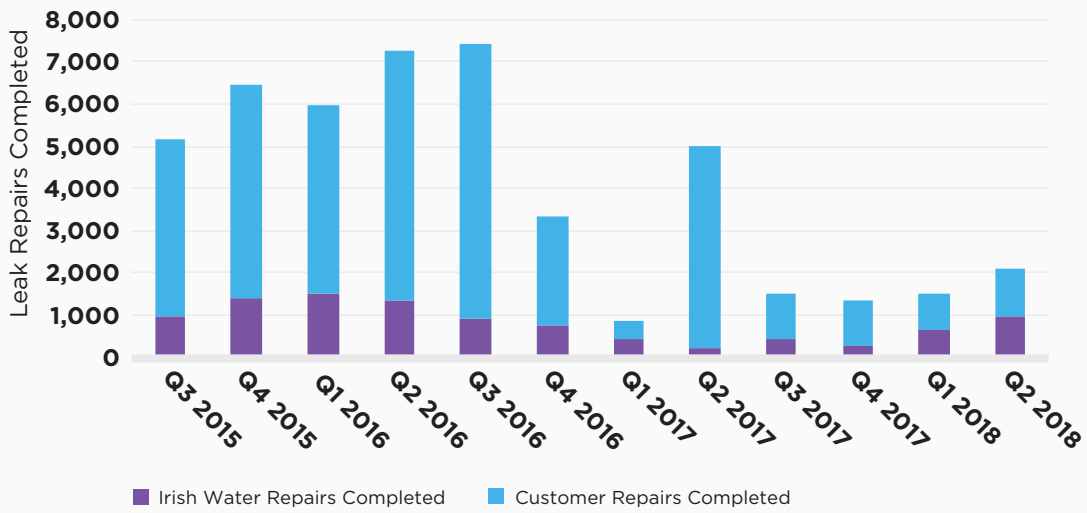
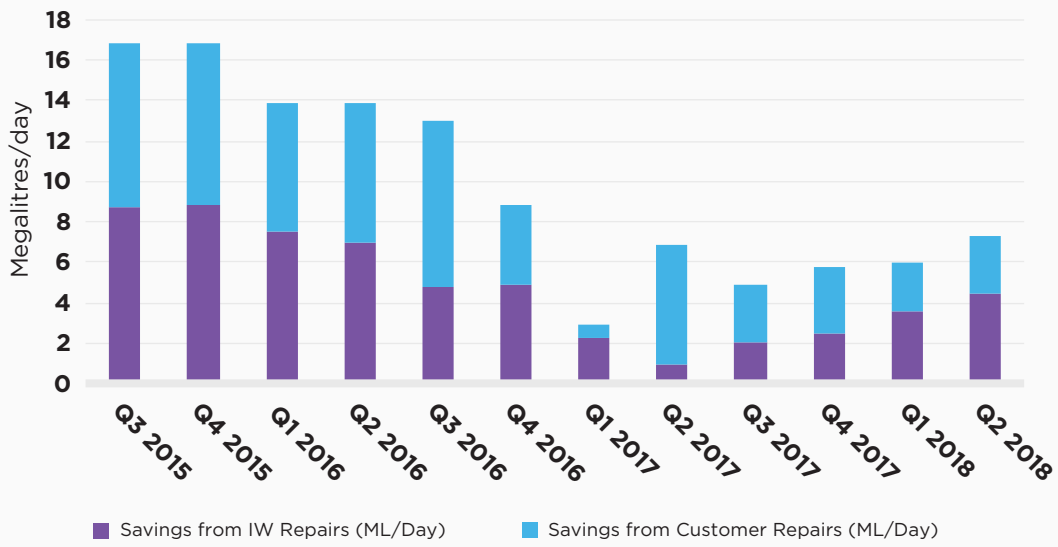


Figure 5
Combined total Savings in Megalitres/day of Irish Water and Customer Leak Repairs completed each quarter



Between the introduction of the First Fix Scheme in 2015 and Quarter 2 2018, the cumulative water savings are estimated by Irish Water to be 128.88 Megalitres/day. A cumulative estimated total of 61.48 Megalitres/day has been saved through repairs carried out by Irish Water and a further estimated 67.40 Megalitres/day of water has been saved through repairs carried out by customers[2].

2 Irish Water Leakage Reduction Programme First Fix Leak Repair Scheme For Domestic Water Customers Quarterly Report Q2 2018. Published on Irish Water website: https://www.water.ie/for-home/first-fix/Quarter-2-Report-2018.pdf

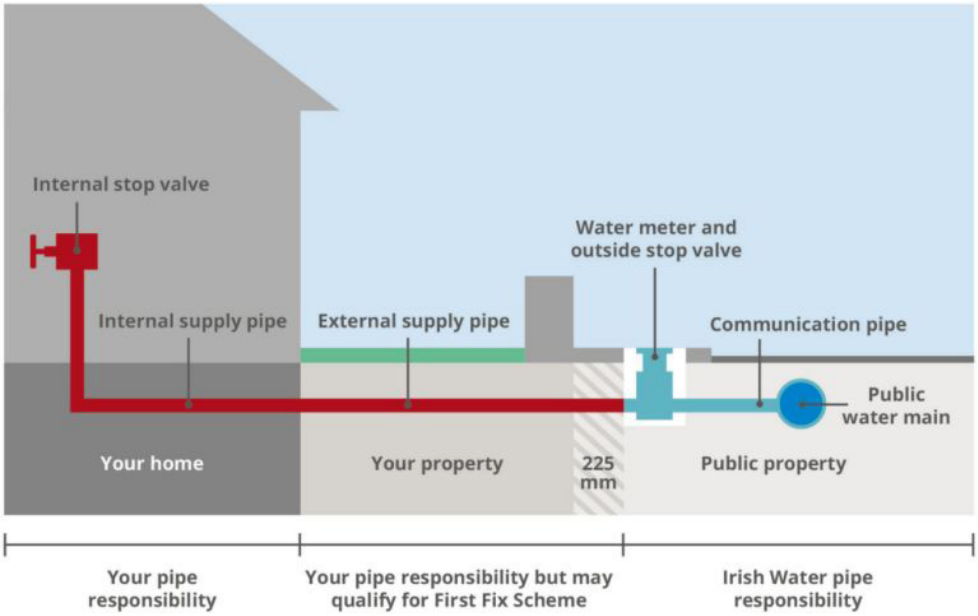
Brief Explanation

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 6. Customers are responsible for fixing leaks on pipes located within the customer home ('internal supply pipe').

Figure 6
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 didn't 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.

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.

Figure 4 shows the number of leak repairs per quarter completed by both Irish Water and the customer. The highest number of leak repairs carried out by Irish Water to date were completed in Quarter 1 2016 while the lowest number was completed in Quarter 2 2017. The highest number of leak repairs carried out by customers to date were completed in Quarter 3 2016, while the lowest number was completed in Quarter 1 2017.

Figure 5 shows the total savings in Megalitres/day estimated by Irish Water as a result of both Irish Water and customer leak repairs each quarter. The highest estimated savings in Megalitres/day as a result of leak repairs carried out by Irish Water took place in Quarter 4 2015, while the highest savings in Megalitres/day as a result of leak repairs carried out by customers took place in Quarter 3 2016.

Commentary

In Quarter 2 2018, a total of 2,110 leak repairs were completed. 982 of these repairs were external to the customer property and were carried out by Irish Water, and the remaining 1,128 leaks were internal to the customer property and repaired by the customer.

As of Quarter 2 2018 Irish Water had completed approximately 10,000 leak repairs and customers had completed approximately 40,000 leak repairs in total. Irish Water estimates that the scheme has saved nearly 129 million litres of water per day up to the end of Quarter 2 2018.

Project expenditure is reported quarterly in arrears. The cumulative total expenditure up to the end of Quarter 1 2018 (end of March 2018) is €25,715,036 consisting of €12,143,189 for leak investigations, €9,767,706 for repairs and €3,804,141 for additional costs[3]. This expenditure is within the original allowed funding amount of €51m for the scheme. Irish Water has sought additional funding for the First Fix Scheme over the upcoming revenue control period, from 2020 to 2024.

3 **Source:** Irish Water Leakage Reduction Programme First Fix Leak Repair Scheme For Domestic Water Customers Quarterly Report Q2 2018. Published on Irish Water website: https://www.water.ie/for-home/first-fix/Quarter-2-Report-2018.pdf

Specific targets have not been set for Irish Water in respect of the First Fix Scheme. This is because availing of a leak investigation and possible first fix requires a good level of customer engagement to meet any target. There has been a disappointing drop-off in the number of leak repairs completed under the scheme from mid 2016, which coincides with the suspension and eventual abolition of domestic water charges. However, it is expected that the introduction of the Excess Use Charges for domestic households in 2020 will encourage customers to avail of the scheme and that higher numbers of leak repairs will be achieved in the future. Future WAB reports will continue to monitor the rate of first fix repairs by Irish Water and customers.

TECHNICAL NOTE

WHY THE FIRST FIX SCHEME IS IMPORTANT

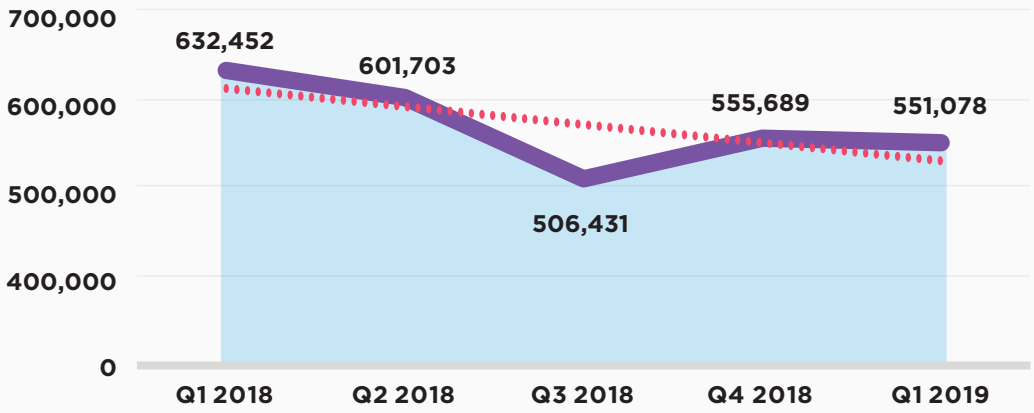
Reducing drinking water loss through the First Fix Scheme helps to:

- 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).

The detail of Irish Water's revenue submission for the Revenue Control 3 period, from 2020 to 2024, will be subject to a final decision in Quarter 4 2019.

2.1.3 Performance Indicator 3 - Remedial Action List (Water)

Figure 7
Population Served by Supplies on the Remedial Action List[4]



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.

Figure 7 shows the population served by drinking water supplies included on the list from Quarter 1 2018 to end Quarter 1 2019. The figures for the last five quarters show a general downward trend in both the number of drinking water supplies on the list and the population that these supplies serve.

Under normal circumstances, the WAB would expect a continual reduction in the number of supplies on the Remedial Action List, with a substantial reduction by 2020.

4 **Source:** Environmental Protection Agency

Commentary

In Quarter 1 2019 the Remedial Action List contained 60 water supplies, down from 63 in the previous quarter. This reduction was due to six supplies being removed from the list whilst at the same time an additional three supplies were added in that quarter. The population served by the 60 supplies needing remedial action is 551,078, which is down by 4,611 from the previous quarter.

Irish Water has an action plan in place to remediate the drinking water supplies that are currently included on the Remedial Action List. Irish Water's plan targets the completion of remedial works for –

- 32 supplies (serving 217,528 people) by end 2019,
- 19 supplies (serving 166,872 people) by end 2020, and
- 4 supplies (serving 103,671 people) by end 2021.

There are five supplies (serving 63,007 people) for which Irish Water has yet to set target dates for completion of the remedial works. Future WAB reports will monitor the progress of Irish Water in meeting the targets they have set to remediate those 60 water supplies through the quarterly updates of the Remedial Action List. The WAB will also monitor the number of new drinking water supplies that are put on to the list in any quarter.

TECHNICAL NOTE

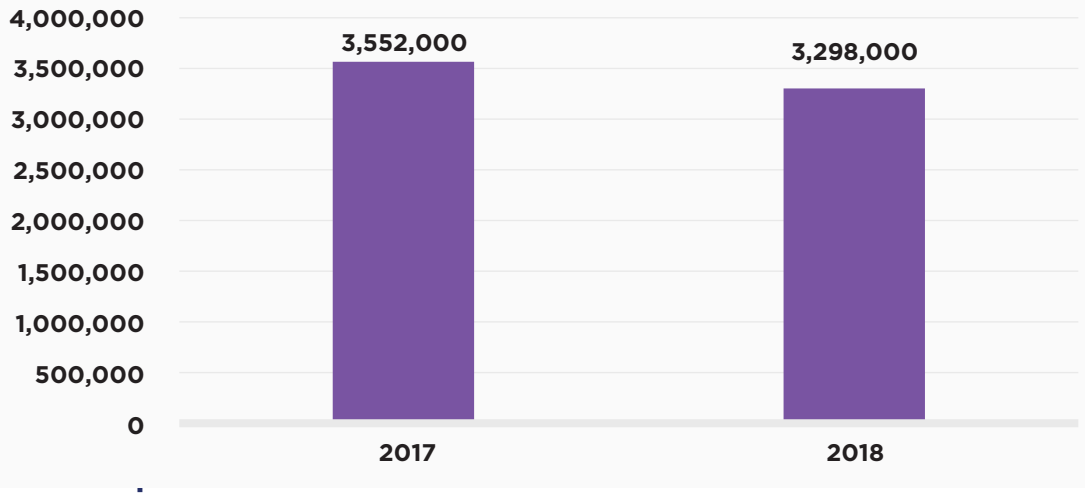
REASONS FOR ADDING A DRINKING WATER SUPPLY TO THE REMEDIAL ACTION LIST

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)

Figure 8
Population equivalent served by priority areas



The Environmental Protection Agency also 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.

Figure 8 shows the population equivalent served by priority areas included on the Priority Urban Area List for 2017 and 2018. The figures show a downward trend in the population equivalent served by priority urban areas included on the list from 2017 to 2018.

Under normal circumstances the WAB expects to see a continued reduction of the population equivalent served by priority areas on the list.

Commentary

The targets for completion of remedial actions in Priority Urban Areas are reported to the Environmental Protection Agency. Progress is also monitored by the Environmental Protection Agency.

At the end of 2018, there were 132 priority areas included on the list which represented a population equivalent of 3,298,000 people, a reduction of 254,000 from 2017.

It is important to note that this includes 2.3 million population equivalent served by the Ringsend treatment plant. Remedial work is underway. When Ringsend is removed from the list, the population equivalent will be reduced significantly.

The inclusion of an urban area on the list means that Irish Water must improve waste water treatment levels in that area. There can, therefore, be a range of actions that Irish Water might need to take to upgrade the treatment being provided to a specific urban area, depending on the reason it was added to the list. These might include:

- Improve the operation of the plant;
- the installation of basic primary treatment (for example to deal with small discharges of raw sewage);
- secondary treatment;
- secondary treatment with nutrient reduction; or
- an upgrade to the collection system to ensure waste water is collected properly.

The target dates for the completion of those specific actions are reported to the Environmental Protection Agency which monitors Irish Water's delivery on those targets. Future WAB reports will monitor the progress of Irish Water in reducing the number of agglomerations on the Priority Urban Area List.

The WAB notes the Environmental Protection Agency's view that Ireland is not addressing the deficiencies in its waste water treatment infrastructure at a fast enough pace. It is the Environmental Protection Agency's view that, 13 years after the final deadline to comply with treatment standards, it is not acceptable that there are still 28 large towns and cities discharging sewage that fails to meet these standards. The Environmental Protection Agency also notes that this is putting our health at risk and is having an impact on our rivers, lakes and coastal waters. On this basis, the WAB notes and accepts the commentary of the Environmental Protection Agency and would expect improvement in this area.

TECHNICAL NOTE

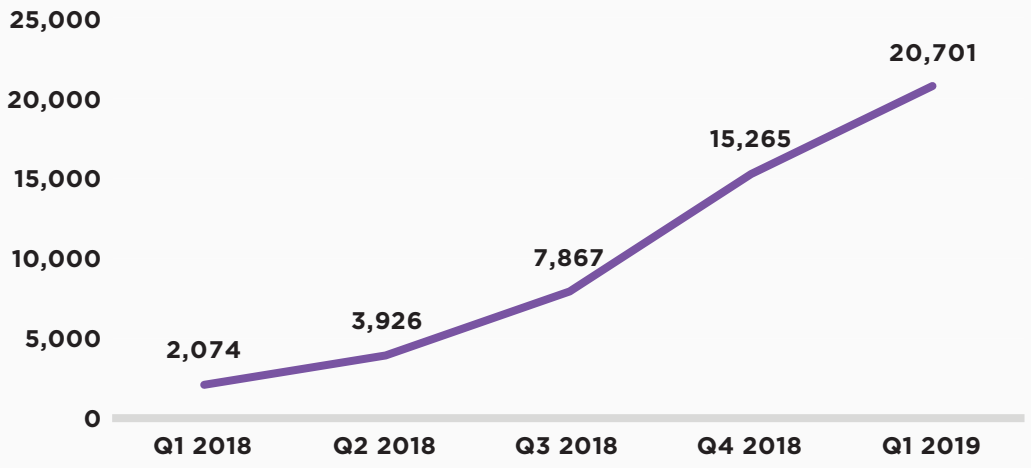
REASONS FOR AN URBAN AREA BEING INCLUDED ON THE PRIORITY URBAN AREA LIST

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; or
- an improvement (i.e. an increase in treatment level) needed to protect Shellfish Waters.

2.1.5 Performance Indicator 5 - Lead service connections replaced

Figure 9
Total lead connections replaced (cumulative)



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*"[5], 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.

Figure 9 shows the cumulative number of lead connections replaced by Irish Water to date, with detailed replacement figures given for the last five quarters. This data is compiled by the Environmental Protection Agency on a quarterly basis.

Under normal circumstances the WAB expects to see the continued replacement of lead services until the completion date of 2026.

5 https://www.housing.gov.ie/water/water-quality/lead-drinking-water/national-lead-strategy-june-2015

Commentary

In May 2017, after public consultation, Irish Water published its "Lead in Drinking Water Mitigation Plan"[6], which sets out what Irish Water is going to do to reduce lead in the water distribution network.

The goal of both the National Strategy and the Mitigation Plan is the removal of all lead pipework from the network.

Irish Water estimates there are 180,000 lead service connections that need replacing of which:

- 140,000 are service connections from water mains which run under the roads; and
- 40,000 are backyard service connections, where lead pipes run through backyards serving a number of houses.

Irish Water aims to remove all public-side lead pipework by 2026.

Future WAB reports will monitor the lead services replacement rate by Irish Water to measure Irish Waters progress in achieving its targets.

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:

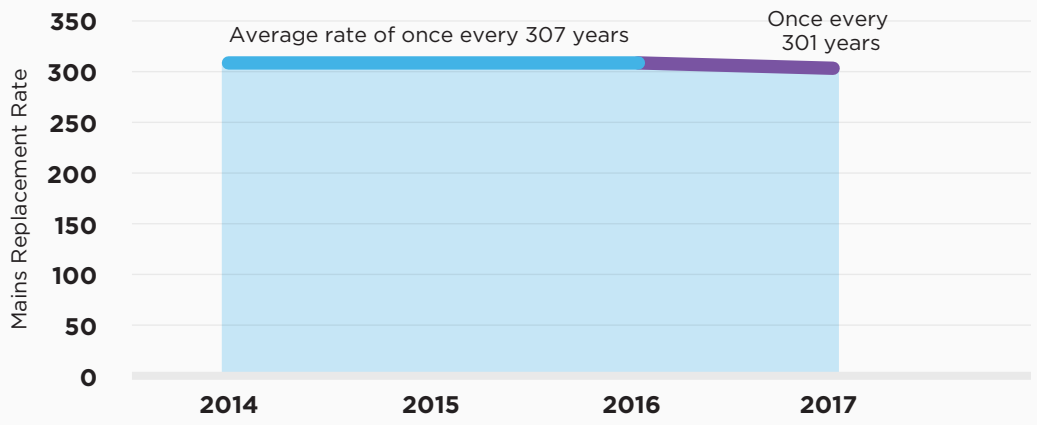
- renal toxicity;
- disturbances in cardiac conduction and rhythm and increase in blood pressure;
- hepatic damage;
- anaemia and other haematological effects;
- reproductive and developmental toxicity;
- gastrointestinal disturbances.

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

6 https://www.water.ie/docs/Lead-in-Drinking-Water-Mitigation-Plan.pdf

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

Figure 10
Mains Replacement Rate[7]



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.

Figure 10 shows Irish Water's mains replacement rate from 2014 to 2017. It has remained at a consistent level for that time period.

7 **Source:** Commission for the Regulation of Utilities

Commentary

In 2015, when it published its 7-year Business Plan, Irish Water estimated that 49% of the water it produces is lost to leakage from the distribution network due to its age and quality. Through Irish Water's leakage reduction programmes and analysis of metered information, this estimate has fallen in subsequent years. In 2017, approximately 46% of the average daily water demand was classed as 'unaccounted for water' on the public network.

The "*Irish Water Capital Investment Plan 2017 – 2021 Monitoring Report No. 2*"[8] noted Irish Water replaced 209km of water mains in 2017. This represents a replacement rate of 0.33% of Irish Water's network and a replacement rate of once every 300 years. To place this in context, companies in England and Wales are 'replacing' (mostly by renewal, but some by relining) in the region of 0.1% to 0.4% of their networks annually. Although Irish Water's mains replacement rate of 0.33% is within this range, the Commission for Regulation of Utilities is of the view that Irish Water's replacement rate will need to be higher given Irish Water's infrastructure is likely to be older and in worse condition on average.

There are no specific targets in place to monitor Irish Water's mains replacement rate. Therefore, future WAB reports will monitor the mains replacement rate to assess if Irish Water has achieved improved performance against this metric over time.

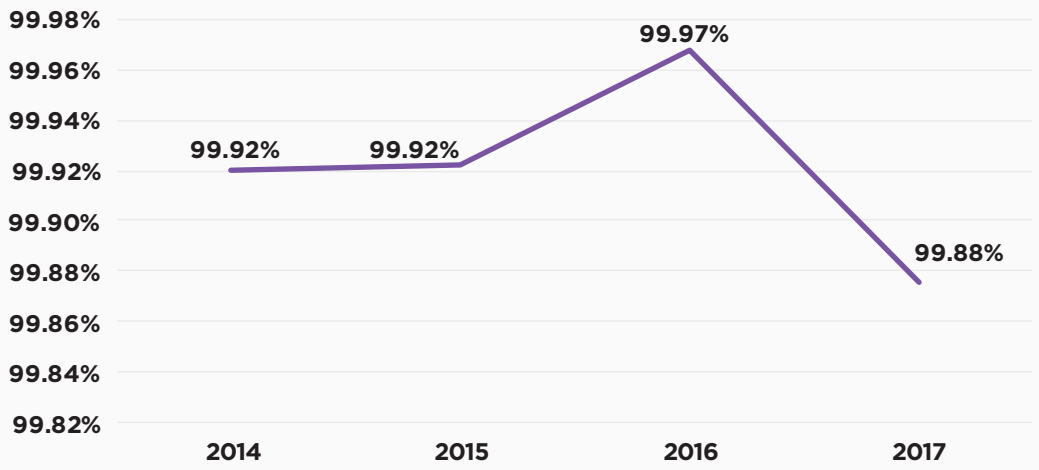
8 https://www.cru.ie/wp-content/uploads/2019/04/CRU190426-CRU-Monitoring-Report-No-2-Irish-Water-Capital-Investment-Plan-2017-2021.pdf

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

Figure 11

Percentage of samples complying with E. coli Standard[9]



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%.

9 **Source:** Environmental Protection Agency

Commentary

In general, the WAB notes that compliance with the microbiological standards is high as illustrated in Figure 11, which shows that compliance has remained over 99% in the period 2014 – 2017. 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 2017, 11 public water supplies showed samples which failed to meet the standards for *E. coli*. Four of these failed due to issues at the treatment plant, three were due to problems with consumers' taps while sampling issues were suspected in the remainder. Further information is available in the Environmental Protection Agency's "*Drinking Water Report for 2017*"[10] . This is an increase from 2016 when only three supplies failed the standard for E. coli.

Future WAB reports will monitor the success of Irish Water in decreasing the number of public water supplies that do not comply with the *E. coli* standard.

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.

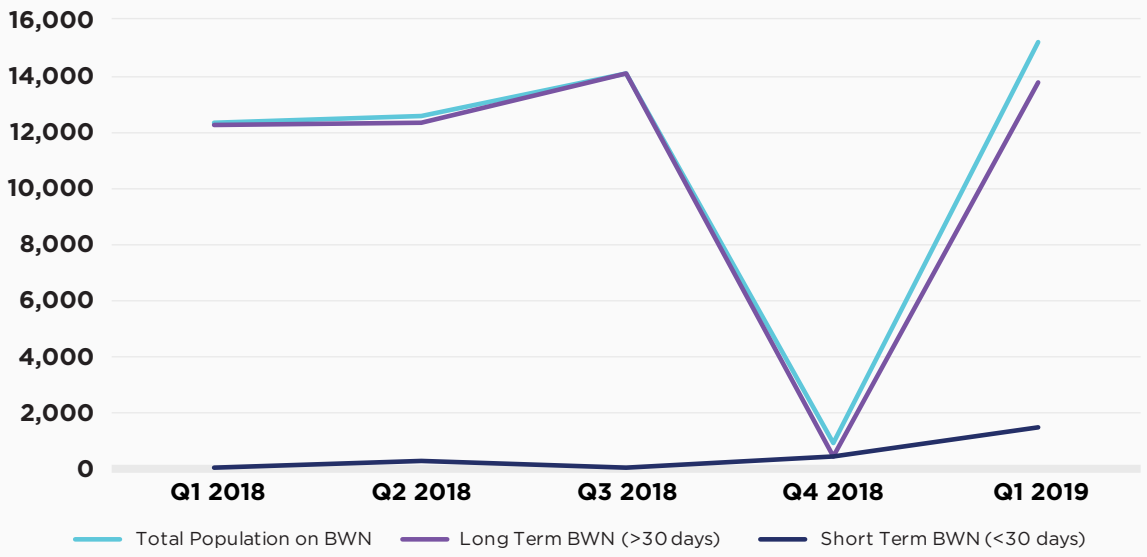
Source: Environmental Protection Agency Advice Note No. 3 – *E. coli* in Drinking Water

10 http://www.epa.ie/pubs/reports/water/drinking/2017%20DW%20Report_web_Final.pdf

2.2.2 Performance Indicator 8 - Boil Water Notices

Figure 12

Boil water notices at the end of each quarter[11]



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

Figure 12 shows the total population on boil water notices at the end of Quarter 1 2019. The graph also shows how long those boil water notices have been in place by showing the population on boil water notices for less than thirty days and the population on boil water notices for more than thirty days.

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.

11 **Source:** Environmental Protection Agency

Commentary

In Quarter 1 2019, 15,234 people were on boil water notices. This represents an increase from 12,288 in Quarter 1 2018.

Of the 15,234 people on boil water notices, 12,260 of those relate to Lough Talt and 1,419 to the Avoca/Ballinaclash water treatment plants. This accounts for 90% of all people on boil water notices in Quarter 1 2019. Sligo County Council confirmed in May 2019 that planning permission has been granted to upgrade the Lough Talt facility. These upgrade works are scheduled to be completed in 2020 and will have a significant impact on the number of boil water notices currently in place.

When Irish Water took charge of water supplies in 2014 it set a target to eliminate all boil water notices that were in place at that time. This target was achieved and while no specific future targets have been set, Irish Water is working to continue reducing the number of people affected by boil water notices.

We note the significant decline in long term boil water notices in Quarter 4 2017, followed by a significant increase in early 2018 is a result of a single supply being temporarily removed from the list. This situation, where the removal of a boil water notice followed by the subsequent reinstatement of that notice in a short period of time, is a cause for concern for the WAB given the impact it can have on the confidence the public have in the reported level of boil water notices.

TECHNICAL NOTE

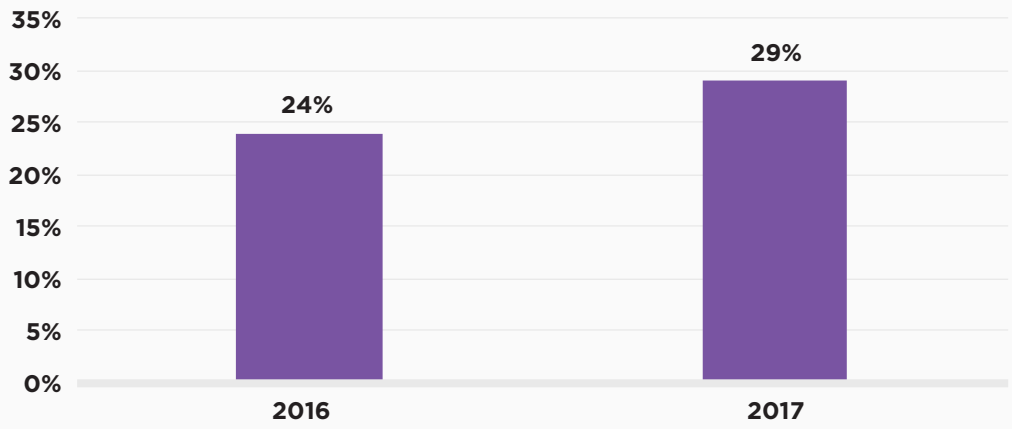
REASONS WHY A BOIL WATER NOTICE MIGHT BE ISSUED

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

Figure 13
Percentage of Population served by compliant Urban Waste Water Treatment plants (by population equivalent)[12]



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 license 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.

Figure 13 shows the percentage of the population served by treatment plants (by population equivalent) that complied with their Environmental Protection Agency Discharge licence.

Under normal circumstances the WAB expects to see a continued increase in compliance in this area.

12 **Source:** Environmental Protection Agency

Commentary

Overall, compliance is very low. The total population equivalent of waste water treatment plants in 2017 was 5,261,862. Only 29% of the population (1,525,672) served by these plants, were compliant for that year.

This is an improvement on the 24% recorded for 2016 which equates to a 5% increase or population equivalent of 240,150.

Of the 71% of the population served by the plants that were not compliant, it is worth noting that 60% of that non-compliance can be attributed to one waste water treatment plant – the plant at Ringsend, Dublin. Dealing with the non-compliance issues at this plant has the potential to result in a significant improvement in the overall compliance rate.

On 28 March 2019 the Court of Justice of the European Union declared that Ireland failed to fulfil its obligations under the Urban Waste Water Treatment Directive[13] at 28 agglomerations. In some cases, a single agglomeration was found non-compliant with more than one of the Directive's requirements. In summary, the Court found that:

- The waste water collection system serving eight agglomerations failed to ensure that waste water was retained and conducted for treatment (Article 3 of the Directive);
- 19 agglomerations did not comply with the secondary treatment standards specified in the Directive (Article 4 of the Directive);
- 16 agglomerations discharging to sensitive areas did not meet the Directive's requirements on nutrient removal (Article 5 of the Directive);
- Two agglomerations were not licensed (Article 12). One of these, Castlebridge, is now covered by the discharge licence for Wexford. The licence application process is still ongoing at the second agglomeration (Arklow).

Aside from the impact on public health and the environment, failure by Ireland to address these issues in a reasonable timeframe may lead to Ireland facing fines by the European Courts.

Future WAB reports will monitor the progress of Irish Water in improving the percentage of the population served by compliant waste water treatment plants.

13 Urban Waste Water Treatment Directive, Council Directive 91/271/EEC

2.3 Responsiveness to the needs of Communities and Enterprise

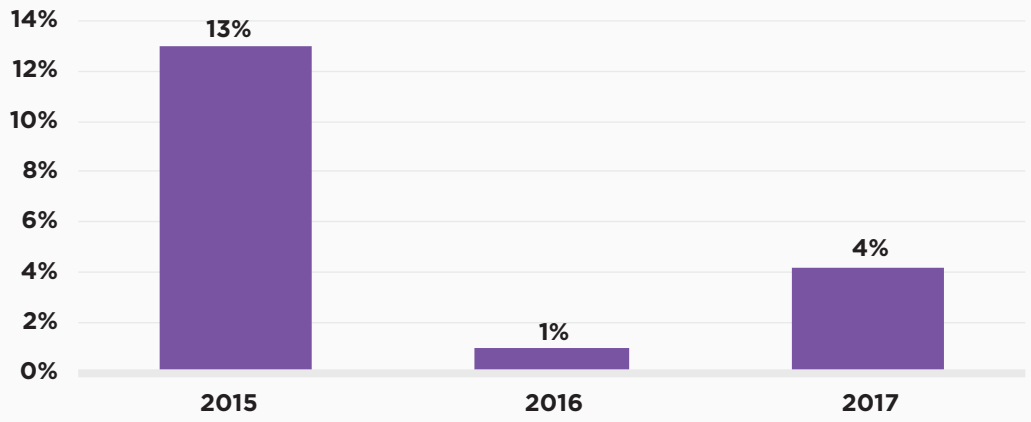
2.3.1 Performance Indicator 10 – Ease of Contact

In terms of the Ease of Contact performance indicator, the Commission for Regulation of Utilities has chosen four separate metrics:

The Call Abandonment Rate metric is the percentage of calls that are abandoned while a caller is waiting in the queue to speak to an agent (having been directed through the Interactive Voice Recognition system).

Figure 14

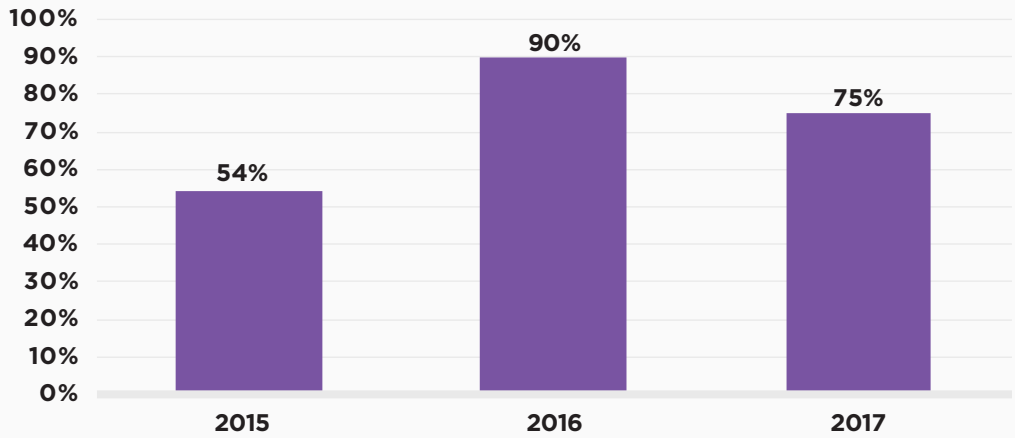
Call Abandonment Rate



The Speed of telephone response by Irish Water is measured by two separate telephone service factors. The first metric, Telephone Service Factor 1 (TSF 1) measures the percentage of calls that enter a queue to speak to an agent which are answered within 20 seconds.

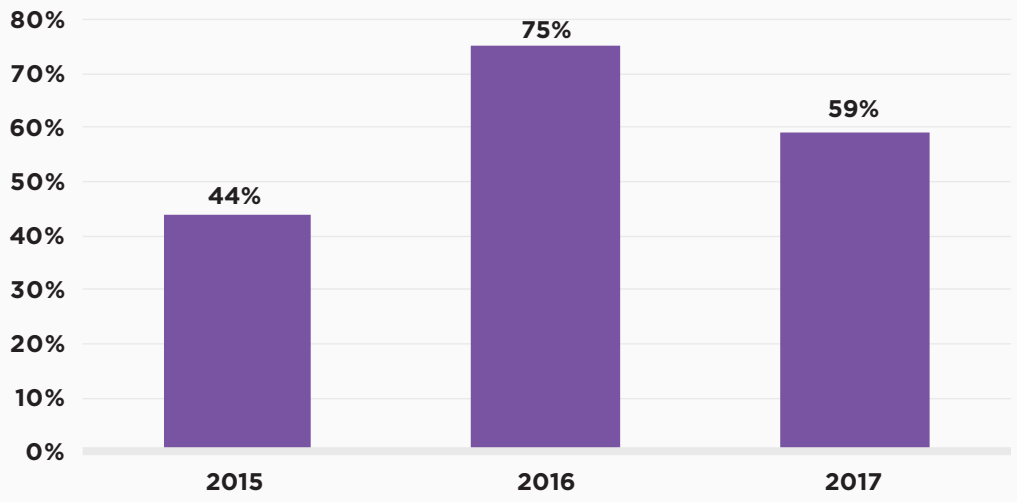
Figure 15

Telephone Service Factor 1: Calls answered by Agent within 20 seconds



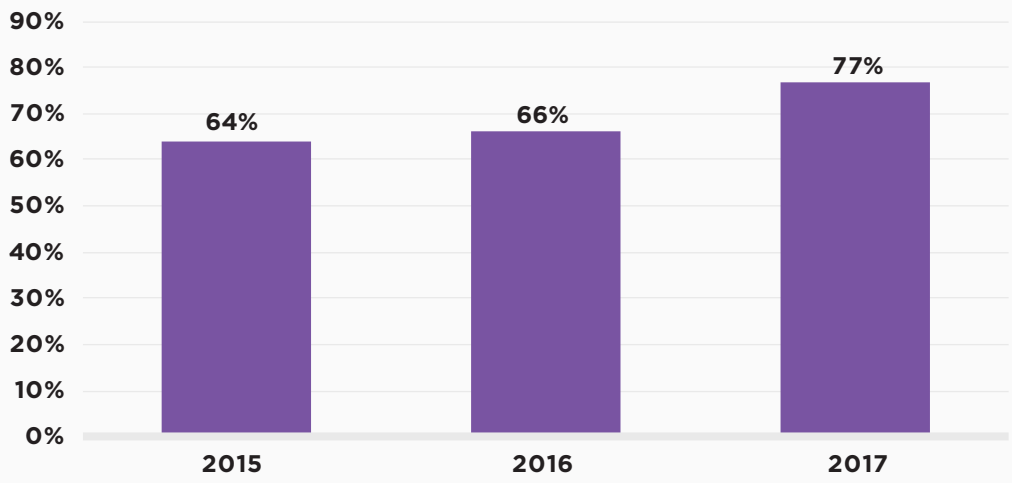
The second metric, Telephone Service Factor 2 (TSF 2), measures the number of calls that are dealt with through the Interactive Voice Recognition system as well as the number of calls when placed in a queue to speak to an agent (after going through the Interactive Voice Recognition system) answered by an agent within 20 seconds.

Figure 16
Telephone Service Factor 2: Calls dealt with through Interactive Voice Recognition & calls answered by Agent within 20 seconds



The Customer Satisfaction metric measures customer satisfaction levels of their experience dealing with Irish Water through phone contact. A survey is conducted by an independent research company, where customers rate their satisfaction level on a ten-point scale.

Figure 17
Customer Satisfaction Scores



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 above, 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.

Commentary

Overall, Customer Satisfaction Scores for the three years to 2017 are on an upward trend (Figure 17).

However, 2017 saw a slight disimprovement in speed of telephone response and the abandonment rate.

- 59% of calls were either dealt with by the Interactive Voice Recognition System or answered within 20 seconds by an agent down from 75% in 2016 (Figure 16).
- 75% of calls in the queuing system to speak to an agent were answered in 20 seconds, down from 90% in 2016 (Figure 15).
- In 2017, 4.2% of calls to Irish Water were abandoned while a caller was waiting in the queue to speak to an agent. This an increase from 1% in 2016.

For comparison, the "UK Contact Centre Decision-Makers' Guide 2017-18 (15th edition)" reported an industry median of 4% and mean of 5.3% in the UK.

In relation to both Telephone Service Factor 1 and 2 and the Abandonment Rate, it must be stated, that 2017 included a period of increased customer contact with Irish Water due to Storm Ophelia, and the refunds of payments made by customers to Irish Water.

As noted above Irish Water's customer satisfaction scores, have increased steadily since 2015, from 64% to 77%.

Future WAB reports will continue to monitor Irish Waters performance under this indicator.

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 us 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 call-back survey: This indicator is defined as Irish Waters 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.

Commentary

Irish Water has yet to report to the Commission for Regulation of Utilities under these two metrics. Under the Irish Water Customer Handbook, the complainant should receive a response to the complaint within five working days, with a resolution or an outline plan of the proposed resolution. While this process is currently operational within Irish Water, it does not have the system capability in place to report on performance. A technical change to Irish Water data system is required to report on this metric.

In relation to complaints on which a final decision is issued within two months, further data development and enhancement of Irish Water's current system will need to be carried out to enable Irish Water to report on this metric. Irish Water has stated that it will be reporting on these metrics by the end of 2019.

In Irish Water's "*Water Services Strategic Plan October 2015*", under a heading entitled 'Customer Complaint Handling', Irish Water states that the utility aims to resolve (or have outlined steps taken towards resolving a complaint) 100% of complaints within five working days.

Part 3
Other Key Events

Key Events

There are two reports, which were published recently, that the WAB has considered in the writing of this report. The first is the Environmental Protection Agency *"Urban Waste Water Treatment Report 2017"* (published in October 2018) and the second is the Commission for Regulation of Utilities' *"Capital Investment Monitoring Report 2019"* (published in April 2019).

3.1 Environmental Protection Agency – Urban Waste Water Treatment 2017

Every year the Environmental Protection Agency produces a report on waste water treatment in Ireland. The Environmental Protection Agency Report on "*Urban Waste Water Treatment in 2017*" was released in October 2018. The Report found that there were:

- **28** large towns and cities where waste water treatment failed to meet mandatory standards. These account for over half of the sewage collected in our public sewers. The final deadline to comply with the standards was 2005.
- **38** towns and villages were discharging raw sewage from the equivalent of 88,000 people. The Environmental Protection Agency has prosecuted Irish Water for delays in providing treatment plants at six of these areas.
- **57** areas where waste water discharges are the sole environmental threat to rivers, lakes and coastal waters at risk of pollution.
- **4** areas where upgrade works are needed to protect beaches with poor quality bathing water. The affected beaches were Merrion Strand, Clifden, Loughshinny and Sandymount Strand.
- **15** areas where improvements are needed to protect critically endangered freshwater pearl mussels or to safeguard shellfish habitats.
- **13** priority waste water collection networks (sewers) that need to be upgraded.

At the release of the report the Environmental Protection Agency's comment/view on the findings of the report was that Ireland is not addressing the deficiencies in its waste water treatment infrastructure at a fast-enough pace. It was the Environmental Protection Agency's view that 13 years after the final deadline to comply with treatment standards, it is unacceptable that there are still 28 large towns and cities discharging sewage that fails to meet these standards. This is putting our health at risk and is having an impact on our rivers, lakes and coastal waters.

The Report acknowledged that it is not possible to fix all the issues with Ireland's waste water treatment systems in the short term and a long-term strategy is required to address the shortcomings. The Environmental Protection Agency concluded that it is essential that the resources available are targeted efficiently in the right areas to deliver improvements where they are most needed.

3.2 Commission for Regulation of Utilities' 2nd Capital Investment Monitoring Report

The Commission for Regulation of Utilities' "2nd Capital Investment Monitoring Report" was published in April 2019.

This Report provides an overview of Irish Water's progression, delivery and forecast delivery of the Commission for Regulation of Utilities approved 2016 Capital Investment Plan as at the end of March 2018. The Commission for Regulation of Utilities has stated that it is too early to draw any conclusions on the efficiency of Irish Water's expenditure on capital investments. The Commission for Regulation of Utilities' current revenue control process (termed 'RC3') will include a detailed review of this efficiency, taking into account Irish Water's updated forecast regarding progression of the Capital Investment Plan as evident from the monitoring submissions received from Irish Water to date.

The Commission for Regulation of Utilities' key findings based on the November 2018 submission are summarised below.

2017 Delivery

- Irish Water spent a total of €489m on capital investments in the first year of the 2016 Investment Plan versus planned expenditure of €516m.
- €292m was spent on progressing and delivering projects in 2017, with most of this expenditure dedicated to projects that are due to be completed in future years.
- 32 projects were closed in 2017. Of these, 23 were originally planned to close by the end of 2016.

The Commission for Regulation of Utilities is currently undertaking its revenue review process for the years 2020 to 2024. In addition to reviewing Irish Water's proposed Expenditure and Capital Investment Plan for the years 2020-2024, this review will look back at Irish Water's spend in the years 2017 to 2019 to determine its efficiency and effectiveness, including the data included in this report. It is during this process that the Commission for Regulation of Utilities will review Irish Water's performance against the approved 2016 Investment Plan.

As part of this review, the Commission for Regulation of Utilities will audit a sample of projects and programmes within the approved Plan. The Commission for Regulation of Utilities published a consultation paper in July 2019 seeking comments on its views on this and related proposed decisions regarding Irish Water's allowed revenue in that context later this year. This will be followed by a Commission for Regulation of Utilities decision.

Major Projects

There are five projects within Irish Water's 2016 Investment Plan of significant spend and strategic importance that the Commission for Regulation of Utilities requires more detailed updates from Irish Water.

Total forecast spend across the five projects is now €2,364m compared with €2,070m in the 2016 Investment Plan.

- **Cork Lower Harbour Project** – new waste water treatment plant and sewer network to provide effective treatment of waste water produced in areas bordering the Harbour.
  - The waste water treatment plant is operational, treating more than 50% of the Lower Harbour's waste water load. Irish Water is forecasting that the southern sewer networks aspect of the project will be completed by 2019. Forecast total spend on the project has increased from €118m (in 2016) to €131m (in 2019).
- **Greater Dublin Drainage Project** – to provide a new regional waste water treatment facility and the associated infrastructure to serve the growing population of Dublin area.
  - Irish Water's monitoring submission forecasts that the project will be completed in 2024. In 2016 Irish Water was targeting a completion date in 2023. Forecast total costs for the project have fallen from €520m to €486m. A planning application was lodged with An Bord Pleanála in June 2018.
- **Ringsend Waste Water Treatment Plant Upgrade Project** – to provide increased capacity and effective nutrient removal at the Ringsend plant. The latest phase of this project is currently progressing through statutory planning processes and is therefore subject to revision in that context.
  - Irish Water is forecasting that the project will be completed by 2024 but that the plant will be discharging effluent compliant with the Urban Waste Water Treatment Directive by 2021. Forecast total spend on the project has increased from €363m to €416m.
- **Vartry Regional Water Supply Scheme** – to provide a new treatment plant, upgrades to the Vartry reservoir and replacement of the Vartry tunnel to help to ensure a safe and sustainable water supply in north Wicklow and South Dublin.
  - Irish Water is forecasting that this project is on track to be completed by 2021, with forecast total costs falling from €154m to €129m.
- **Water Supply Project – Eastern and Midlands** – to ensure a sustainable and resilient water supply is secured for Dublin and the Eastern and Midlands region.

- Irish Water is now forecasting that this project will be completed in 2027 compared with 2024 in its 2016 Investment Plan. Irish Water is now forecasting that the project will cost €1,202m compared with €915m in the 2016 Investment Plan.

The Commission for Regulation of Utilities recognises that as the projects pass through various stages of project development, for example where planning decisions require refinements to the scope of a project, the cost forecasts may be refined accordingly. These projects tend to be progressed in phases. The Commission for Regulation of Utilities has not, in the "*2nd Capital Investment Monitoring Report*", assessed the efficiency of the forecast or actual capital expenditure. That assessment will take place as part of the revenue control process. In the meantime, the forecasts included in the Report represent what Irish Water plans to spend to deliver the five projects in question. These forecasts also form the basis for Irish Water's proposed Capital Investment Plan for 2020-2024, which the Commission for Regulation of Utilities is reviewing as part of the RC3 process.

Part 4
WAB's Commentary on Key Indications and Conclusions

This Report has identified eleven key indicators by which the performance of Irish Water can be monitored.

It has reported on progress Irish Water has made in addressing some of these areas, most notably the areas of water compliance (typically achieving high levels of compliance) and public water supplies. In Table 1 we summarise the WAB's comments on each metric.

Table 1
Summary of the WAB's comments on each metric

Number	Indicator	WAB Commentary
1.	Leakage	By any measure, Ireland's leakage rate is unacceptable and needs to be a focus for Irish Water in the future. The WAB will continue to monitor the level of unaccounted for water until the end of this year until Irish Water makes its leakage metric available for assessment.
2.	First Fix Scheme	There has been a disappointing drop-off in the number of leak repairs completed under First Fix Scheme from mid-2016, which coincides with the suspension and eventual abolition of domestic water charges. However, it is expected that the introduction of the Excess Use Charges for domestic households in 2020 will encourage customers to avail of the scheme and that higher numbers of leak repairs will be achieved in the future.

Number	Indicator	WAB Commentary
3.	Remedial Action List (Water)	Irish Water has an action plan in place to remediate the drinking water supplies that are currently included on the Remedial Action List. Future WAB reports will monitor the progress of Irish Water in meeting the targets they have set to remediate those 60 water supplies through the quarterly updates of the Remedial Action List. The WAB will also monitor the number of new drinking water supplies that are put on to the list in any quarter.
4.	Priority Urban Area List (Wastewater)	The WAB notes the Environmental Protection Agency's view that Ireland is not addressing the deficiencies in its waste water treatment infrastructure at a fast enough pace. It is the Environmental Protection Agency's view that, 13 years after the final deadline to comply with treatment standards, it is not acceptable that there are still 28 large towns and cities discharging sewage that fail to meet these standards. The Environmental Protection Agency also noted that this is putting our health at risk and is having an impact on our rivers, lakes and coastal waters. On this basis, the WAB notes and accepts the commentary of the Environmental Protection Agency and would expect improvement in this area.
5.	Lead service connections replaced	Irish Water aims to remove all public-side lead pipework by 2026, and has set specific targets in that context. Future WAB reports will monitor the lead services replacement rate by Irish Water to measure Irish Water's progress in achieving its targets.
6.	Mains replacement rate (for water mains)	Irish Water replaced 209km of water mains in 2017. This represents a replacement rate of 0.33% of Irish Water's network and a replacement rate of once every 300 years. Although Irish Water's mains replacement rate of 0.33% is within a range comparable with other similar entities, the WAB agrees with the Commission for Regulation of Utilities view that Irish Water's replacement rate will need to be higher given Irish Water's infrastructure is likely to be older and in worse condition on average. There are no specific targets in place to monitor Irish Water's mains replacement rate. Therefore, future WAB reports will monitor the mains replacement rate to assess if Irish Water has achieved improved performance against this metric over time.
7.	Overall compliance with microbiological indicators for drinking water	In general, the WAB notes that compliance with the microbiological standards is high.

Number	Indicator	WAB Commentary
8.	Boil Water Notices	When Irish Water took charge of water supplies in 2014 it set a target to eliminate all boil water notices that were in place at that time. This target was achieved and while no specific future targets have been set, Irish Water is working to continue reducing the number of people affected by boil water notices. The WAB notes the significant decline in long term boil water notices in Quarter 4 2017, followed by a significant increase in early 2018 is a result of a single supply being temporarily removed from the list. A situation where the removal of a boil water notice followed by the subsequent reinstatement in a short period to time, of that notice is a cause for concern for the WAB given the impact it can have on the confidence the public have in the reported level of boil water notices.
9.	Compliance of Urban Waste Water Treatment (UWWT); Plants with Environmental Protection Agency discharge licenses	Overall, compliance for urban waste water treatment is very low. Aside from the impact on public health and the environment, failure by Ireland to address compliance in a reasonable timeframe may lead to Ireland facing fines by the European Courts. Future WAB reports will monitor the progress of Irish Water in improving the percentage of the population served by compliant waste water treatment plants.
10.	Ease of Contact	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. 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. While Customer Satisfaction Scores for the three years to 2017 are on an upward trend, telephone service factors showed some dis-improvement in the same time period. Future WAB reports will continue to monitor Irish Waters performance under this indicator.
11.	Irish Water Customer Complaints management	Irish Water has yet to report to the Commission for Regulation of Utilities under these two metrics in relation to complaints management. Irish Water has stated that it will be reporting on these metrics by the end of 2019.

There is a history of under-investment in water and waste water in Ireland and much of the recent focus by Irish Water has been on the provision of high-quality public water.

It is clear, however, that the management and improvement of the drinking and waste water network requires significant and sustained action, particularly in the areas of leakages, mains repairs and waste water treatment. We consider that current operational and capital investment should be maintained, coupled with a strong organisational focus, to enable a substantial improvement programme.

It is firmly our view that increasing public confidence in Irish Water is dependent on visible action in these key areas.

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.

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