Quarterly Report No. 2 of 2021

2

WAB

Water Advisory Body

JULY 2021

Web: www.wateradvisorybody.ie Email: info@wab.gov.ie

Contents

Foreword

Paul McGowan
Chairperson

Welcome to the second Quarterly Report of 2021 by the Water Advisory Body (the WAB).

In this report we highlight changes to six of our Performance Indicators. We use these Performance Indicators to monitor how well Irish Water is performing.

With regards to The First Fix Free Scheme, while this report shows a small increase in the number of leak repairs completed since Quarter 4 2019, we note a continued and disappointing drop-off in the total number of leak repairs completed under the scheme since mid-2016. The WAB anticipates that the introduction of the Household Water Conservation (Excess Use Charges) Policy in 2021 (with first bills expected to issue in 2023) and the expansion of the First Fix Free Scheme to unmetered households will encourage customers to avail of the First Fix Free Scheme and that higher numbers of leak repairs will be achieved in the future.

The report notes that the number of supplies on the remedial action list increased by two at the end of Quarter 1 2021. The WAB also notes the Environmental Protection Agency's concern that the progress made during 2020 was reversed during the last Quarter, and that there are now 48 supplies on the Remedial Action List serving 1,010,117 consumers. This represents an increase of 5,120 consumers being served by the most "at risk" supplies. There were eight supplies on the Remedial Action List at the end of Quarter 1 2021 for which Irish Water has not submitted a completion date.

While there was a net reduction of 16 in the number of Priority Urban Areas in the past year, the WAB notes the Environmental Protection Agency's concern that further delays in providing treatment mean that 12 towns and villages will continue discharging raw sewage after 2024 because they will still not be connected to a waste water treatment plant.

Irish Water exceeded its target for 2020 with regard to replacement of lead connections. However, Irish Water's target to replace an additional 7% of remaining public side lead connections up to the end of 2024 means it is highly unlikely that Irish Water will be able meet the targets to replace all lead services by 2026.

There was a decline in the number of consumers on a boil water notice at the end of Quarter 1 2021. However, the WAB notes the Environmental Protection Agency's concerns that all of the 17 notices in place at the end of Quarter 1 2021 were in "long term" boil water notices, which means the notice was in place for more than 30 days.

The report notes that the percentage of the population served by Urban Waste Water Treatment plants that are not compliant has increased from 25% to 28%. Concerningly, compliance remains very low and the percentage of urban areas meeting their licence standards has decreased slightly.

The WAB welcomes the decision from the Commission for Regulation of Utilities, published in April, to expand the eligibility criteria for the First Fix Scheme. This allows thousands of previously ineligible domestic water customers to avail of a free leak investigation and repair. The WAB is of the view that the First Fix Scheme has been successful in reducing customer-side leakage.

The Minister for Housing, Local Government and Heritage published the Water Sector Transformation Policy Paper in February 2021. The WAB welcomes the publication of this report and considers it an important step towards ensuring Irish Water can be held accountable to its customers and Irish society, in a transparent manner.

The WAB completed Stage one of a review of Irish Waters procurement policies and procedures. The review is reported on in length in Section 3 of this report and is published on the WAB website www.wateradvisoybody.ie. The auditors (Ernst & Young) advised that at a high level conclusion, Irish Water is compliant with procurement policies and procedures.

Finally, the WAB welcomes the development of the National Water Resources Plan and looks forward to its timely conclusion in 2022. The Plan will play a key role in identifying the investments required to deliver the capacity and quality of water on a sustainable, national basis.

Paul McGowan
Chairperson of the Water Advisory Body

Executive Summary

This is the sixth Quarterly report published by the WAB, and the second report of 2021. With this report, the WAB fulfills its function of reviewing the implementation by Irish Water of its Strategic Funding Plan.

The WAB was established on 1 June 2018. The purpose of 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 Strategic Funding 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 is collated and published as part of the Quarterly reports of the WAB in order to provide objective information on Irish Water's 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, Local Government and Heritage and the Oireachtas on the performance of Irish Water.

A detailed explanation of each key performance indicator is available in Appendix 1.

The information published within this report is accurate as of 31 May 2021.

The following findings from the report are of note, with specific reference to the six Key Performance Indicators that have been updated since the last report:

First Fix Free Scheme

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

In Quarter 1 2020, a total of 799 leak repairs were completed. 652 of these repairs were external to the customer property and were carried out by Irish Water. The remaining 147 leaks were internal to the customer property and repaired by the customer. This represents a small increase in the number of leak repairs completed since Quarter 4 2019 and demonstrates a continued and disappointing drop-off in the number of leak repairs completed under the scheme since mid- 2016.

The Household Water Conservation (Excess Use Charges) Policy is expected to be introduced in 2021, with first bills expected to issue in 2023. The WAB anticipates that this will encourage customers to avail of the First Fix Free Scheme and that higher numbers of leak repairs will be achieved in the future. The WAB also anticipates an increase uptake of First Fix Free Scheme by customers following the extension of the scheme to un-metered customers in April 2021.

Remedial Action List (Water)

The Environmental Protection Agency requires Irish Water to have an action plan in place to remediate the drinking water supplies that are currently included on the Remedial Action List. WAB monitors the progress of Irish Water in meeting the targets they have set to remediate those 48 water supplies through the Quarterly updates of the Remedial Action List. The number of supplies on the Remedial Action List has increased at the end of Quarter 1 2021 by two supplies. The WAB notes the Environmental Protection Agency's concerns that the progress made during 2020 has been reversed during the last quarter. The WAB also notes the EPA;s concern at the re-addition of Kilgarvan to the RAL following its' removal in 2018.

Priority Urban Area List (Wastewater)

There was a net reduction of 16 in the number of Priority Urban Areas in the past year. In 2020 waste water treatment at 12 large towns and cities did not meet European Union standards set to protect the environment.

The WAB notes the Environmental Protection Agency's concern that further delays in providing treatment mean that 12 towns and villages will continue discharging raw sewage after 2024 because they will still not be connected to a waste water treatment plant.

Lead service connections replaced

The WAB notes that Irish Water exceeded its target for 2020 with regard to replacement of lead connections. Irish Water's target for the entire five year term of Revenue Control period 3 (2020-2024) is to replace 13,231 lead connection. The WAB also notes the concerns expressed by the Environmental Protection Agency in its report "Drinking Water Quality in Public Supplies 2019"[1] where it highlighted that by the end of 2019, 17% of public side lead connections had been replaced. Irish Water's target to replace an additional 7% of remaining public side lead connections up to the end of 2024 means it is highly unlikely that Irish Water will be able meet the targets it set in its' "Lead in Drinking Water Mitigation Plan"[2] to replace all lead services by 2026.

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

1 http://www.epa.ie/pubs/reports/water/drinking/DW%20Quality%20in%20Public%20Supplies%202019_web.pdf

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

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 decline in the number of consumers on a boil water notice at the end of Quarter 1 2021.However, the WAB notes the Environmental Protection Agency's concerns that all of the 17 notices in place at the end of Quarter 1 2021 were in "long term" boil water notices, which means the notice was in place for more than 30 days.

Compliance of Urban Waste Water Treatment (UWWT); Plants with Environmental Protection Agency discharge licences

Overall, compliance remains very low and the percentage of urban areas meeting their licence standards has decreased slightly. More stringent standards commenced at a number of urban areas at the beginning of 2020 which may have contributed to the decline in compliance.

Notwithstanding this, the percentage of the population served by the plants that were compliant has increased from 25% to 28%. The main factor in the low rate of compliance by population equivalent remains due to the failure to treat waste water adequately at Ringsend.

Other Developments

Extension of First Fix Free Scheme

The WAB welcomes the decision from the Commission for Regulation of Utilities, published in April 2021, to expand the eligibility criteria for the First Fix Free Scheme. This allows thousands of previously ineligible domestic water customers to avail of a free leak investigation and repair. Notably, the scheme is now available to unmetered customers. The WAB is of the view that the First Fix Scheme has been successful in reducing customer-side leakage.

Water Sector Transformation Policy Paper

The Minister for Housing, Local Government and Heritage published the Water Sector Transformation Policy Paper in February 2021. The WAB welcomes the publication of this report and considers it an important step towards ensuring Irish Water can be held accountable to its customers and Irish society, in a transparent manner.

The WAB considers the transformation of Irish Water into a national, standalone, regulated water services utility as a vital requirement for Irish Water to be equipped to deliver on the challenges it faces and for it to be truly transparent and accountable to all its customers and society as a whole. This requires Irish Water to have direct control over the assets and resources that will deliver this outcome.

Review of Irish Water Procurement Policies

The WAB completed stage one of a review of Irish Waters procurement policies and procedures. The review is reported on in length in Section 3 of this report and is published on the WAB website www.wateradvisoybody.ie. The auditors (Ernst & Young) advised that at a high level conclusion, Irish Water is compliant with procurement policies and procedures.

National Water Resources Plan

Finally, the WAB welcomes the development of the National Water Resources Plan and looks forward to its timely conclusion in 2022. The Plan will play a key role in identifying the investments required to deliver the capacity and quality of water on a sustainable, national basis.

Part 1
Introduction

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.

Performance Indicators in this Report

The WAB has chosen a set of performance indicators to provide a broad view of Irish Water's performance.

In this report, we explain each indicator and why it is important. The WAB has chosen performance indicators that are a useful reflector of performance and that 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 requires 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 3 Decision on Irish Water to inform discussion on how indicators in these areas might be developed. In August 2020 the Commission for Regulation of Utilities published a Final Decision on Revenue Control 3. This includes the full Capital Expenditure Allowance for Irish Water for the period 2020-2024.

Irish Water procurement, remuneration and staffing policies

In relation to procurement, remuneration and staffing policies the WAB propose that Irish Water commissions independent audit on these policy areas, reporting directly to the WAB.

The first of these reports *("Review of Irish Waters procurement and contract policies and procedures to ensure compliance against PD02 and PD03")* covers procurement policies and procedures and is published alongside this report.

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).

This report displays each of the eleven performance indicators. A commentary is provided only on those performance indicators which have been updated in this Quarterly report. Where available, the targets that Irish Water is working to in relation to each indicator are also set out.

For each indicator, the Appendix to this report includes a brief explanation of the indicator; and the reason why the indicator is important.

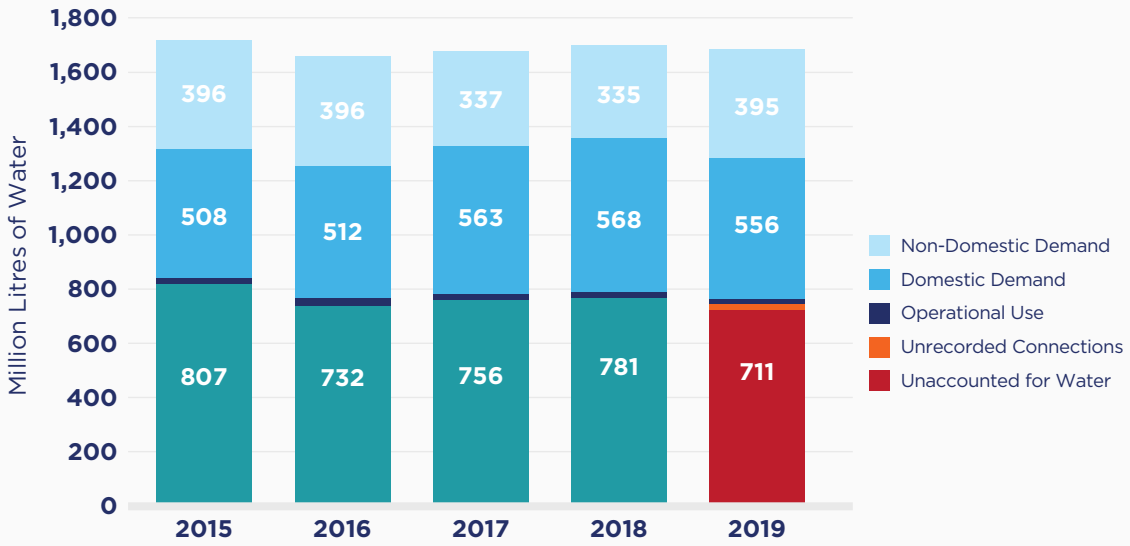
The WAB will continue to refine indicators to ensure they remain a useful measure of the performance of Irish Water.

2.1 Infrastructure Delivery and Leakage Reductions Indicators

This metric is not updated in this report. This metric was last updated in the Water Advisory Body Quarterly Report No.2 of 2020.

2.1.1 Performance Indicator 1 - Leakage

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



2.1.2 Performance Indicator 2 - First Fix Scheme

This Performance Metric has been updated in this report and is based on information valid up to the end of Quarter 1 2020.

Figure 2
Combined total of Irish Water and Customer Leak Repairs completed each Quarter

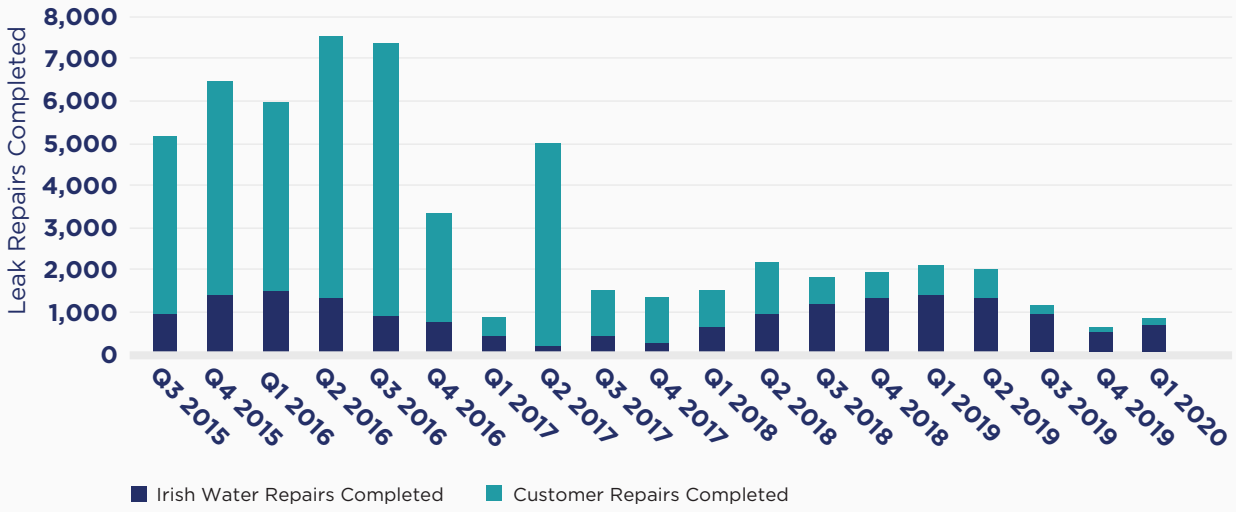
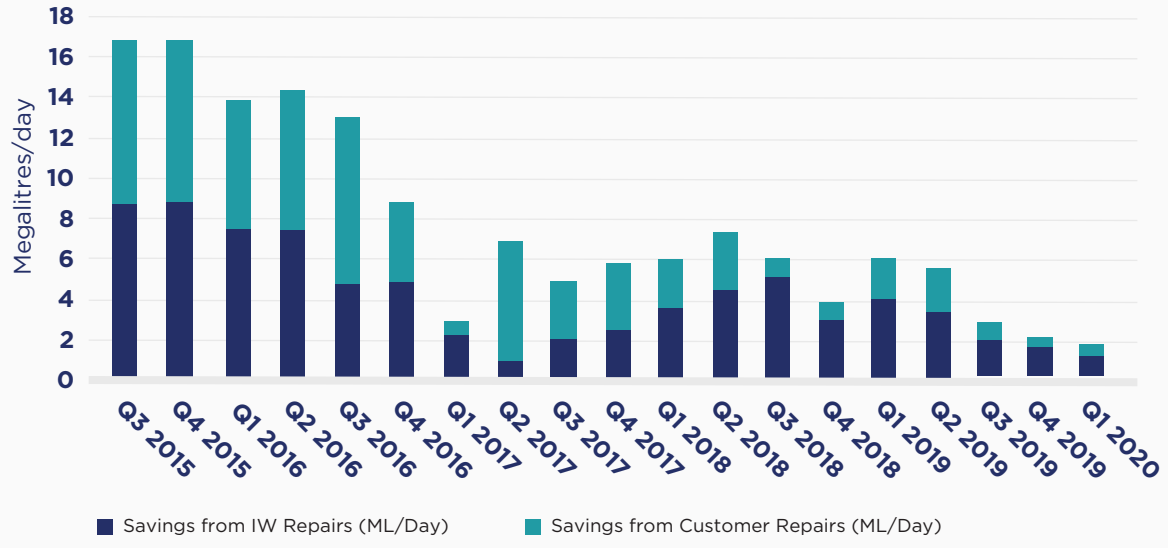


Figure 3
Combined total Savings in Megalitres/day of Irish Water and Customer Leak Repairs completed each quarter



Between the introduction of the First Fix Scheme in 2015 and Quarter 1 2020, the cumulative water savings are estimated by Irish Water to be 156.54 Megalitres/day. A cumulative estimated total of 81.72 Megalitres/day has been saved through repairs carried out by Irish Water and a further estimated 74.82 Megalitres/day of water has been saved through repairs carried out by customers.

Figure 2 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 2 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 4 2019.

Figure 3 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 3 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 1 of 2020, a total of 799 leak repairs were completed. 652 of these repairs were external to the customer property and were carried out by Irish Water, and the remaining 147 leaks were internal to the customer property and repaired by the customer. As of Quarter 1 2020, Irish Water had completed approximately 18,000 leak repairs and customers had completed approximately 43,500 leak repairs in total. Irish Water estimates that the scheme has saved nearly 157 million litres (ML) of water per day up to the end of Quarter 1 2020.

Project expenditure is reported Quarterly in arrears. The cumulative total expenditure up to the end of Quarter 1 2020 is €46,192,652 consisting of €23,753,889 for leak investigations, €18,136,716 for repairs and €4,302,047for additional costs[3]. This expenditure is within the original allowed funding amount of €51m for the Scheme. Irish Water has been approved additional funding for the First Fix Scheme over the revenue control period, from 2020 to 2024.

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. Figure 2 shows a small increase in the number of leak repairs completed since Quarter 4 2019. However, overall Figure 3 demonstrates a continued and disappointing drop-off in the number of leak repairs completed under the scheme since mid-2016. This coincides with the suspension and eventual abolition of domestic water charges.

Excess Use Charges for domestic households were planned to be introduced in late 2020, however this was delayed, primarily due to the impact of the Covid-19 pandemic. The Household Water Conservation (Excess Use Charges) Policy is now expected to be introduced in 2021, with first bills expected to issue in 2023. It is expected that this 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.

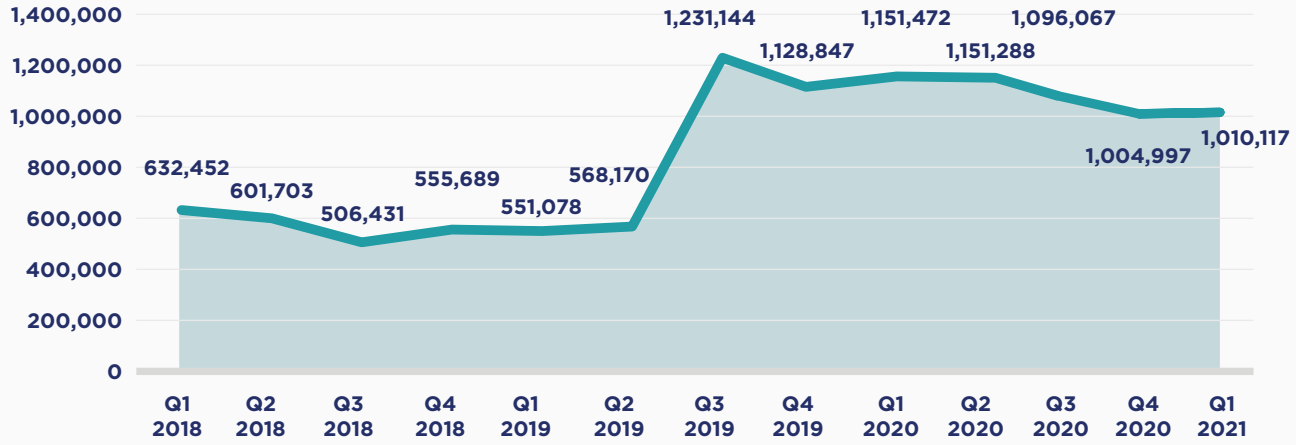
The WAB also anticipates an increase uptake of First Fix by customers following the extension of the scheme to un-metered customers. .

3 **Source:** Irish Water Leakage Reduction Programme - First Fix Leak Repair Scheme - For Domestic Water Customers - Quarterly Report Quarter 1 2020

2.1.3 Performance Indicator 3 - Remedial Action List (Water)

This Performance Metric has been updated in this report and is based on information valid up to the end of Quarter 1 2021.

Figure 4
The population served by drinking water supplies included on the Remedial Action List from Quarter 1 2018 to end Quarter 1 2021



Commentary

Figure 4 shows the population served by drinking water supplies included on the list from Quarter 1 2018 to end Quarter 1 2021. The figures had been showing a general downward trend in both the number of drinking water supplies on the list and the population that these supplies serve: however, the addition of the Leixlip supply to the Quarter 3 2019 Remedial Action List has changed this. The number of supplies on the remedial action list increased by two at the end of Quarter 1 2021, with the population served by these supplies standing at 1,010,117.

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

At the end of Quarter 1 2021 the Remedial Action List contained 48 water supplies, which is an increase of 2 supplies since the end of 2020. The most recent supplies removed from the Remedial Action List (Quarter 1 2021) were Gowna and Granard in Co. Longford. Four supplies were added to the Remedial Action List including Whitegate Regional (Co.Cork), Kilgarvan (Co. Kerry), Borrisokane (Co. Tipperary) and Ballymorris (Co. Wicklow). The increase in the population served by supplies on the Remedial Action List from Quarter 4 2020 to Quarter 1 2021 was 5,120 consumers. The progress that had been seen during 2020 where there was an overall reduction of seven supplies on the Remedial Action List, has been reversed during Q1 2021 and the Environmental Protection Agency is concerned by this development

The Whitegate Regional supply was added to the Remedial Action List as the supply has had boil water notices imposed on six occasions since 2016, the most recent of which was put in place on 31st January 2021. The plant lacks resilience to deal with variations in raw water quality.

The re-addition of the Kilgarvan Public Water Supply to the Remedial Action List is of concern to the Environmental Protection Agency. This supply was removed from the Remedial Action List in Quarter 4 2018 following the installation of treatment for removal of THMs. Irish Water must ensure that where supplies are removed from the Remedial Action List, that there is ongoing vigilance and oversight in the operation of water treatment plants. Progress on these supplies continues to be tracked and reported to the European Commission as part of the Trihalomethanes Infringement Proceedings against Ireland.

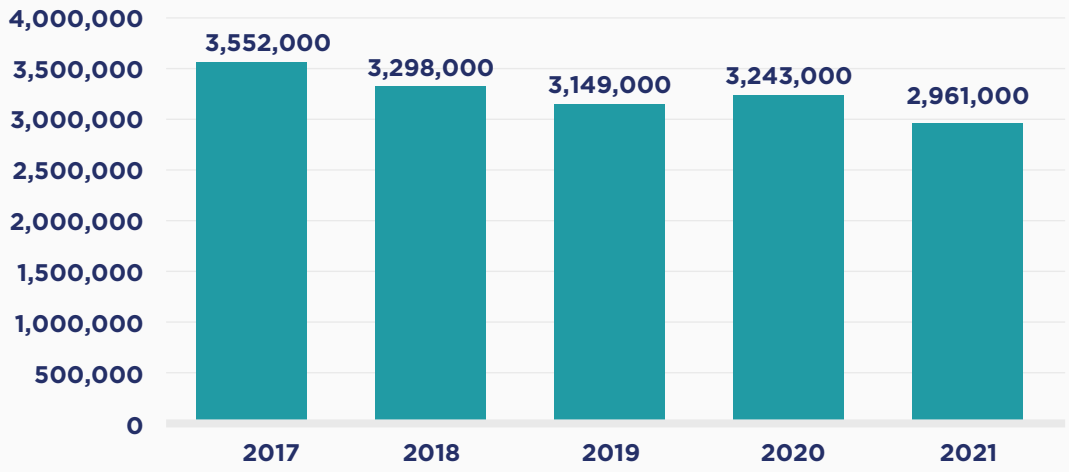
The WAB notes the removal of two supplies from the Remedial Action List since its' last Quarterly report. However, the WAB also notes the Environmental Protection Agency's concern that the progress made during 2020 was reversed during the last Quarter, and that there are now 48 supplies on the Remedial Action List serving 1,010,117 consumers. This represents an increase of 5,120 consumers being served by the most "at risk" supplies. There were eight supplies on the Remedial Action List at the end of Quarter 1 2021 for which Irish Water has not submitted a completion date.

Future WAB reports will monitor the progress of Irish Water in identifying dates by which supplies on the Remedial Action List will be addressed and in meeting the targets they have set to remediate those 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. The WAB expects that COVID-19 restrictions will continue to have some impact on the dates for supplies on the Remedial Action List and will continue to monitor Irish Water's progress to assess and address these delays in subsequent reports.

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

This Performance Metric has been updated in this report and is based on information valid up to June 2021.

Figure 5
Population equivalent served by priority areas



Commentary

Figure 5 shows the population equivalent served by priority areas included on the priority urban area list for 2017 to 2021. The population equivalent decreased in 2021, reversing the increase in 2020 and resuming the downward trend recorded between 2017 and 2019. The WAB welcomes this progress by Irish Water in reducing the population equivalent served by priority areas.

It is important to note that a single agglomeration, the Greater Dublin Area served by Ringsend treatment plant, accounts for approximately 2.3 million or over three-quarters of the total population equivalent served by priority areas. Work is underway to upgrade and improve treatment at Ringsend and when this is complete the total population equivalent served by priority areas will decrease significantly.

The number of priority urban areas reduced from 148 in 2017 to 97 in 2021. 19 areas were removed from the list in the latest update and three were added.

The number of large towns and cities that failed to comply with the mandatory treatment and effluent quality standards in the European Union's Urban Waste Water Treatment Directive is 12, down from 19 the previous year. The final deadline to meet these standards was 2005.

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

- Infrastructural upgrades to the waste water plant to treat sewage to the required standards;
- Upgrades to the collecting systems to ensure waste water is collected properly and conveyed to the treatment plant;
- Operational improvements to optimise plant performance.

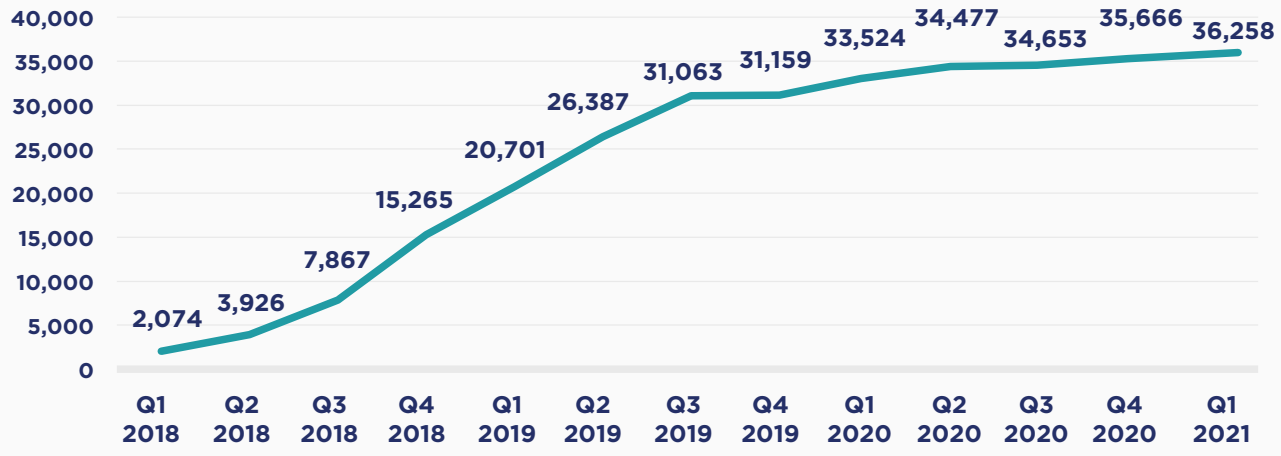
The target dates for the completion of those specific actions are reported to the Environmental Protection Agency, which monitors Irish Water's delivery on those targets. The Environmental Protection Agency's assessment of the latest priority urban areas update highlights that further delays in providing treatment to eliminate discharges of untreated waste water mean that 12 of the 34 towns and villages with no treatment will continue discharging raw sewage after 2024. The final two of these are not scheduled to receive treatment until 2027. The next update on the priority urban areas is due at the end of Quarter 2.

The WAB notes with concern that the Environmental Protection Agency has again highlighted the pace at which deficiencies are addressed by Irish Water. The WAB also notes with concern that delays in delivering infrastructural works means that the discharge of raw sewage will continue after 2024 in 12 of the 34 towns and villages with no treatment, and beyond 2027 for two sites.

2.1.5 Performance Indicator 5 - Lead service connections replaced

This Performance Metric has been updated in this report and is based on information valid up to Quarter 1 2021.

Figure 6
Total lead connections replaced (cumulative)



Irish Water has an annual target for lead service replacements which, again this year, was significantly and substantially reduced from the 2019 target. The target for 2021 is 1,500 replacements, with a target of 13,231 for the entirety of Revenue Control period 3[4]. During Quarter 1 2021, Irish Water replaced 592 lead service connections.

Figure 6 above shows the rate of progress of lead connection replacements up to end of Quarter 1 2021. It demonstrates that progress has slowed significantly when compared to the progress made during since 2019 and has plateaued over the last five quarters. Replacement of lead connections recommenced in Quarter 3 2020 following restrictions imposed due to COVID-19. A stimulus package from Government during 2020 allowed some additional funding to be allocated towards lead connection replacements towards the end of 2020.

Irish Water has continued to encounter difficulties in accessing shared and backyard service replacements, as some homeowners have refused to sign the necessary consent forms for works to be carried out on private property. Irish Water continues to engage with these homeowners to get these consent forms signed. Irish Water's target of 1,500 replacements during 2021 is lower because they will concentrate efforts on back yard services, which can be more complex and more expensive to replace.

Figure 6 shows the cumulative number of lead connections replaced by Irish Water to date, with detailed replacement figures given for the last twelve quarters. This data is compiled by the Environmental Protection Agency on a Quarterly basis.

The WAB notes that Irish Water exceeded its target for 2020 with regard to replacement of lead connections. Irish Water's target for the entire five year term of Revenue Control period 3 (2020-2024) is to replace 13,231 lead connection. The WAB also notes the concerns expressed by the Environmental Protection Agency in its report "Drinking Water Quality in Public Supplies 2019"[5] where it highlighted that by the end of 2019, 17% of public side lead connections had been replaced. Irish Water's target to replace an additional 7% of remaining public side lead connections up to the end of 2024 means it is highly unlikely that Irish Water will be able meet the targets it set in its "Lead in Drinking Water Mitigation Plan"[6] to replace all lead services by 2026.

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

4 https://www.cru.ie/wp-content/uploads/2019/07/CRU19148-Irish-Water-Revenue-Control-3-Decision-Paper.pdf

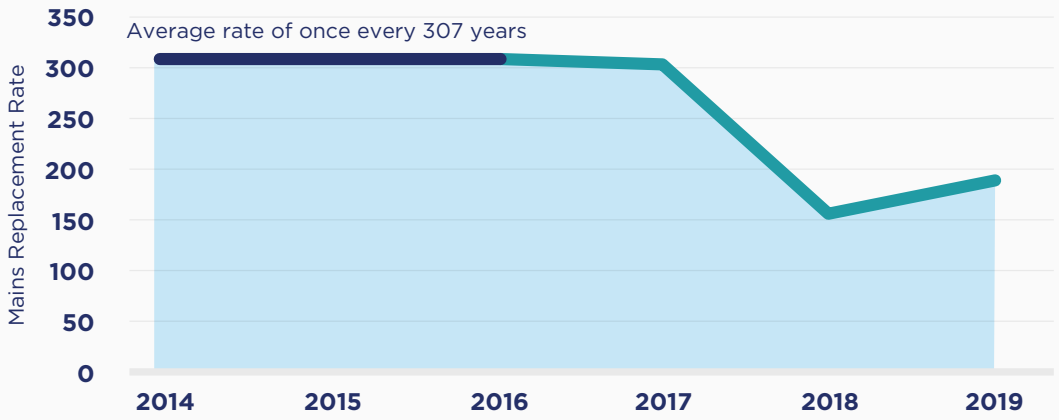
5 http://www.epa.ie/pubs/reports/water/drinking/DW%20Quality%20in%20Public%20Supplies%202019_web.pdf

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)

This metric has not been updated in this report. This metric was last updated in the Water Advisory Body Quarterly Report No.2 of 2020.

Figure 7
Mains replacement rate 2014 - 2019

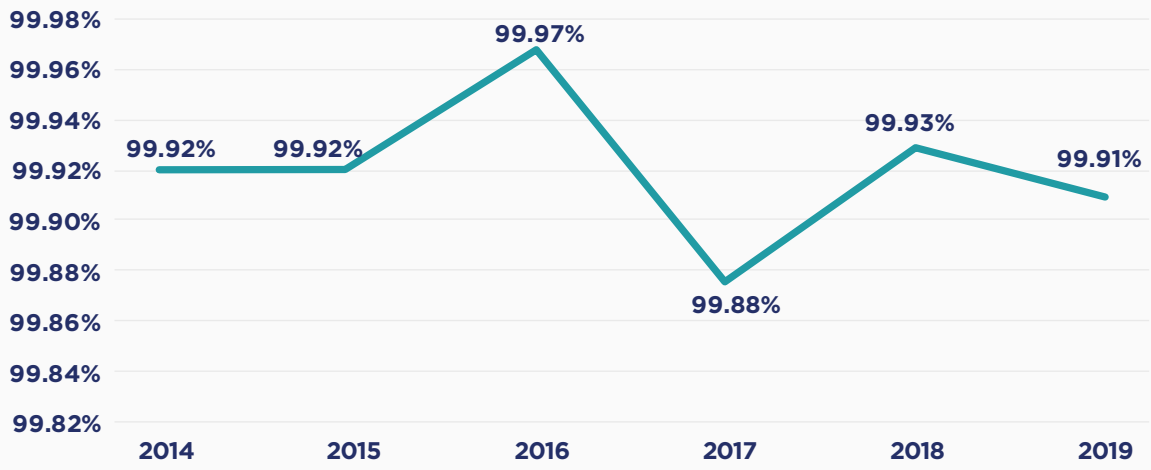


2.2 Improvements in Water Quality, including the elimination of Boil water notices

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

This metric has not been updated in this report. This metric was last updated in the Water Advisory Body Quarterly Report No.2 of 2020.

Figure 8
Percentage of Samples complying with the E.coli Standard



Links to 2019 report
https://www.epa.ie/pubs/reports/water/drinking/drinkingwaterqualityinpublicsupplies2019.html

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.

2.2.2 Performance Indicator 8 - Boil Water Notices

This Performance Metric has been updated in this report and is based on information valid up to March 2021.

Figure 9

Boil water notices at the end of each quarter

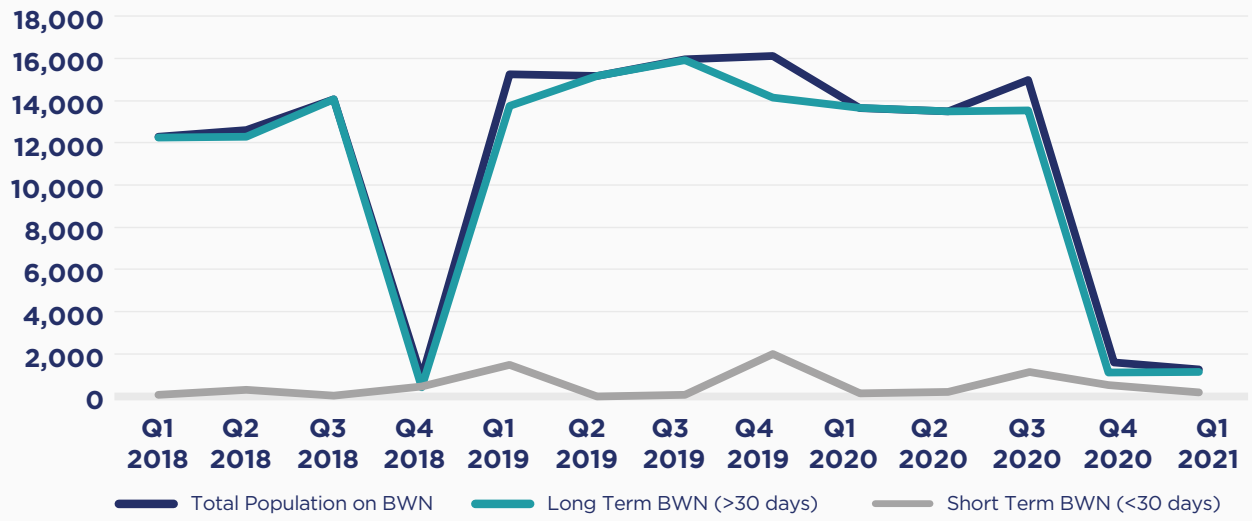


Figure 9 shows the total population on boil water notices at the end of Quarter 1 2021. The graph also shows how long those boil water notices have been in place by showing the population on boil water notices for less than thirty days and the population on boil water notices for more than thirty days.

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.

At the end of Quarter 1 2021, 1,087 people were on boil water notices which is a decrease on the population on boil water notices at the end of the previous Quarter (1,335 people). The WAB welcomes the reduction in the number of people on a boil water notice at the end of Quarter 1 2021.

During Quarter 1, 2021 there were also a number of boil water notices in place on supplies for more than 30 days. Boil water notices were required on Whitegate Regional (6,500 consumers), Teeranea (911 consumers) and Achill (2,447 consumers) during Quarter 1 and each of these remained in place for longer than 30 days. For consumers on these three supplies, these notices were a repeat occurrence. The boil water notice for Achill was put in place as a planned, precautionary measure to allow Irish Water to undertake upgrade works to safeguard the supply following a Do Not Consume notice on the supply in August 2020. The boil water notice on Teeranea was the second such notice within a year for consumers on that supply and was put in place to deal with production issues at the plant. The notice on Whitegate Regional was the sixth boil water notice for consumers of this supply since 2016 and was put in place as the plant cannot adequately treat the elevated turbidity in the raw water after heavy rainfall.

The WAB will continue to monitor the number of people affected by short term boil water notices, particularly where for supplies where notices need to be put in place on more than one occasion.

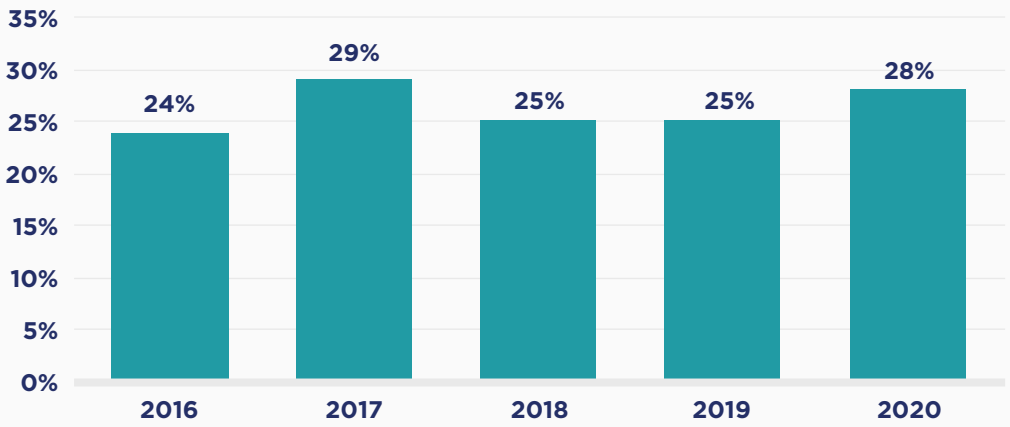
At the end of Quarter 1 2021, all of the 17 boil water notices (serving 1,087 people) were in place for more than 30 days. This means that the solution to fix the problem with the plant could not be addressed quickly and requires significant investment by Irish Water. The WAB notes with continuing concern the trends for long term boil water notices highlighted by the Environmental Protection Agency. It will continue to monitor Irish Water's progress in this area and ensuring that boil water notices remain in place for as short a period of time as possible.

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.

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

This Performance Metric has been updated in this report and is based on information valid up to the end of 2020.

Figure 10
Percentage of Population served by compliant Urban Waste Water Treatment plants (by population equivalent)[7]



Commentary

Overall, compliance of urban waste water treatment remains very low and the percentage of urban areas meeting their licence standards has decreased slightly. More stringent standards commenced at a number of urban areas at the beginning of 2020 which may have contributed to the decline in compliance.

Notwithstanding this, the percentage of the population served by the plants that were compliant has increased from 25% to 28%.

The two main actions to improve compliance are:

- Upgrading of the waste water treatment infrastructure.
- Continuing to improve how plants are operated and maintained.

Of the 72% of the population served by the plants that were not compliant, over half of that non-compliance can be attributed to one waste water treatment plant – Ringsend, Dublin. Resolving non-compliance at Ringsend will result in a significant improvement in the overall compliance rate. Work is underway to upgrade and improve treatment at Ringsend. The quality of the treated waste water will improve as the upgrade works in Ringsend proceed but is not expected to start meeting the required standards until 2023.

Future WAB reports will monitor the progress of Irish Water in improving the percentage of urban areas that comply with licence standards.

2.3 Responsiveness to the needs of Communities and Enterprise

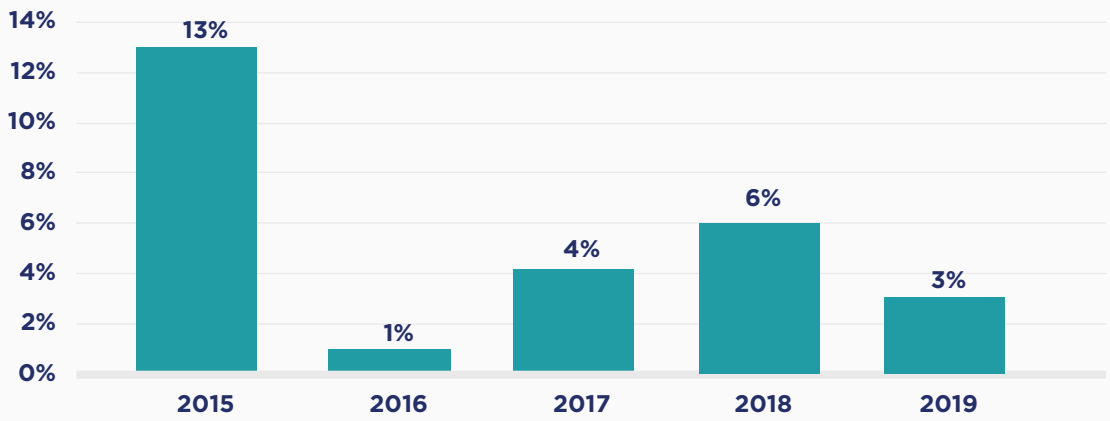
This metric has not been updated in this report. This metric was last updated in the Water Advisory Body Quarterly Report No.3 of 2020.

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:

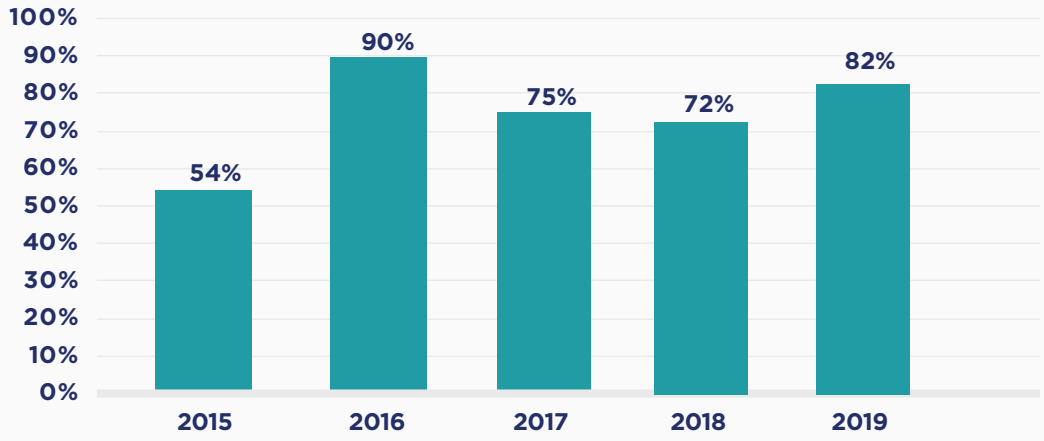
The Call Abandonment Rate metric is the percentage of calls that are abandoned while a caller is waiting in the queue to speak to an agent (having been directed through the Interactive Voice Recognition system).

Figure 11
Call Abandonment Rate



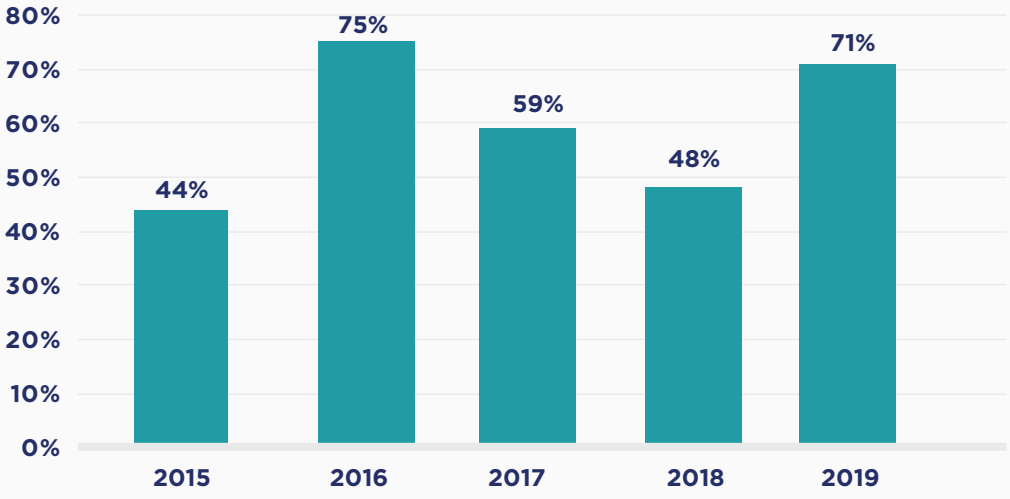
The Speed of telephone response by Irish Water is measured by two separate telephone service factors. The first metric, Telephone Service Factor 1 (TSF 1) measures the percentage of calls that enter a queue to speak to an agent which are answered within 20 seconds.

Figure 12
Telephone Service Factor 1: Calls answered by Agent within 20 seconds



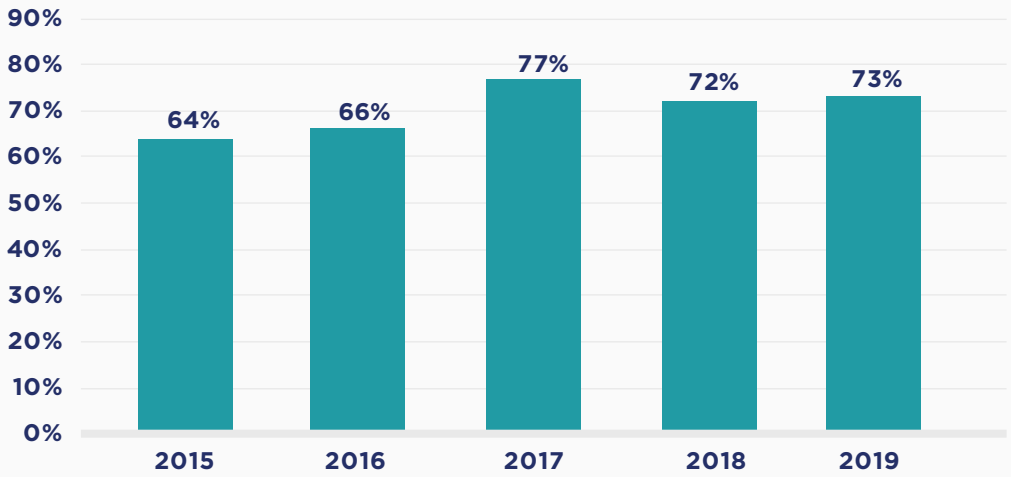
The second metric, Telephone Service Factor 2 (TSF 2), measures the number of calls that are dealt with through the Interactive Voice Recognition system as well as the number of calls when placed in a queue to speak to an agent (after going through the Interactive Voice Recognition system) answered by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

Figure 13
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.

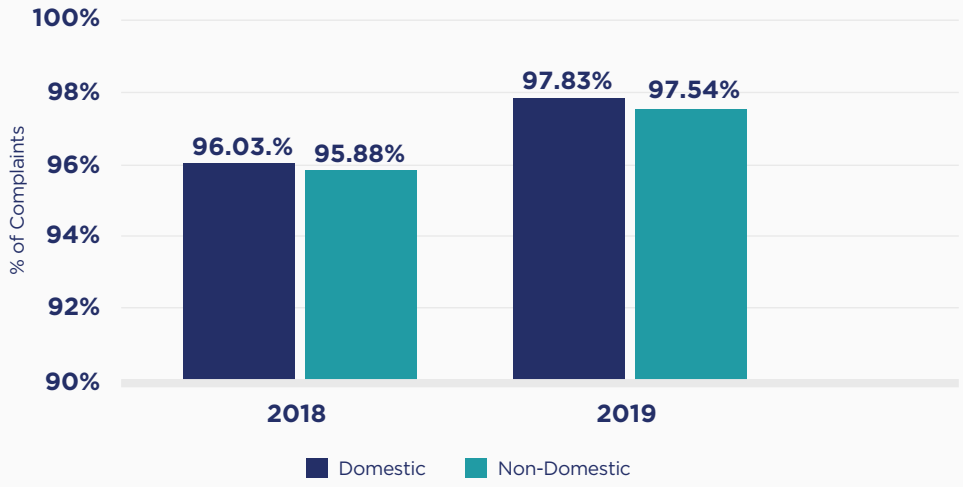
Figure 14
Customer Satisfaction Scores



2.3.2 Performance Indicator 11 - Irish Water Customer Complaints management

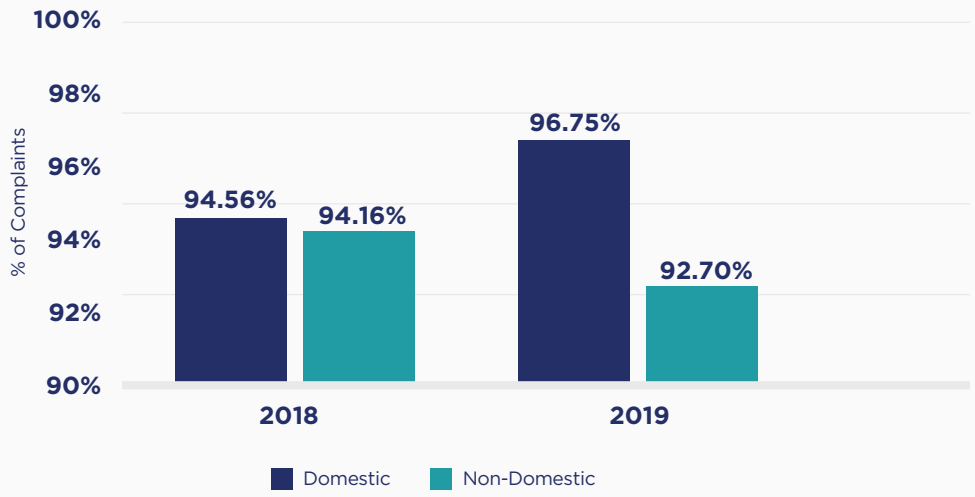
This metric has not been updated in this report. This metric was last updated in the Water Advisory Body Quarterly Report No.3 of 2020.

Figure 15
Response to Complaints within 5 working days[7]



7 Note that for complaints responded to within five days, data in 2018 is provided by Irish Water from Quarter 2 – Quarter 4 only.

Figure 16
Response to Complaints (with Final Decision) within 2 months



Part 3
Key Events

3.1 Decision of First Fix Scheme

The First Fix Scheme entitles qualifying domestic customers to a leak investigation and repair to their external supply pipe free of charge. Leakage reduction is a key water policy objective and the WAB is of the view that the First Fix Scheme has been successful in reducing customer-side leakage. Considering the significant costs associated with delivering water services, the Scheme has also been good value for money. Irish Water estimates water savings of 155 megalitres per day in the period 2015-2019, with a total spend of €45m. The Scheme may also help reduce the need for investment in the water network as it reduces the overall amount of treated water that is needed in Ireland.

In April 2021, the Commission for Regulation of Utilities published a decision to expand the eligibility criteria for the First Fix Scheme. This allows thousands of previously ineligible domestic water customers to avail of a free leak investigation and repair. The WAB welcomes this positive change.

The scheme is now expanded to the following types of customers:

- Unmetered customers
- Customers with no Internal Stop Valve
- Mixed-use customers with a predominant domestic use
- Customers with a shared service connection
- Unregistered customers

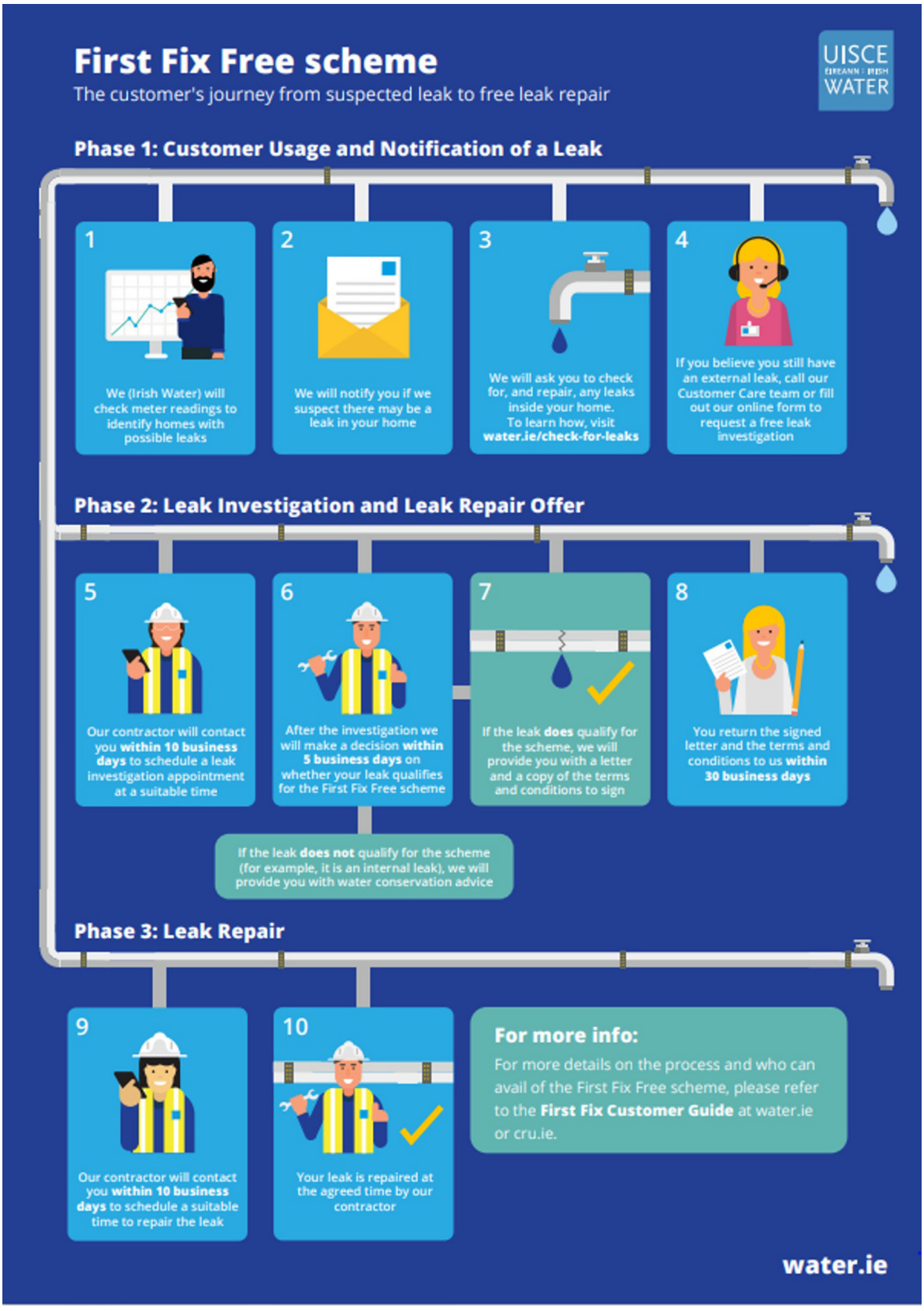
The Scheme now allows as many domestic customers as possible the opportunity to have a leak fixed and reduce wastage of water. One accepted drawback of the scheme in recent years had been its narrow scope: it could only be availed of in certain circumstances, e.g., it had to be possible to isolate the supply to the external part of the property and it could not have been a shared connection.

The revised First Fix policy is timely in the context of the planned introduction of the Household Water Conservation (Excess Use Charge). It is expected that the introduction of charges for those with the highest demand would encourage greater uptake of the First Fix Scheme. Based on the Commission for Regulation of Utilities' analysis, the top 10% of households account for almost 40% of total water use. Most of these high users have a leak on their premises. The First Fix Scheme and the Household Water Conservation Policy will complement one another as fixing leaks may facilitate customers' water consumption falling below the household annual allowance of 213,000 litres and thus help customers avoid the charge. Since any customer is potentially liable for Excess Usage Charges, based on their consumption, it is appropriate to ensure that the First Fix Free Scheme is available to as many customers as possible.

Expanding the eligibility criteria will also lead to greater equity between customer classifications – i.e., those that have a meter and those that do not. The most significant change is that unmetered customers will be able to avail of the Scheme under the amended policy. This allows an additional circa 600,000 customers to qualify for a leak investigation. This change ensures that both metered and unmetered customers have the same opportunities to fix leaks, thereby reducing the numbers of customers who may face liability under the Household Water Conservation Policy[8].

8 https://www.cru.ie/wp-content/uploads/2019/07/CRU19086-CRU-Decision-and-Response-to-Comments-on-Household-Water-Conservation-Excess-Use-Charges.pdf

The below infographic outlines the customer journey through the First Fix process:



3.2 Water Sector Transformation Policy Paper – Single Public Utility

The Minister for Housing, Local Government and Heritage published the Water Sector Transformation Policy Paper in February 2021. The WAB welcomes the publication of this report and considers it an important step towards ensuring Irish Water can be held accountable to its customers and Irish society, in a transparent manner. Water is a national resource and its environmental stewardship is of national importance.

The policy paper sets out the Government's expectations on the transformation of Irish Water to operate as the national, standalone, regulated water services utility in Ireland and remain within public ownership. It explicitly states at Page 24 that

"single, publicly-owned water utilities in comparable jurisdictions of Scotland and Northern Ireland, have been capable of achieving greater efficiencies in their operation, whilst successfully providing for network growth and improved regulatory compliance and supporting and developing their staff".

Selected quotes from the paper

Page 21: "The Service Level Agreement model is not conducive to the full delivery of targets around customer service, operational performance, environmental performance and cost efficiency. The involvement of 32 separate organisations represents a cumbersome way of working, which inevitably leads to differences in operational practices leading to greater inconsistency and increased risks."

Page 24: "the Service Level Agreement arrangement is considered to have reached the limits of its potential to deliver on the objective of facilitating the changes necessary to transform the sector."

Page 28: "The benefits of the amalgamation of water services, including operational efficiencies, economies of scale, sustainable investment, and better quality of services, depend on further integration." This "means that all operational activity would be integrated into Irish Water, replacing the service level agreements currently in place with the 31 local authorities. Statutory responsibility for public water services will be fully aligned with management and control and Irish Water will be fully accountable for all aspects of the delivery of water services."

The WAB is an independent State Body. We have two main roles. The first role is to report on how well Irish Water is performing and the second role is to help increase public confidence in Irish Water. The WAB advises the Minister for Housing, Local Government and Heritage on measures needed to improve the transparency and accountability of Irish Water. In addition to this the WAB also reports to an Oireachtas Committee focusing on the performance of Irish Water on the implementation of its business plan.

The WAB has previously stated that we are conscious that Irish Water's status as a single public utility is "under consideration", and that Irish Water's programme of work to bring all of its activities and functions together as a single organisation is not yet concluded.

We continue to hold the view that Irish Water's performance in delivery of its business plan, including delivery of a significant and sustained programme of capital investment, and its capacity to be fully accountable for its performance, will benefit from clear and early resolution of both these matters.

The WAB has published six reports on Irish Water's performance, including this quarterly report. A recurring theme throughout our reports is the challenge facing Irish Water to:

- address historic under-investment in water and wastewater services in Ireland, and
- to deliver drinking water of the required quality and waste water infrastructure that will meet modern standards and legislative requirements, for all its customers.

This necessarily requires a significant, co-ordinated investment, over many years, in new and existing water and wastewater infrastructure to address the significant environmental, quality and capacity deficits that currently exist and to future proof these critical services.

The WAB is very mindful of the fact that Irish Water must be equipped with the necessary human and financial resources to deliver on this, in the public interest. This includes ensuring that the known deficits (especially water capacity deficits, waste water compliance deficits, high levels of leakage and water quality issues) are addressed in a cost-efficient manner, delivering on environmental and public health outcomes for the public.

The WAB considers the transformation of Irish Water into a national, standalone, regulated water services utility as a vital requirement for Irish Water to be equipped to deliver on the challenges it faces and for it to be truly transparent and accountable to all its customers and society as a whole. This requires Irish Water to have direct control over the assets and resources that will deliver this outcome.

Essentially, Irish Water must be equipped to deliver capacity, quality and environmental stewardship expected and required by a modern society and the WAB welcomes the Government's commitment to ensure completion of the transformation of the water services sector.

3.3 Irish Water procurement policies and procedures review - Stage 1

Background

The Water Advisory Body (the WAB) as part of its remit under the Water Services Act 2017, commenced a review of Irish Waters procurement policies and procedures. Specifically, the review was carried out by WAB as we have a function to report to the Oireachtas on the performance of Irish Water in the delivery of its business plan with particular regard, amongst other things, to Irish Water's procurement policies.

The review is focused on the methodologies Irish Water use regarding procurement and the effectiveness and compliance of its policies and processes. Phase I of the review has been conducted through an external service provider (Ernst & Young) tendered by Irish Water on behalf of, and based on Terms of Reference set by, WAB.

As part of this review, it was agreed between Irish Water and the Water Advisory Board that an independent review of Irish Water's procurement policies and procedures should be carried out. The main objective of the review was to cover:

- Irish Water procurement policies and procedures; and
- Irish Water procurement contracts management policies and procedures.

On an annual basis, Irish Water manage between 300-500 tender competitions through the Supply Chain departments. There were 470 tender competitions in 2019 and of those circa 300 were mini competitions. Tendering activity is split between the Capital and Category functions with Category consisting of five key pillars – Indirect & Professional Services, Asset & Equipment, IT, Telecoms & Customer Care, Operational Consumables & Services, and Utilities Logistics & Facilities.

Scope of the review

The six areas of scope as part of this internal review of Irish Water procurement policies and procedures were:

1. Irish Water's requirements and obligations regarding the procurement process.
2. Procurement contracts management policies and procedures in place and its execution of same (PD02 - Procurement Policy & PD03 - Authorisation Levels and Contract Approvals).
3. Compliance and conformity with relevant EU Procurement Directives, relevant Framework Agreements, good practice for Governance of State Bodies and industry Peer and Best Practice from a Governance and Compliance perspective.

4. Processes and controls to support policies and the purpose of these policies, focusing on the following areas:
    a) Preparation and issue of tender documentation and draft contract;
    b) Process for issuing tender documentation, managing receipt of tender submissions and managing clarifications;
    c) Process for appraisal of tenders, including competency and training of evaluation team and ensuring independence (managing conflicts of interest); and
    d) Management of the award process.
5. Market engagement and capacity of the market to deliver Irish Water's requirements.
6. Irish Water's (and Local Authority SLA) capacity to manage its procurement requirements from a governance and compliance perspective.

The scope of the review did not include the following processes:

- Demand plan development and accuracy
- Post award variations and contract management.

To support the review, Irish Water provided Ernst & Young with a copy of the tender register for works undertaken between 2018 and 2020 with a value greater than €200k (187 tenders in total).

Using the above range of tenders, a sample was selected as follows:

- 10 tenders were selected representing a 5% by volume and over 50% by estimated / award value;
- All procurement routes used (Negotiated, Framework, Mini competition, Below threshold and Open procedure);
- Tender values ranged from €2M to €104M.

To ensure each element of the scope of works was completed, Ernst & Young developed a testing process similar to that used as part of an internal audit. This involved interviewing key stakeholders within Irish Water as well as carrying out a document review of the key controls for each of the sample tenders selected.

Conclusion of WAB's Independent Review

The intention of the report was a high-level review of Irish Water's procurement policies and procedures. Ernst & Young advise that at a high level conclusion, Irish Water is compliant in regard to PD02 **Procurement Policy and PD03 Authorisation Levels and Contract Approvals.**

The report author made a number of recommendations that Irish Water could introduce to improve compliance and align with best practice in the area of procurement, such as:

- Developing a more formal and structured approach to identifying industry best practice in relation to procurement and governance with peer organisations across the country.
- Updates to internal processes and controls.

Irish Water Response

Irish Water advised it has been a useful process. They advised that the recommendations will be used to enhance their controls and they are happy to accept them.

Concluding comments

WAB notes and welcomes the outcome of this procurement review and, in particular, the findings from Ernst & Young and we welcome Irish Water's acceptance of the report findings.

The WAB is currently considering what a next stage of our review of Irish Water's procurement processes would consist of. We note that the wider matter of Irish Water's procurement planning was the subject of the Scottish Water International Review[9]. This review was carried out to support the Commission for Regulation of Utilities' (CRU) 3rd Revenue Control for Irish Water. The Commission for Regulation of Utilities is currently reviewing a plan from Irish Water for the implementation of the various recommendations arising from the Scottish Water International Review. The WAB proposes considering the outcome of the Commission for Regulation of Utilities' oversight process, before determining what Stage 2 of WAB's procurement review will look like.

The report and Irish Water's Letter to WAB in response to the report is available on the WAB's website at https://wateradvisorybody.ie/other-publications/

9 https://www.cru.ie/document_group/irish-water-revenue-control-3-2020-2024/cru20085b-scottish-water-international-report-iw-investment-and-delivery-review/

3.4 National Water Resources Plan (NWRP)

The National Water Resources Plan is Irish Water's plan to identify how it will deliver a safe, sustainable and secure and reliable water supply for consumers now and into the future, whilst safeguarding the environment.

The National Water Resources Plan is a 25-year strategy and will set out how Irish Water intends to balance supply and demand of drinking water over the short, medium and long term. The National Water Resources Plan will set out how Irish Water balances the amount of drinking water it can supply with the demand for water from both consumers and communities. It will set out the risk-based approach Irish Water intends to take to ensure the quality, reliability and sustainability of our public water supplies. Where issues are identified, Irish Water will assess the potential options to resolve and address these issues.

Earlier this year, Irish Water undertook a public consultation on Phase 1 of the National Water Resources Plan, which is the Framework Plan and details the methodologies that have been developed by Irish Water to identify needs and find solutions to address those needs across all public water supplies in Ireland. Phase 2 of the Plan comprises of four Regional Water Resources Plans, and will begin with a public consultation on the first of these regional plans (Eastern and Midlands Region) in Autumn 2021. Both Phases 1 and 2 will be subject to Strategic Environmental Assessment and Appropriate Assessment.

The WAB welcomes the development of the National Water Resources Plan and looks forward to its timely conclusion in 2022. The Plan will play a key role in identifying the investments required to deliver the capacity and quality of water on a sustainable, national basis.

3.5 Major Projects

Vartry Regional Water Supply Scheme

Aim: 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.

Update: Irish Water is forecasting that this project is on track to be completed by 2021.

Leixlip Water Treatment Plant

Aim: To install and commission ultraviolet disinfection at the "old" plant at Leixlip to address deficiencies in treatment to ensure a safe water supply for Kildare, Dublin and Meath.

Update: Irish Water has completed the installation of ultraviolet disinfection by end Quarter 1 2021, with commissioning expected to be completed by end Quarter 2 2021.

Part 4
WAB's Commentary on Key Performance Indicators and Conclusions

In Table 1 we summarise the WAB's comments on each metric which has been updated in this report.

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

Number	Indicator	WAB Commentary
2.	First Fix Scheme	In 2015 Irish Water introduced the First Fix Scheme to tackle leakage on domestic customers' properties. 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. In Quarter 1 2020, a total of 799 leak repairs were completed. 652 of these repairs were external to the customer property and were carried out by Irish Water, and the remaining 147 leaks were internal to the customer property and repaired by the customer. This performance indicator has been updated with data for Quarter 1 2020. While it shows a small increase in the number of leak repairs completed since Quarter 4 2019, it demonstrates a continued and disappointing drop-off in the number of leak repairs completed under the scheme since mid-2016. This coincides with the suspension and eventual abolition of domestic water charges. The Household Water Conservation (Excess Use Charges) Policy is expected to be introduced in 2021, with first bills expected to issue in 2023. The WAB anticipates that this will encourage customers to avail of the First Fix Free Scheme, which has been expanded to capture unmetered customers, and that higher numbers of leak repairs will be achieved in the future.

Number	Indicator	WAB Commentary
3.	Remedial Action List (Water)	The Environmental Protection Agency requires Irish Water to have 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 48 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. The number of supplies on the Remedial Action List has increased at the end of Quarter 1 2021 by 2 supplies.
4.	Priority Urban Area List (Wastewater):	There was a net reduction of 16 in the number of Priority Urban Areas in the past year. In 2020 waste water treatment at 12 large towns and cities did not meet European Union standards set to protect the environment. The WAB notes the Environmental Protection Agency's concern that further delays in providing treatment mean that 12 towns and villages will continue discharging raw sewage after 2024 because they will still not be connected to a waste water treatment plant.
5.	Lead service connections replaced	The WAB notes that Irish Water exceeded their target for 2020 with regard to replacement of lead connections. Irish Water's target for the entire 5 year term of Revenue Control period 3 (2020-2024) is to replace 13,231 lead connection. The WAB also notes the concerns expressed by the Environmental Protection Agency in their report "Drinking Water Quality in Public Supplies 2019"[10] where it highlighted that by the end of 2019, 17% of public side lead connections had been replaced. Irish Water's target to replace an additional 7% of remaining public side lead connections up to the end of 2024 means it is highly unlikely that Irish Water will be able meet the targets it set in its' "Lead in Drinking Water Mitigation Plan"[11] to replace all lead services by 2026. Under normal circumstances the WAB expects to see the continued replacement of lead services until the completion date of 2026.

10 http://www.epa.ie/pubs/reports/water/drinking/DW%20Quality%20in%20Public%20Supplies%202019_web.pdf

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

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 decline in the number of consumers on a boil water notice at the end of Quarter 1 2021. However the WAB notes the Environmental Protection Agency's concerns that all of the 17 notices in place at the end of Quarter 1 2021 were in "long term" boil water notices, which means the notice was in place for more than 30 days.
9.	Compliance of Urban Waste Water Treatment (UWWT); Plants with Environmental Protection Agency discharge licences:	Overall, compliance remains very low and the percentage of urban areas meeting their licence standards has decreased slightly. More stringent standards commenced at a number of urban areas at the beginning of 2020 which may have contributed to the decline in compliance. Notwithstanding this, the percentage of the population served by the plants that were compliant has increased from 25% to 28%. The main factor in the low rate of compliance by population equivalent remains due to the failure to treat waste water adequately at Ringsend.

In this report six out of 11 metrics have been updated since WAB published its last report (WAB Quarterly Report No.2 of 2021).

It continues to be the WAB's view that the management and improvement of the drinking and waste water infrastructure and network requires significant and sustained action, across a range of areas.

It remains our view that increasing public confidence in Irish Water is dependent on visible action in areas such as waste water treatment, water quality, and leakage.

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.

Web: www.wateradvisorybody.ie Email: info@wab.gov.ie