An Coimisiún um Rialáil Fóntais
Commission for Regulation of Utilities

Irish Water Capital Investment Plan 2017 to 2021

Monitoring Report No. 3

Information Paper

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www.cru.ie
The Exchange, Belgard Square North, Tallaght, Dublin 24, Ireland
T +353 1 4000 800 | F +353 1 4000 850 | www.cru.ie

Summary

Irish Water provides public water and wastewater services in Ireland. As part of its role as economic regulator, the CRU sets the outputs and outcomes that Irish Water should deliver over a set period of time, as well as the revenue Irish Water needs to deliver these services. This set number of years is known as a 'revenue control period'. The revenue approved for Irish Water includes the money that Irish Water needs to abstract, treat and distribute drinking water to homes and businesses and to collect and treat wastewater before returning it safely to the environment. It also includes the money Irish Water needs to deliver its Investment Plans.

Irish Water's Investment Plans set out the capital projects and programmes that it plans to progress and deliver during the period of each plan. They include proposed costs and timelines and the outputs and outcomes that will be delivered for the investment. The Investment Plans allow Irish Water to maintain, upgrade and build new treatment plants, sewers, pipes and so on. This allows Irish Water to improve the quality of water and wastewater treatment, to provide better service to homes and businesses, and, to help facilitate social and economic growth.

Irish Water's Investment Plans contain a mix of projects, national programmes and capital maintenance programmes.

- Projects deliver new and upgraded assets at specific locations e.g. a new treatment plant.
- National programmes address known issues across the entire asset base e.g. the Disinfection Programme.
- Capital maintenance programmes are planned and reactive, like-for-like replacements of assets such as repairs on a burst main.

The nature of project and programme planning and the time required to deliver projects from start to finish means that Investment Plans are a mix of projects and programmes that have already started and new projects that will start during the period of the plan. Some projects and programmes will finish during the period while others will carry over into the next Investment Plan cycle.

In 2016 the CRU approved Irish Water's Investment Plan for the years 2017 to 2021. Last year the CRU published a monitoring report showing Irish Water's updated forecast delivery of the Investment Plan by the end of 2017, one year into its progression. The report highlighted that Irish Water was forecasting it would need more money and more time to the deliver the projects in its Investment Plan.

Since then, Irish Water has submitted an update on its progression and delivery of its projects and programmes up to the end of 2019. The 2019 monitoring submission shows that Irish Water

has spent a total of €1,939m in the period 2017 to 2019, to progress and deliver on its outputs and outcomes.

While Irish Water has remained within its overall allowance, it has stretched spend and delivery of projects into the period 2020 and beyond. It is also forecasting an increased spend on a significant portion of its portfolio of projects.

The forecasted costs and delivery of these projects that continue into the Revenue Control 3 period are part of Irish Water's proposed Investment Plan for 2020 to 2024, which the CRU is reviewing as part of the Revenue Control 3 process. This process will set the timelines and expenditure to deliver the outputs and outcomes in Irish Water's Investment Plan for the period 2020 to 2024 and will be the basis for future monitoring reports.

This report focuses on Irish Water's delivery of outputs and outcomes in the period up to the end of 2019 and closes out Irish Water's second revenue control, covering 2017 to 2019. As noted above, given the increased costs associated with its portfolio of projects and the funding cap under which it operates, Irish Water has stretched spend and delivery of a significant portion of its portfolio of projects, targeted for delivery in 2017 to 2019, into the period 2020 and beyond.

Irish Water reprioritised its delivery of outputs and outcomes and largely delivered the high-level drinking water quality outputs it had committed to in 2016. However, these outputs were a subset of the deliverables in the Investment Plan with Irish Water spending money on other projects and programmes including those that would deliver outside of the revenue control period and those that had less well-defined outcomes in 2016. There is evidence that Irish Water's under-delivery in the period has resulted in failures to reduce the risks to water supply quality.

As part of its reprioritisation, Irish Water increased spend on its portfolio of national programmes, prioritising delivery of infrastructure relating to drinking water assets, in particular through its disinfection programme and increased spend on mains rehabilitation.

The increased costs and reprioritisation of its Investment Plan has resulted in Irish Water under-delivering against the wastewater improvements expected during the second revenue control period with a significant proportion of wastewater projects and programmes not progressing to the extent expected in 2016.

When developing its Investment Plan, Irish Water faced challenges in terms of data and understanding its asset base. Notwithstanding that, there is evidence of optimism bias in both the costing and delivery schedules in the Investment Plan developed by Irish Water in 2016 and in its updates throughout the second revenue control period. The CRU has required that Irish Water carries out an external review of its approach to capital investment planning including its

approach to costing and prioritising its projects and programmes. This will be published alongside the Revenue Control 3 decision.

Some of the outputs Irish Water delivered in the Revenue Control 2 period are outlined below:

- The number of water supplies on the EPA's Remedial Action List was reduced from 99 to 52. However, the population served by supplies on the Remedial Action List has more than doubled from 555,689 to 1,128,847 people.
    - In 2017 there were 68 water supplies that had been on the EPA's Remedial Action List since the end of 2014 and Irish Water had targeted reducing this to 41 by the end of 2018. Irish Water has surpassed this target with 32 supplies on this list at the end of 2018.
- By the end of 2019 Irish Water had replaced 7,535 'backyard' lead service pipes and 25,106 individual lead service pipes having targeted replacing over 4,000 in each category by the end of 2018.
- Irish Water accelerated spend on a number of drinking water programmes for the protection of human health during the period. The outputs of these programmes were not well defined in 2016 and did not have targets for delivery associated with them.
    - Irish Water upgraded the CFC and Filtration processes at 70 sites. These processes help to remove suspended solids, some heavy metals and organics and produces clearer water.
    - Irish Water upgraded the disinfection processes at 235 sites, helping to make the water safe from bacteria and parasites including Cryptosporidium.
- Irish Water has replaced or rehabilitated 949km of watermains in the last three years.
- Irish Water has invested in a Leakage Management System that improves its ability to understand its network to help tackle leakage.
- The average daily volume of 'unaccounted for water'– which includes leakage – on the public network was 711 million litres a day in 2019.
- Irish Water provided wastewater treatment for nine locations that were previously discharging raw sewage having targeted completing work at nineteen locations in the three-year period 2017 to 2019. At the end of 2019 there were 35 locations continuing to discharge untreated wastewater.

Public Impact Statement

Monitoring and reporting help to ensure that Irish Water performs in an open and transparent manner and keeps the public, and other key stakeholders, informed of Irish Water's performance. It also provides Irish Water with a reputational incentive to deliver its expected outputs and outcomes on time and in budget. Monitoring also supports the CRU in making evidence-based decisions.

This report provides an overview of the investments completed by Irish Water in 2018 and 2019.

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1. Introduction

The CRU's primary objective as the economic regulator of Irish Water is to protect the interests of Irish Water's customers. One of the ways the CRU delivers on this objective is by periodically reviewing, and ultimately approving, the outputs and outcomes that Irish Water will deliver over a revenue control period and the proposed costs for delivery of those outcomes and outputs, and, by setting customer service levels.

In that context, Irish Water makes submissions to the CRU outlining its view of what it intends to deliver and what it needs to spend during a revenue control period. The CRU reviews these submissions and determines the amount of money that Irish Water can recover in each period. This allows Irish Water to fund necessary costs and is the basis for charges. It includes the money Irish Water needs to deliver its day-to-day operations and to deliver its Investment Plans.

Irish Water's Investment Plans set out the capital projects and programmes that it plans to progress and deliver during the period. They set out the outputs and outcomes to be delivered for the investment and are integral to maintaining and upgrading water and wastewater assets, to improving quality and compliance, to providing enhanced service levels to customers and to facilitating growth.

In December 2016, the CRU published its decision on the amount of money Irish Water could spend in the years 2017 and 2018. This decision was subsequently extended to include 2019[1]. This included money to progress and deliver the projects and programmes in Irish Water's Investment Plan 2017 to 2021, that was provided to the CRU by Irish Water as part of that revenue control process.

Irish Water's delivery is monitored during each revenue control period against the Investment Plans that are approved by the CRU. Last year the CRU published a monitoring report showing Irish Water's updated forecast delivery of the Investment Plan by the end of 2017, one year into its progression. The report highlighted that Irish Water was forecasting it would need more money and more time to deliver the projects in its Investment Plan.

This report provides a further update on Irish Water's progression and delivery of its Investment Plan up to the end of 2019. Projects and programmes are delivered over multiple years that span revenue control and Investment Plan periods. As such, Investment Plans are rolling plans that continue into new periods. Irish water's Investment Plan 2017 to 2021 has been replaced by the

[1] Irish Water Revenue Control 2019 Revenue Control 2 (2017/2018) One-Year Extension

Investment Plan 2020 to 2024. Projects that have been completed by 2019 fall away and new projects that begin in 2022 or later are included. However, this plan contains many of the same projects and programmes. Most of the spend in the period 2018 and 2019 was to progress projects and programmes that deliver in the period 2020 and beyond.

1.1.1 Related Documents

- Irish Water Second Revenue Control 2017-2018
- Irish Water Revenue Control 2019 Revenue Control 2 (2017/2018) One-Year Extension
- Irish Water Revenue Control Revenue Control 3 (2020 – 2024)
- Irish Water Capital Investment Plan 2017-2021 Monitoring Report No. 2

Information on the CRU's role and relevant legislation can be found on the CRU's website at **www.cru.ie**.

2. Capital Investment 2017 to 2019

2.1 Overview

In it's 2017 monitoring submission, Irish Water had forecast it would spend €1,948m for the three years up to the end of 2019. The 2019 monitoring submission shows that Irish Water has spent €1,939m. Figure 1, below, shows the differences in where that money has been spent.

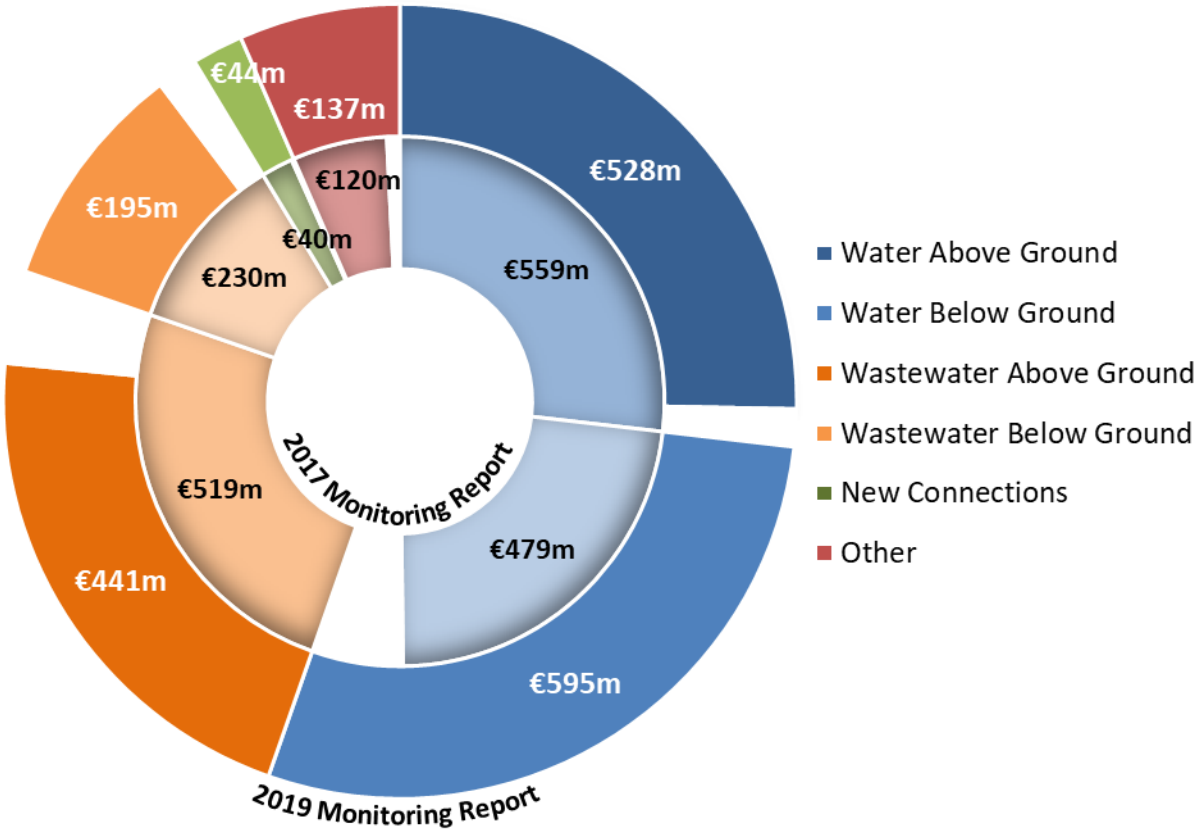

Figure 1 - Forecast vs Actual Spend 2017 to 2019

In general, Irish Water has spent less on wastewater treatment plants and sewers and on water supply schemes than it had forecast it would in 2017. There was a significant increased spend on below ground water assets, driven largely by more money being spent on watermains replacement and rehabilitation.

While Irish Water has remained within its overall allowance in the years 2017 to 2019, it has stretched spend into the period 2020 and beyond and is forecasting an increased spend on a significant portion of its portfolio of projects. This increased requirement for funding is being considered as part of the CRU's revenue control decision for the period 2020 to 2024.

2.2 Outputs and Outcomes

Most of the money Irish Water has spent in 2018 and 2019 was to begin and progress projects and programmes that will not be completed until 2020 or later. Nonetheless, Irish Water has completed work at hundreds of sites across the country to deliver improvements in service, and compliance, to protect the environment and to facilitate population and economic growth. Some of the headline areas of delivery are discussed below.

2.2.1 Irish Water's 2016 Nominated Outputs and Outcomes

When submitting its Investment Plan to the CRU in 2016, Irish Water highlighted some of the outputs and outcomes the Investment Plan would deliver by the end of 2018 and the end of 2021. Revenue Control 2 (including the 2019 rollover) provided the money identified by Irish Water to deliver these outputs and outcomes. However, these outputs and outcomes were a subset of the deliverables in the Investment Plan with Irish Water spending money on other projects and programmes including those that would deliver outside of the revenue control period and those that had less well-defined outcomes in 2016. Therefore, while Irish Water has met the majority of the drinking water targets it set out in Table 1, below, this does not fully capture its performance in delivering expected benefits or progressing projects that deliver in later years.

The targets are shown below, in Table 1, next to Irish Water's actual delivery by the end of 2018 and 2019. As part of the 2019 Revenue Control decision, no updates to the target levels of the outputs and outcomes were stated. A definition and explanation of the metrics can be found in Appendix A of this paper.

The increased spend and extended timelines to deliver the projects within its Investment Plan has seen Irish Water underperform in its delivery of some of the outputs and outcomes that were expected by the end of the Revenue Control 2 period, and over deliver on some others. Where Irish Water has not delivered, these projects are now continuing into the next Investment Plan that is being reviewed as part of the Revenue Control 3 decision.

In general terms, Irish Water's under performance against the metrics in Table 1, below, relates to the provision of wastewater infrastructure. By 2018 Irish Water had met or exceeded most of the drinking water targets it had set. The assessment of Irish Water's performance for 2019 is complicated by the extension of the Revenue Control 2 period and the fact that no targets were set for 2019. However, it would be expected that continued progression and improvement would be made against the metrics included in the table.

Table 1 - Irish Water's Nominated Outputs and Outcomes – Expected vs Actual Delivery[2, 3]

	2018 Expected	2018 Actual	2019 Actual
Water Above Ground			
People on Boil Water Notices that had been in place for more than 200 days at the end of 2013	1,041	0	0
Number of water supplies that were on the EPA's Remedial Action List at the end of 2014	41	32	19
Water treatment plants rationalised	12	47	72
Water Below Ground			
Compliance with the lead in drinking water parameter	-	98	98
Environmental assessments for orthophosphate	200	115	138
Plumbosolvency control plans for orthophosphate	200	400	400
Shared backyard lead shared service replaced	4,000	3,614	7,535
Individual lead service pipes replaced	4,000	13,235	25,106
Gross leakage savings public and private (ML/day)	117	189	356
Water Supply Zones with updated hydraulic models	0	11	28
Wastewater Above Ground			
Population equivalent served by wastewater treatment works compliant with the Urban Waste Water Treatment Directive	2,361,000	2,113,172	TBC
Wastewater treatment works serving a population equivalent of more than 2000 that are overloaded	24	31	30
Wastewater treatment works serving a population equivalent of less than 2000 that are overloaded	82	86	80
Agglomerations identified in 2013 as having no treatment	19	31	29
Wastewater treatment works compliant with Emission Limit Values	36	33	38
Wastewater Below Ground			
Agglomerations covered by a drainage area plan	14	4	30
Other			
Energy Efficiency Improvement (%)	20	22	TBC

[2] Irish Water had originally included targets for headroom at its treatment plants, however, the methodology and inputs required for calculating headroom are being reconsidered and will be finalised following a public consultation on the National Water Resources Plan later this year.

[3] No targets had been set for 2019 therefore comparison between actual and expected delivery is not possible. For 2018 actual delivery, green colour coding indicates that Irish Water achieved its target while red indicates that Irish Water has not delivered its expected target.

2.2.2 Water Treatment Upgrades

Irish Water has been addressing known deficiencies across its water treatment sites to help ensure the water it produces is safe to drink. This has included upgrading and standardising processes at hundreds of sites across the country to remove contaminants and disinfect the water.

In the period 2017 to 2019 Irish Water has upgraded the Coagulation, Flocculation, Clarification (CFC) and Filtration process at 70 sites through its national programme. These processes help to remove suspended solids, some heavy metals and organics and produces clearer water.

Irish Water's disinfection programme has addressed deficits at 235 sites between 2017 and 2019. Disinfecting the water makes it safe from bacteria and parasites including *Cryptosporidium*.

2.2.3 The EPA's Remedial Action List

The EPA's Remedial Action List (RAL) includes public supplies where water quality issues arise because of the performance of the water treatment plant. Supplies are added to the RAL where the EPA deem there to be a treatment deficiency, or operational/management issues that may result in persistent failures of key water quality parameters, for example, *E. coli*, trihalomethanes (THMs) and *Cryptosporidium*.

Supplies may be added to the RAL as a result of audits from the EPA, notifications of exceedances, or information gathered from Irish Water or the Health Service Executive (HSE). The RAL is a dynamic list of public water supplies requiring action to improve performance.

In the period 2015 to 2019, the EPA has added 78 supplies to the RAL, and 147 supplies have been removed. At the end of 2019 there were 52 supplies on the EPA's RAL.

While there was an overall reduction in the number of supplies on the RAL from 2018 to 2019 the population served by supplies on the RAL has more than doubled from 555,689 to 1,128,847 people. This increase is driven largely by the inclusion of the population served by the Leixlip water treatment plant following the incidents in October and November 2019 that required a boil water notice to be issued to help protect public health.

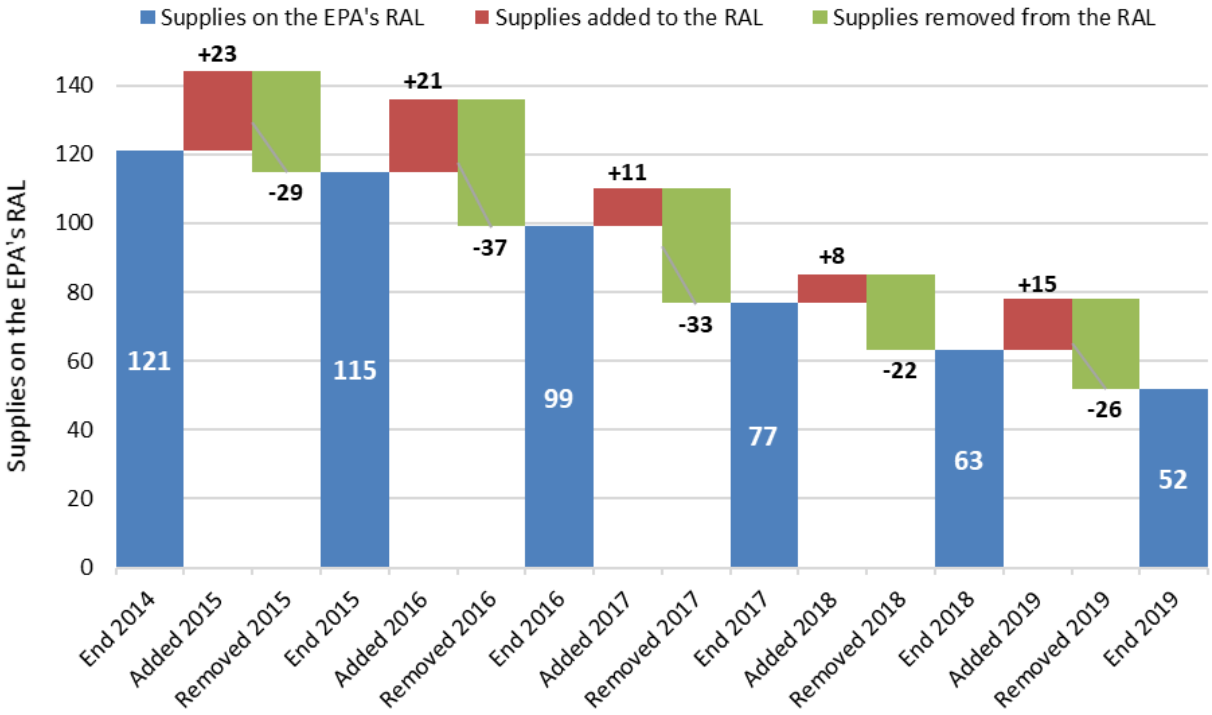

Figure 2 - Supplies on the EPA's RAL

2.2.3.1 Irish Water's Business Plan RAL Targets

Irish Water's Investment Plan for 2017 to 2021 included projects and programmes that targeted improvements at 68 supplies that have been on the EPA's RAL since the end of 2014. Irish Water has now reduced this to 19 supplies as illustrated in Table 1. This is a subset of all of the supplies that are on the EPA's RAL, discussed in the section above.

2.2.4 Lead Mitigation Programme

Irish Water estimated that there were 40,000 shared 'backyard' lead service connections in 2014 which loop off the mains and serve several properties. In its 2016 Investment Plan, Irish Water had targeted replacing over 18,000 of these shared lead service connections by the end of 2021. In its 2017 monitoring submission, Irish Water had forecast that it would replace 7,639 by the end of 2019. Irish Water has fallen just short of this number and has replaced 7,535 backyard lead connections since the beginning of the programme as noted in Table 1, above.

Irish Water has estimated that there are 140,000 individual lead service connections on the public network. Irish Water, in the 2017 monitoring submission, had forecast it would replace over 14,614 of these by the end of 2019. By the end of 2019, Irish Water has replaced 25,106 individual lead connections, as noted in Table 1, above.

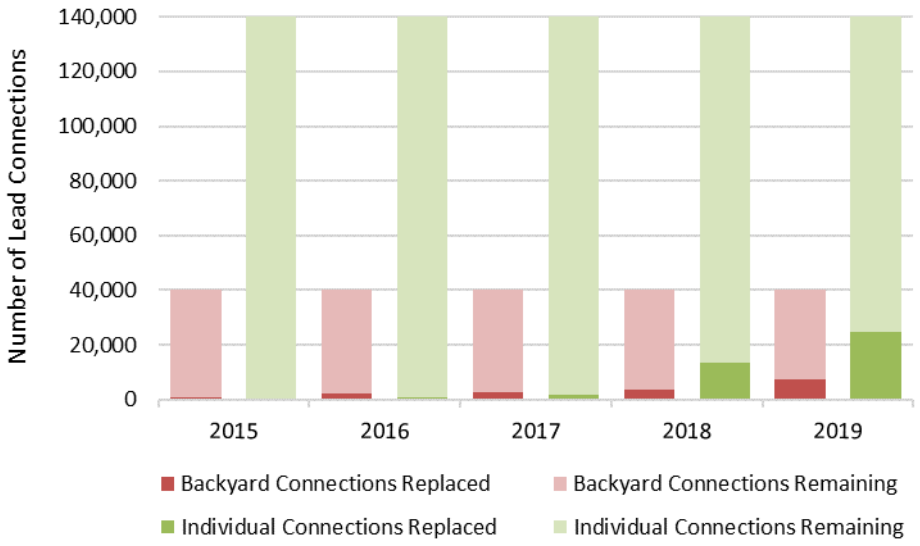

Figure 3 - Lead Connections Replacement

2.2.5 Mains Replacement

Irish Water replaced or rehabilitated 407km of watermains in 2018 and 333km in 2019. This represents 1.2% of Irish Water's network. The average replacement rate – the time it would take to replace the whole network – was 155 years in 2018 and 189 years in 2019. This is a substantial increase compared with the rate of once every 301 years in 2017.

Proactive and programmed replacement and rehabilitation of watermains is crucial in reducing and controlling leakage levels, along with investment in finding and fixing leaks, pressure management and quickly responding to bursts.

Since 2014 Irish Water has replaced or rehabilitated 1,564km of watermain.

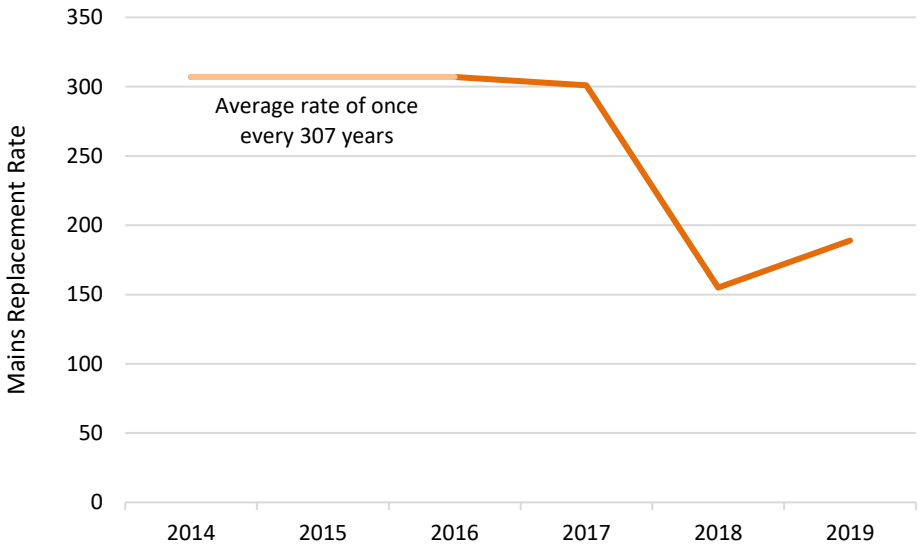

Figure 4 - Average Mains Replacement Rate 2014 to 2019

2.2.6 Leakage

In place of reporting to the CRU on leakage, Irish Water has been providing a figure for 'unaccounted-for-water'. In arriving at this number, Irish Water provided an estimate of the water demanded by domestic and non-domestic customers (this includes water lost to leaks on the customer's property) and an estimate of the water it uses on its network to clean and flush its watermains. Irish Water had categorised the remainder of the water that is put into the network as unaccounted-for-water.

The unaccounted-for-water numbers for 2014 to 2018 include:

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

For 2019, Irish Water has made some changes to how it is reporting water losses to the CRU. An estimate of the water used by Irish Water in its own buildings and treatment plants has been included in the non-domestic demand figures. An estimate of the water used by fire services, other unbilled use and water used at connections that are not recorded on Irish Water's system have been removed from unaccounted-for-water and are now reported as unrecorded use. Under-recorded use at homes and businesses, resulting from old and broken meters and data errors, has also been removed from unaccounted-for-water and is now included in the domestic and non-domestic demand figures, respectively. A full breakdown of these categories will be provided in future reports.

The reduction in unaccounted-for-water from 2018 to 2019 is a result of a combination of this recategorization, data improvements arising from Irish Water's new leakage management system and Irish Water's leakage reduction activities during the year.

While there are still improvements to be made in how Irish Water is reporting, the unaccounted-for-water figure for 2019 gives a better indication of the amount of water that is lost to leaks on Irish Water's network compared with previous reports.

With the roll out of its leakage management system, Irish Water will now be in a position to report, with greater accuracy and clarity, water losses resulting from leaks on its network.

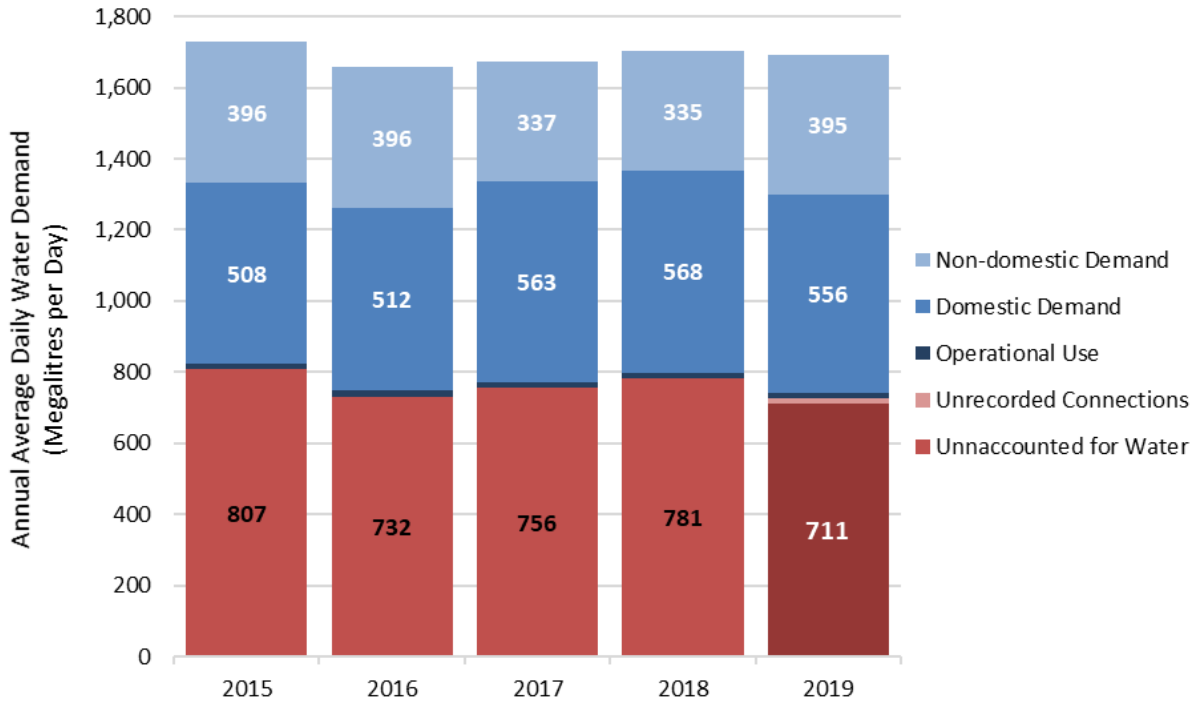

Figure 5 - Water Demand 2015 to 2019

2.2.7 Agglomerations with no Wastewater Treatment

In 2013 there were 50 agglomerations in Ireland that were discharging untreated wastewater into the environment. By the end of 2019 Irish Water had completed work in 15 agglomerations to reduce this number to 35.

Irish Water had originally targeted providing treatment at 25 of these agglomerations by the end of 2018 and 44 by the end of 2021. In 2017 it revised this target to deliver wastewater treatment for 15 of the agglomerations by the end of 2019. It has now met that revised target.

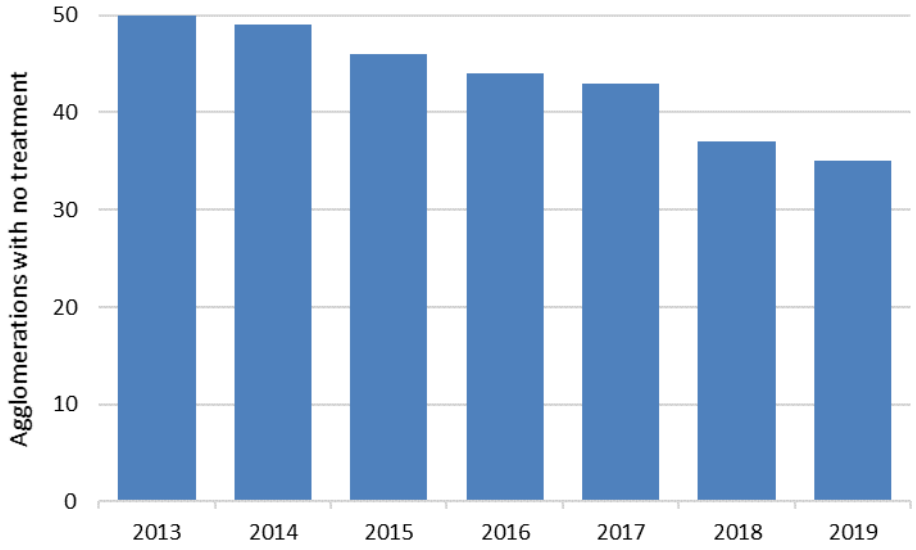

Figure 6 - Agglomerations Providing No Wastewater Treatment

2.2.8 UWWTD Infringement Case

The Urban Waste Water Treatment Directive sets requirements for the collection, treatment and discharge of wastewater from large urban areas. In 2019, the Court of Justice of the European Union found that Ireland was not in compliance with the Directive in respect of 28 agglomerations. Five of these agglomerations either required no investment or have been removed from the list.

By the end of 2019, Irish Water had completed work at 10 agglomerations, leaving 13 that still required work to be completed.

2.3 Major Projects

In 2017, there were six projects within Irish Water's Investment Plan of significant spend and strategic importance that are delivered centrally, through Ervia's Major Projects function. The CRU receives more detailed updates from Irish Water on these projects.

The CRU 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 and costed in phases.

Total forecast spend from 2017 to completion across the six projects is now €2,405m compared with €2,301m in the 2017 monitoring submission, a 4.5% increase.

The majority of this increased spend is associated with the Ringsend wastewater treatment plant which has seen its forecast costs increase by €89m. This project is required to improve the performance and increase the capacity of Ireland's largest wastewater treatment plant.

The Cork Lower Harbour project, providing a new wastewater treatment plant and sewer network to provide effective treatment of wastewater produced in areas bordering the harbour, is forecast to be completed on schedule in 2021 with an additional €9m forecast spend. The wastewater treatment plant has been completed and wastewater from Carriagline, Ringaskiddy, Shanbally, Crosshaven, Monkstown, Glenbrook and Passage West is now being collected and discharged to the new treatment plant. This wastewater was previously discharging directly into the Harbour without treatment. Construction has commenced on a new pipeline to cross under the estuary and on new sewers to connect Cobh to the wastewater treatment plant.

The Vartry Water Supply Scheme project includes a new treatment plant, upgrades to the Vartry and Stillorgan reservoirs and replacement of the Vartry tunnel to help to ensure a safe and sustainable water supply in north Wicklow and South Dublin. The project is forecast to be completed on schedule in 2021 with a reduced forecast spend of €6m compared with the 2017 monitoring submission. The new Vartry to Callowhill tunnel was completed in 2019 and construction on the new treatment plant and the Vartry and Stillorgan reservoirs has commenced.

The Greater Dublin Drainage Project, providing a new regional wastewater treatment facility and the associated infrastructure to serve the growing population of the Dublin area, has had €44m of spend pushed into the period after 2024. It received planning permission in November 2019 and Irish Water is forecasting that construction will begin in 2022.

As part of Irish Water's proposals for the Ringsend wastewater treatment plant and the Greater Dublin Drainage Project, Irish Water is planning to build a new regional biosolids storage facility. Biosolids are produced as part of the wastewater treatment process and the most common reuse pathway is on agricultural land. However, since biosolids can only be applied during planting season they need to be stored during the rest of the year. Irish Water has completed its site selection process for the new facility and is forecasting that this project will commence construction in 2021.

The Water Supply Project – Eastern and Midlands Region has had €98m of proposed expenditure pushed into the period after 2024. Irish Water is currently finalising its National Water Resources Plan which will assess supply-demand balances across the country. This will help to inform Irish Water's decision-making relating to the proposed Water Supply Project.

3. Next Steps

The CRU is currently reviewing Irish Water's Investment Plan for the period 2020 to 2024, to assess the efficiency of the proposed spend, to review Irish Water's approach to investment planning and costing and to understand the outputs and outcomes Irish Water will deliver for this investment. The CRU will publish its decision in July/August 2020, outlining the outputs and outcomes that Irish Water is committed to deliver over the Revenue Control 3 period, and the associated expenditure

The CRU will continue to monitor and report on Irish Water's Investment Plan delivery and will publish annual reports outlining Irish Water's delivery against the agreed outcomes and outputs, included within the Revenue Control 3 decision, during the period 2020 to 2024.

The CRU will consult in 2020 on the continued appropriateness of the metrics included in the Performance Assessment Framework for the 2020 to 2024 period, to ensure they still reflect key services areas for customers. The CRU will also set out the proposed targets for each of the metrics in that consultation.

Appendix A – Irish Water's 2016 Nominated Outputs and Outcomes

	2018 Expected	2018 Actual	2019 Actual
Water Above Ground			
People on Boil Water Notices that had been in place for more than 200 days at the end of 2013	1,041	0	0
Number of water supplies that were on the EPA's Remedial Action List at the end of 2014	41	32	19
Water treatment plants rationalised	12	47	72
Water Below Ground			
Compliance with the lead in drinking water parameter	-	98	98
Environmental assessments for orthophosphate	200	115	138
Plumbosolvency control plans for orthophosphate	200	400	400
Shared backyard lead shared service replaced	4,000	3,614	7,535
Individual lead service pipes replaced	4,000	13,235	25,106
Gross leakage savings public and private (ML/day)	117	189	356
Water Supply Zones with updated hydraulic models	0	11	28
Wastewater Above Ground			
Population equivalent served by wastewater treatment works compliant with the Urban Waste Water Treatment Directive	2,361,000	2,113,172	TBC
Wastewater treatment works serving a population equivalent of more than 2000 that are overloaded	24	31	30
Wastewater treatment works serving a population equivalent of less than 2000 that are overloaded	82	86	80
Agglomerations identified in 2013 as having no treatment	19	31	29
Wastewater treatment works compliant with Emission Limit Values	36	33	38
Wastewater Below Ground			
Agglomerations covered by a drainage area plan	14	4	30
Other			
Energy Efficiency Improvement (%)	20	22	TBC

Water Above Ground

People on Boil Water Notices that had been in place for more than 200 days at the end of 2013

Irish Water's target was to reduce to zero the number of people supplied from a public water supply where a Boil Water Notice (BWN) was in place for more than 200 days as identified by Irish Water in Q4 2013. Irish Water monitored this target against this static baseline. During the first revenue control Irish Water removed over 19,000 people from this baseline list. Investment over the period 2017 to 2021 had targeted removing the remaining 4,057 people.

Number of water supplies that were on the EPA's Remedial Action List at the end of 2014

Irish Water's target was to reduce to zero the 121 water treatment plants included on the EPA's remedial action list (RAL) in Q4 2014. Irish Water monitored this target against this static baseline. During first revenue control Irish Water removed 53 WTPs from this baseline RAL list. Investment over the period 2017 to 2021 targeted removing the remaining 68 supplies from the list.

Water treatment plants rationalised

Irish Water was targeting rationalising 12 water treatment plants by the end of 2018 and 105 in total in the period 2017 to 2021 through the delivery of 32 projects. Some of these projects also contribute to the lifting of boil water notices and to the removal of schemes from the EPA's RAL.

Water Below Ground

Compliance with the lead in drinking water parameter

Irish Water was targeting 98% of samples meeting the lead compliance standard by 2021. Irish Water has stated that this would be achieved through a combination of removing backyard lead service pipes and individual lead connections and through orthophosphate dosing. Orthophosphate dosing of treated water can reduce the likelihood that lead from pipes will dissolve into the water.

Environmental assessments for orthophosphate

Irish Water targeted completing environmental assessments for 200 water supply zones by the end of 2018.

Plumbosolvency control plans for orthophosphate

Irish Water targeted completing plumbosolvency control plans for 200 water supply zones by the end of 2018. Plumbosolvency is a measure of how likely drinking water, based on its chemical properties, will dissolve lead from pipes.

Shared backyard lead shared service replaced

Irish Water estimated that there were 40,000 shared 'backyard' lead service connections in 2014 which loop off the mains and serve several properties. In its 2016 Investment Plan, Irish Water had targeted replacing over 4,000 of these shared lead service connections by the end of 2018 and over 18,000 by the end of 2021.

Individual lead service pipes replaced

Irish Water has estimated that there are 140,000 individual lead service connections on the public network. Irish Water had targeted replacing over 4,000 of these shared lead service connections by the end of 2018 and over 23,000 by the end of 2021.

Gross leakage savings public and private (ML/day)

Irish Water's target was to achieve gross leakage savings of 226 million litres per day in the period 2014 to 2021. By the end of 2018 Irish Water had targeted a cumulative gross leakage saving of 117 million litres per day on both the public and private side of the network.

This target did not correspond to a reduction in leakage, rather it was a measure of the water that would have been lost had Irish Water not carried out any leakage activities. Leaks are inevitable on a network with 63,000 km of mains, thousands of kilometres of service pipes and customer supply pipes and millions of joints, valves, pumps and connections. Leakage must be actively managed just to prevent it from increasing. Reducing leakage is a continuous activity, not a one-off exercise.

Water Supply Zones with updated hydraulic models

Irish Water has targeted developing hydraulic models to cover 12 water supply zones by 2021.

Wastewater Above Ground

Population equivalent served by wastewater treatment works compliant with Urban Waste Water Treatment Directive.

Irish Water was targeting a population equivalent of 2,361,000 being served by wastewater treatment plants that are compliant with the treatment requirements of the Urban Waste Water Treatment Directive by the end of 2018 and a population equivalent of 4,839,000 by 2021.

Wastewater treatment works serving a population equivalent of more than 2000 that are overloaded

Irish Water targeted reducing the number of wastewater treatment plants with a capacity of more than 2000 population equivalent that are overloaded as reported in Irish Water's 2014 annual compliance returns to the EPA, from 45 to 24 by the end of 2018 and to 6 by the end of 2021.

Wastewater treatment works serving a population equivalent of less than 2000 that are overloaded

Similarly, Irish Water targeted reducing the number of wastewater treatment plants with a capacity of more than 2000 population equivalent that are overloaded as reported in Irish Water's 2014 annual compliance returns to the EPA, from 113 to 82 by the end of 2018 and to 74 by the end of 2021.

Agglomerations identified in 2013 as having no treatment

The EPA's "Focus on Urban Waste Water Treatment in 2013" identified 44 areas where waste water is discharged with no treatment or preliminary treatment only. Irish Water had targeted reducing this number to zero by 2021. Six plants were removed from this baseline list during the first revenue control and Irish Water was targeting removing a further 19 by the end of 2018.

A further six agglomerations with no treatment have been identified by the EPA since this target was set.

Wastewater treatment works compliant with Emission Limit Values

Irish Water generated a register of Annual Environmental Reports submitted to the EPA in 2014 and estimated that 77 of 273 Licences granted for agglomerations with a population equivalent of more than 500 were 100% compliant with their specified Emission Limit Values (ELVs).

Irish Water had targeted increasing the number of licences compliant with the EPA's discharge ELVs by 36 by the end of 2018 and a total of 64 during the period 2017 to 2021.

Wastewater Below Ground

Agglomerations covered by a drainage area plan

Irish Water had targeted completing drainage area plans for 14 agglomerations by the end of 2018 and for 36 agglomerations by the end of 2021.

Other

Energy Efficiency Improvement (%)

Irish Water targeted an improvement in energy efficiency of 33% by 2020 from the 2009 baseline in line with national targets for public sector bodies under the National Energy Efficiency Action Plan and had set itself an interim target of 20% for 2018.