An Coimisiún um Rialáil Fóntais
Commission for Regulation of Utilities

# Irish Water Revenue Control

## Revenue Control 3 (2020 – 2024)

**Decision Paper**

| | | | | | |
|---|---|---|---|---|---|
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# Executive Summary

The Commission for Regulation of Utilities (CRU) is the independent economic regulator of Irish Water, the provider of public water and wastewater services.

The Water Services (No. 2) Act 2013 ("the Act") sets out the functions and powers of the CRU as the economic regulator of Irish Water. The Act states that the CRU is responsible for setting the total level of revenue that Irish Water can receive, (through Government subvention and from customers), to cover its efficiently incurred costs. It does this by performing revenue controls. The revenue control process involves reviewing Irish Water's submissions, engaging with the utility, benchmarking its proposed costs against comparator companies, completing a public consultation process, and thereafter setting appropriate revenue allowances for operating costs, capital costs and other items. This decision relates to Irish Water's third revenue control period (RC3) which will be for the five-year period 2020-2024.

**Context**

The current Irish Water revenue control period (IRC2) ends at the end of 2019, after being extended by one year to include 2019 due to changes in the funding model for Irish Water introduced by the Water Services Act 2017.

Before the revenue control can take place, the Minister was required to publish a Water Services Policy Statement[1] (WSPS). This set out the Government's expectations for the delivery and development of water and wastewater services in the years ahead. The WSPS, published in May 2018, sets out four principles to guide the delivery of water services, as well as three themes of quality, conservation and future proofing of the water/wastewater network which set out high-level objectives.

Subsequent to the WSPS, Irish Water submitted a Strategic Funding Plan (SFP) to the Minister which set out the arrangements that Irish Water proposes in order to implement the objectives of the WSPS. Irish Water's SFP for the 2019-2024 period was approved by the Minister in November 2018. The Plan sets out the limit of capital and operating costs expected to be incurred by Irish Water over the 2019-2024 period and how these costs are expected to be recovered, from customers and government subvention, to ensure there is a shared understanding between Government and Irish Water of the broad financial parameters and investment priorities.

[1] The Minister published the Water Services Policy Statement 2018-2025 in May 2018. This is available at: https://www.housing.gov.ie/sites/default/files/publications/files/water_services_policy_statement_2018-2025.pdf

The Exchequer funding allocations set out in the SFP reflect the upper ceiling that would be provided by the Exchequer[2] to fund Irish Water operations and investments, with final funding allocations being confirmed based on the outcome of this RC3 process for 2020-2024. This will subsequently feed into the multi annual Government budgetary process. For the 2020-2024 period, the funding ceiling totals €9,458m (nominal).

The overall objective of the CRU revenue control process is to support the continued transformation of the water sector in Ireland, to facilitate the transition to a single public utility as well as ensuring that Irish Water are in a position to deliver on their environmental compliance obligations. This begins with CRU identifying and agreeing with Irish Water the scope of the outcomes and outputs that they commit to deliver over the five-year period. The CRU will also assess the extent to which Irish Water can operate more efficiently and will identify the level of operating costs and capital investment costs that are required to deliver on those commitments. This assessment of costs is done to ensure that Irish Water expenditure remains within the SFP envelope. Over the 2020-2024 period, the CRU will continue to monitor Irish Water's delivery of these outputs and outcomes.

### CRU's RC3 Discussion Paper & The Regulatory Process

Because of the change in the funding model for Irish Water, the CRU considered whether changes required to its approach to regulating Irish Water. In December 2018, the CRU published its RC3 Discussion Paper, examining what regulatory model the CRU should follow for RC3. Subsequent to this, the CRU concluded that no change to its normal approach to Irish Water's revenue review was warranted at this time, and that the CRU followed the same approach as previously used for other revenue or price controls for the electricity and gas networks in Ireland and in previous Irish Water revenue controls.

### Assessment of Irish Water's Business Plans

The output of a revenue control is a regulatory contract that defines the obligations on the utility regarding what it should deliver in terms of outcomes to customers/users/broader stakeholders, and the efficient level of capital and operating expenditure to deliver those outcomes.

In determining the regulatory contract for RC3, the CRU's objective is to assess that Irish Water is setting the right priorities and delivering value for money. The CRU did so by examining Irish

[2] Less revenue from non-domestic customers

Water's business plan, reviewing Irish Water's submissions regarding the level of outcomes and outputs that it proposed to deliver and considered how Irish Water can be challenged to deliver continued efficiencies without reducing the quality of its services to its customers.

Irish Water provided a business plan to the CRU in November 2018 and made a further submission to the CRU in response to the consultation.

This later submission in October 2019 that included changes to planned outputs and outcomes, as well as updated investment priorities and costs. These were reviewed in the context of developing this decision paper. Because the Strategic Funding Plan (SFP) limits the maximum amount of capital expenditure that will be funded by the government subvention in any one year, there is a circular relationship between changes in the project costs, and the outputs and outcomes that can be delivered within the funding constraints of the SFP. An increase in the cost of any one project or programme means that less can be delivered by other projects or programmes, for a fixed capex spend, and so the outcomes and outputs reduce.

Fundamental change in the outputs and outcomes that Irish Water is now saying they will deliver over the lifetime of the RC3 project, means that the CRU is not in a position to determine the final regulatory contract at this point in time.

The reduced level of outputs and outcomes submitted by Irish Water are of grave concern to the CRU, along with the increase in costs associated with projects and programmes to deliver them. The CRU has not received sufficient explanation from Irish Water regarding why specific outputs and outcomes were chosen to be reduced. While the CRU acknowledges that there are upward pressures on construction costs, the project cost changes provided by Irish Water are in excess of the estimates of construction price inflation in the consultation. Again, while acknowledging that an increase in project costs would lead to a decrease in outputs and outcomes, due to the SFP, the CRU is very concerned about the scale of the reductions in outcomes, that seems to be well in excess of the average increase in project costs. Irish Water has provided detailed information, at this time, only on the top 100 projects by project cost. The CRU has a further concern that the mix of projects/programs in the top 100 has changed, compared to their previous business plan. Several large projects, that had defined outcomes associated with them, have been removed, and replaced with new capex spend related to feasibility studies, etc., that have no defined outcomes associated with them. Further, Irish Water has not provided sufficient information on the remaining 100 projects (totalling €715m in value). For this reason, the CRU has decided to cut Irish Water's allowance. An opportunity for Irish Water to be provided with additional capital expenditure funding is being made and is detailed further in this paper.

### Operating Costs

The CRU has reviewed Irish Water's operating costs and benchmarked (compared) them against water and wastewater utilities in the UK. Irish Water's costs are significantly higher than those of established water and wastewater utilities. The CRU, therefore, has decided to impose an efficiency challenge on Irish Water. Using Irish Water's level of operating costs at the end of the IRC2 period (2019) as the baseline, the CRU expects Irish Water to reduce its costs at a rate that is broadly comparable to what has been achieved by other utilities at similar stages of development. The CRU has decided to hold Irish Water to a challenging, but achievable task of reducing its controllable operating costs annually by 2%, rising to 6%, over the RC3 period (1st January 2020 to 31st December 2024). The resulting level of approved operating expenditure is 5.2% less than the Irish Water request, or an overall reduction of €174 million, when compared to its business plan request. The CRU expects Irish Water to make these savings while maintaining or improving its delivery of water and wastewater services to its customers. This reduction is less than that included in CRU's consultation and acknowledges that Irish Water needed additional operating expenditure to meet the requirements for environmental standards. In reaching its decision on the appropriate rate for Irish Water to reduce its costs the CRU considered a number of factors, including Irish Water's funding model and its transition to a single public utility model, and the potential efficiencies to be achieved from that model.

The CRU accepts that by providing this additional allowance to Irish Water, compared to the level consulted on, that at the end of the RC3 period, it will not have achieved the expected reduction in its operating costs. Irish Water will however continue on a glide path towards operating at a cost level comparable with efficient water / wastewater companies in the UK, and will be on a trajectory towards full compliance with all water quality and wastewater discharge obligations.

In an effort to realise efficiencies, Irish Water's business plan involves a transformation to a Single Public Utility, through implementation of the Water Industry Operating Framework (WIOF) Programme. Irish Water's work was previously the responsibility of 34 (and then 31) Local Authorities, and a significant amount of work is still completed by the Local Authorities on behalf of Irish Water through Service Level Agreements (SLAs). This operating model may impede Irish Water's ability to deliver cost reductions in the short term, as it will take time to implement the unified approach and common systems and processes. The CRU acknowledges that Irish Water's business plan is highly dependent on a transformation to a single public utility model, and that achieving the efficiency challenge set by the CRU will be difficult if there is no progress during RC3. The CRU accepts that if the WIOF programme does not progress over the period there will need to be a reassessment of Irish Water's operating costs (RC3 reopener).

| Irish Water's RC3 Operating Cost Request & CRU Allowance | | | | |
|---|---|---|---|---|
| **Operating Cost Allowance** | Irish Water Request (€M) | CRU Consultation Proposal (€M) | CRU Decision (€M) | Total Savings (€M) |
| **Total operational expenditure for 2020 to 2024** | 3,719 | 3,373 | 3,544 | 174 |

*Table 1 Irish Water's RC3 Operating Cost Request, CRU Consultation proposal & CRU's Decision (2017 monies rounded to the nearest €m)*

For context, the graph below shows Irish Water's operating costs requests since the commencement of regulation.

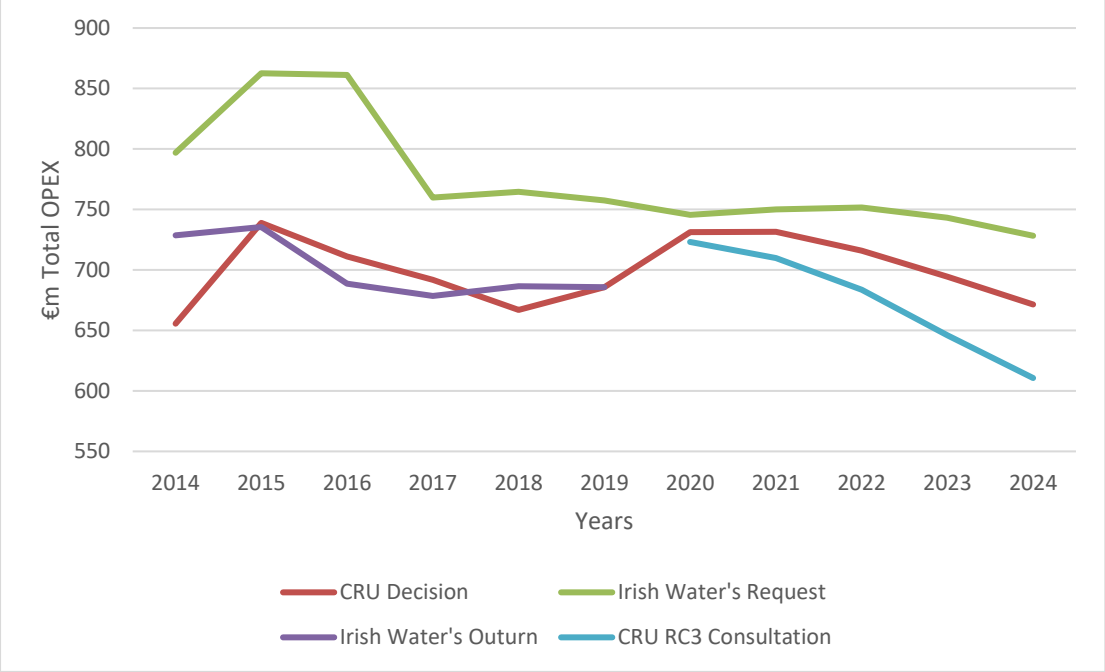


*Figure 1 Irish Water's operating costs requests since the commencement of regulation*

### Capital Costs

As part of its response to consultation, Irish Water provided two significant changes to its business plan, compared to that submitted in November 2018. First, it provided a revised set of outputs and outcomes that it intended to deliver over the RC3 period. This reflected changes to priorities, timelines for delivery and, inevitably due to the cap of the Strategic Funding Plan, a

reduction in outputs and outcomes, in response to cost changes. Secondly, Irish Water provided updated cost estimates for the "Top 100" projects and programmes by value, covering both the updated total capital cost of each project, and the updated spend during the RC3 time period. Irish Water also indicated the total level of expenditure during the RC3 period that would apply to the remaining 100 projects. Irish Water informed the CRU that the new project and programme costs included the impact of construction price inflation.

For network capital expenditure, the CRU has decided on an efficiency challenge of €305m over the RC3 period. This represents a 3% cut on projects which have not yet been committed (contracted).

The CRU having reviewed the updated cost estimates, insofar as is possible during the time available, is concerned that the level of project cost increases is in excess of the estimate of construction price inflation included in the consultation, as well as recent evidence on price increases in the sector. In order to make an informed decision that the proposed project costs reflect an efficient level, and that the proposed outputs and outcomes reflect value for money, the CRU would require further time to interrogate and analyse the data. Therefore, the CRU has decided not to approve all of the capital expenditure requested by Irish Water. A portion of the capital expenditure request by Irish Water, amounting to €788m of the network capital costs is not approved at this time. These costs relate to the increase in cost estimates where like for like projects were identified, and new projects included in the revised Capital Investment Plan. However, an opportunity for Irish Water to be allowed this extra allowance is being provided. The process for this is set out in detail in this paper.

For non-network capital expenditure, Irish Water proposes to spend €425m over the RC3 period. Again, the CRU is of the view that this proposal is also subject to efficiency challenge and as a result, the CRU has decided on a cut of €47m for non-network capex. See table 2 below.

| | Irish Water's Submission €m | Scope Reductions €m | Efficiency Challenge €m | Less Unapproved Costs €m | CRU Decision Allowance €m |
|---|---|---|---|---|---|
| Network Capex | 4,832 | 0 | -305 | -788 | 3739 |
| Non-network Capex | 425 | -40 | -7 | 0 | 377 |
| **Total** | **5,257** | **-40** | **-312** | **-788** | **4,116** |

*Table 2 Irish Water's RC3 Capital Expenditure Request & CRU Proposed Allowance*

The CRU's capital expenditure allowances are below the allowances made available to Irish Water

in the Strategic Funding Plan approved by the Minister in November 2018.

**Outcomes, Outputs & CRU Monitoring of Spend**

For the revenue allowances set out, Irish Water will deliver a mixture of projects and programmes, which in turn deliver various outputs and outcomes.

Outcomes are the high-level objectives that matter most to consumers of water and wastewater services, namely:

- High quality customer service and customer satisfaction;
- Providing a high quality of service for water supply, including security of supply;
- A reliable service to remove and treat wastewater:
- Efficient delivery of services, i.e. value for money;
- Achieve compliance with public health and environmental standards; and
- Environmental performance (for example, a good quality water environment).

As set out above, Irish Water updated what it planned to deliver during the RC3 period. The tables below set out Irish Water's updated proposed outputs and outcomes for the RC3 period.

| Revenue Control 3 Outputs & Outcomes | | |
|---|---|---|
| **Metric** | **Planned Delivery** | **Outcome** |
| Number of new Treatment Plants (water and wastewater) | 42 | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Number of Existing Treatment Plants Upgraded | 73 | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Water Treatment Plant Capacity (Total ML/day) | 606 | Water Supply - Quality of Service - Security of Water Supply |
| Wastewater Treatment Plant Capacity (Total Population equivalent) | 3,440,034 | Environmental Performance |
| Number of Reservoirs Upgraded | 132 | Water Supply - Quality of Service - Security of Water Supply |
| New Watermains (km) | 424 | Water Supply - Quality of Service - Security of Water Supply |

| Revenue Control 3 Outputs & Outcomes | | |
|---|---|---|
| Rehabilitated or lined mains (km) | 461 | Water Supply - Quality of Service - Security of Water Supply |
| Meters installed | 50,815 | Water Supply - Quality of Service - Security of Water Supply |
| New Sewers (km) | 237 | Environmental Performance - Sewerage Service |
| Rehabilitated Sewer (km) | 333 | Environmental Performance - Sewerage Service |

*Table 3 revenue Control Outputs and Outcomes*

| Revenue Control 3 Outcomes | |
|---|---|
| | Updated Change over RC3 period |
| **Water Supply - Quality of Service** | |
| Population on a boil water notice for more than 200 days | 5 |
| Number of Water Treatment Plants with Ortho-phosphate Dosing | 27 |
| Number of Water Supplies removed from the EPA's RAL | 13 |
| Reduction in the number of properties with risk of Microbiological Non-Compliance | 561,915 |
| Reduction in the Number of properties with risk of THM Non-Compliance | 132,122 |
| Number of Common Lead Service pipes in the network | 11,168 |
| Number of individual Lead pipes in the network | 8,139 |
| Number of Lead Services replaces | 13,231 |
| | |
| **Security of Water Supply** | |
| Leakage Reduction (ML/day) | 176 |
| Additional Water Supply Capacity (ML/day) | 46 |
| | |
| **Environmental Performance** | |
| Number of agglomerations removed from EPA's Priority Urban Area Action List | 41 |
| Wastewater treatment works compliant with Urban Waste Water Treatment Directive (Population Equivalent) | 314,656 |
| Number of Wastewater Treatment Plants overloaded serving >2000 population | 1 |
| Number of Wastewater Treatment Plants overloaded serving < 2000 population | 1 |
| Number of Agglomerations in the ECJ Urban Waste Water Treatment Directives | 10 |
| Additional Wastewater Treatment Capacity (Population Equivalent) | 1,158,984 |

| | |
|---|---|
| Number of Wastewater Treatment Plants compliant with EPA discharge increase ELVs | 8 |

*Table 4 Revenue Control Outputs and Outcomes*

Further information on outcomes and outputs is included in the Public Impact Statement and Section 3 below. Overall, the CRU is very concerned about the change in the level of outputs and outcomes proposed by Irish Water, compared to the levels consulted on. Limited background information was provided on how the revised outcomes and outputs have been developed and the re-prioritisation process undertaken by Irish Water. While the CRU acknowledges that such changes in outcomes can arise from a mix of re-prioritisation, better information and data allowing more reliable forecasts of requirements and changes to the baseline start positions for some outcomes at the end of the previous price control, the CRU remains extremely concerned that the general picture of the revised plan is one of a reduction in all outcomes with the exception of Leakage Reduction and Energy Efficiency Improvement where no change to outcomes is proposed.

For this reason, the CRU considers the outcomes and outputs submitted by Irish Water as the minimum levels to be delivered over the RC3 period. Alongside the capital expenditure review, the CRU will examine how Irish Water's planning and prioritisation process was used to generate these revisions and assess whether they continue to provide value for money, compared to the levels consulted on.

Irish Water is also required to report to the CRU during the RC3 period regarding its progress towards delivery on the outputs and outcomes. The CRU will monitor Irish Water's expenditure and delivery of outputs and outcomes through its Capital Expenditure Monitoring Programme and the CRU Performance Assessment Framework. The CRU also monitors Irish Water in other ways, for example through the First Fix Programme and compliance with the obligations in Irish Water's Customer Handbooks.

**Incentives**

Performance-based incentives are an important component of revenue control regulation. They complement and enhance the requirement for a regulated monopoly business to efficiently manage costs by ensuring that the business has an incentive in the delivery of its responsibilities, particularly regarding quality, efficiency and timeliness of service delivery to the customer.

Incentives should be meaningful, measurable and implementable and can either be financial incentives which can include a corresponding reward or penalty or reputational incentives, where performance against key metrics is published.

For RC3, the CRU decided to continue the approach previously taken in prior price controls in order to build upon work currently being undertaken by Irish Water on a number of these incentives. These covered a combination of financial and reputational incentives. In addition, in this

revenue control, the CRU decided to introduce a further financial incentive (or penalty, where Irish Water does not reach targets) for leakage reduction.

**Financing of Irish Water's Capital Investments**

Changes to Irish Water's funding model since the IRC2 decision have led the CRU to consider its approach to setting a cost of capital. The domestic sector accounts for over three-quarters of Irish Water's cost base and as this is now funded by the government rather than customer billing, the CRU carefully considered the true level of risk which Irish Water faces. However, following an assessment of alternative approaches, the CRU has decided to retain the current WACC-CAPM approach for RC3.

The CRU consulted on a WACC of 3.86%, based on the approach used in previous price controls for Irish Water, while also taking into account current market evidence and regulatory precedent. Using the same methodology but reflecting changes in the underlying market data as updated to a more recent cut-off date of 30 September 2019, the CRU has now decided on a WACC of 3.61%. The biggest drivers of this reduced number have been a sizable fall in beta (i.e. perceived riskiness of an Irish water utility relative to the market) and observable government bond yields (Irish government bonds are now negative).

The change in the value of the WACC from the previous CRU price control decisions for the electricity and gas networks is explained by changes in the underlying data and sectoral data regarding water utilities, rather than methodological decisions.

The CRU acknowledges that placing a greater emphasis on current observable financial market evidence in this revenue control may signal a further intention to maintain this approach at future revenue/price controls. However, there are features that are unique to each regulated utility and in this case, we note that Irish Water is a state-owned utility with a funding model that largely protects it from the risk associated with fluctuations in financing costs. Looking forward to its PR5 deliberations (i.e. the electricity price review), the CRU notes that electricity transmission and distribution are different sectors to water and the approach taken in this RC3 decision may be modified or indeed not as relevant or appropriate in assessing the cost of capital for PR5. However, for clarity on the organisation-wide approach, the CRU will shortly publish an information paper, which will provide further information on the approach to setting the WACC and highlight areas of the methodology, which the CRU may seek to refine in the future.

The table below presents the CRU's decision on the WACC for RC3 alongside Irish Water's proposal and the CRU's consultation value.

| Summary of WACC | | | |
|---|---|---|---|
| | Irish Water proposal | CRU Proposal | **CRU Decision** |
| Cost of equity (real pre-tax) | 6.88% | 5.71% | **5.43%** |
| Gearing | 55% | 50% | **50%** |
| Cost of debt | 2.86% | 2.0% | **1.8%** |
| WACC (real, pre-tax) | 4.65% | 3.86% | **3.61%** |

*Table 5 Summary of cost of capital*

**Depreciation and asset lives**

The CRU has decided to change the approach to allocating assets to the RAB (i.e. depreciation methodology) and the asset lives of some assets. This is to more-closely align the assumed asset lives and therefore recovery of capital costs (depreciation charge) with the assumed useful economic life of the asset. This ensures that charges to consumers more accurately reflect the economic costs of service provision and useful lives of the assets, which promotes intergenerational equity.

The overall effect is to extend asset lives relative to the previous approach, resulting in a lower relative annual depreciation charge, and therefore allowed revenues are lower for RC3 than they would have been had these changes not been implemented.

**Allowance Decision**

***Expenditure Allowance***

As this paper details, following a review, the CRU has decided to allow the following expenditure for Irish Water for 2020 - 2024:

| CRU Allowed Expenditure €m, real 2017 | | | | | | |
|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| IW Request & CRU Allowance | €m | €m | €m | €m | €m | €m |
| **Irish Water Request** | | | | | | |
| Operating Costs | 745 | 750 | 752 | 743 | 728 | **3,719** |
| Capital Costs | 878 | 999 | 1,189 | 1,186 | 1,005 | **5,257** |
| **Total Irish Water Request** | **1,623** | **1,749** | **1,941** | **1,929** | **1,733** | **8,976** |
| | | | | | | |
| **CRU Allowance** | | | | | | |
| Operating Costs | 731 | 731 | 716 | 694 | 671 | **3,544** |
| Capital Costs | 848 | 752 | 910 | 895 | 711 | **4,116** |
| **Total CRU Allowance** | 1,579 | 1,483 | 1,626 | 1,589 | 1,382 | **7,660** |
| Irish Water Request -v- CRU Allowance | 44 | 266 | 315 | 340 | 351 | **1,316** |

*Table 6 CRU Allowed RC3 Expenditure (rounded to the nearest €m)*

Irish Water's expenditure allowance is calculated thus:


***Revenue Allowance***

The CRU also determines Irish Water's revenue allowance i.e. the level of funding Irish Water can collect from its customers through charges. Now that the enduring funding model has been introduced by the Water Services Act 2017, for RC3, Irish Water's revenue will be recovered through a mixture of Government subvention and customer charges including e.g. non-domestic customer charges and charges for new connections. The revenue amount includes allowances for operating costs, depreciation and return on capital costs, and an adjustment for revenue relating to the previous revenue control periods (called the k-factor).

Irish Water's revenue allowance is calculated thus:

The revenue allowance is €5,191.1m (2017, real prices). This has increased from the consulted-on amount due to an increase in opex and also profiling of expenditure over the five years of RC3. For more information on this, please see the CRU's revenue model published alongside this consultation.

**Next Steps**

Because of the significant changes in the Capital Investment Plan (CIP) provided by Irish Water so late in the RC3 process, and the need to provide clarity to DHPLG with regard to the level of subvention for 2020, as well as Irish Water's own business planning for 2020, it was necessary to conclude as much of the RC3 process as possible, before the end of November 2019. Absent this time constraint, the CRU would have spent additional time interrogating the Irish Water revised submission before making a final decision.

The CRU will now spend the next 6 months completing the RC3 process to make a final determination on outputs and outcomes that Irish Water must deliver over the RC3 period, along with the efficient level of capital expenditure to deliver those outcomes and outputs.

The CRU will provide an opportunity for Irish Water to submit an updated submission to it, to support the requested level of capital expenditure. This updated submission will include both the scope of information that the CRU requires for the revenue control, updated for changes from the original submission in November 2018, and a report explaining the processes and procedures used to develop the revised submission. This report will also include the reasons for the changes in the scope of projects and programmes, the reasons for the changes in outputs and outcomes, the prioritisation process used by Irish Water, and the method used to develop cost estimates. This should include an assessment of the project planning and costing process and provide a detailed analysis and explanation as to the drivers of the changes between the two submissions (November 2018 to November 2019). This updated submission must be provided to the CRU in its entirety by 31st March 2020.

# Public/ Customer Impact Statement

**Overview of CRU approach to Irish Water Revenue Control**

The water and wastewater sector are vital public services, which are often taken for granted by consumers. It is customers' needs and behaviour that drives demand for clean water, which has an impact on the amount of water taken from the environment, treated and transported to their taps. And it is customers' needs and behaviour that drives demand for how much wastewater is taken away, treated and returned to the environment. It is Irish Water who determine how this is achieved.

Our vision for the sector is one in which customers and wider society in Ireland have trust and confidence in vital public water and wastewater services. For this to be realised, we need Irish Water to focus on delivering the high-level objectives that matter to today's customers today, future customers and the environment.

The CRU has a legal duty to protect consumers' interests while ensuring that an efficient Irish Water can carry out and finance its functions. One of the ways we deliver on this duty is to review Irish Water's business plans and set revenue limits based on Irish Water investments and services that customers receive from Irish Water. The CRU completed the last review in November 2016, which covered the period from 2017 to 2018. We then extended that revenue control to 2019. This revenue control (RC3) now looks at the business plans and revenue limits for the five year period 2020 to 2024.

In this revenue control we look at the outcomes that we expect Irish Water to deliver over the five years. Tied to these outcomes are an extensive and detailed set of outputs, covering projects and programmes across water and wastewater, that we will hold Irish Water accountable for delivering. The revenue control also assesses the assumptions about the capital and operational expenditure needed to achieve those outputs and outcomes.

There is a hierarchical relationship between inputs, outputs and outcomes, that determines our decision making

- Outcomes are the things that customers and society value, e.g., clean drinking water.
- Outputs are specific things that the companies deliver to (help to) achieve those outcomes, e.g., water treatment plants.
- Inputs are the resources the companies need to deliver those outputs.

All the inputs that a company needs should be traceable, through the outputs they will deliver, to outcomes that customers and society value.

The diagram below illustrates this hierarchy.


*Figure 2 Snapshot of the Regulatory Contract*

The CRU, in its role as economic regulator for the water sector, is focused on incentivising Irish Water to deliver efficiently the outcomes that customers and society value. The CRU concerns itself with inputs or outputs to the extent that they are necessary to incentivise Irish Water to efficiently deliver outcomes. Our overall approach to this revenue control is to ensure that Irish Water set stretching commitments for all aspects of customer service for the 2020-2024 period.

The purpose of this revenue control, therefore, is to establish a combination of the outcomes and outputs that Irish Water is committing to deliver, via the business plan that it submitted to the CRU, and the efficient level of capital and operating costs that the CRU deems to be sufficient to deliver on those obligations.

The CRU's decisions in relation to outcomes, outputs and inputs are described in the following sections.

**Outcomes**

Outcomes are the high-level objectives that matter most to consumers of water and wastewater services. Outcomes are generally continuous, long-term requirements that do not necessarily fit into one price control period. The high-level outcomes that Irish Water will deliver in the next revenue control period are consistent with those for IRC2, namely:

- High quality customer service and customer satisfaction;
- Providing a high quality of service for water supply, including security of supply;
- A reliable service to remove and treat wastewater:
- Efficient delivery of services, i.e. value for money;
- Achieve compliance with public health and environmental standards
- Environmental performance (for example, a good quality water environment).

In its RC3 business plan, Irish Water provided a list of capital projects and programs that it intends to deliver over the RC3 period. These projects and programs are designed to achieve a range of

outcomes. Some projects and programmes will deliver on more than one outcome. Here, and in the section below, we group the expected outcomes, and what outputs will deliver those outcomes, across the high-level categories that we are focusing on for the RC3 period.

| Irish Water Outcomes for the RC3 period | Change over RC3 period |
|---|---|
| **Water Supply - Quality of Service** | |
| Population on a boil water notice for more than 200 days | 5 |
| Number of Water Treatment Plants with Ortho-phosphate Dosing | 27 |
| Number of Water Supplies removed from the EPA's RAL | 13 |
| Reduction in the number of properties with risk of Microbiological Non-Compliance | 561,915 |
| Reduction in the Number of properties with risk of THM Non-Compliance | 132,122 |
| Number of Common Lead Service pipes in the network | 11,168 |
| Number of individual Lead pipes in the network | 8,139 |
| Number of Lead Services replaces | 13,231 |
| | |
| **Security of Water Supply** | |
| Leakage Reduction (ML/day) | 176 |
| Additional Water Supply Capacity (ML/day) | 46 |
| | |
| **Environmental Performance** | |
| Number of agglomerations removed from EPA's Priority Urban Area Action List | 41 |
| Wastewater treatment works compliant with Urban Waste Water Treatment Directive (Population Equivalent) | 314,656 |
| Number of Wastewater Treatment Plants overloaded serving >2000 population | 1 |
| Number of Wastewater Treatment Plants overloaded serving < 2000 population | 1 |
| Number of Agglomerations in the ECJ Urban Waste Water Treatment Directives | 10 |
| Additional Wastewater Treatment Capacity (Population Equivalent) | 1,158,984 |
| Number of Wastewater Treatment Plants compliant with EPA discharge increase ELVs | 8 |

*Table 7 Irish Water's outputs and outcomes for the RC3 period*

In addition to these water and wastewater service-based outcomes, the CRU also specifies, within the domestic and non-domestic handbooks expectations of levels of customer service that Irish Water needs to meet. During RC3, Irish Water will be implementing several new water policy decisions, including a new approach to non-domestic tariffs, as well as excess usage charges for domestic customers. The CRU expects that these policies will be implemented by Irish Water with no reduction in the level of customer service provided.

The customer service outcomes are reported on in the annual performance assessment reports published by CRU (discussed below).

**Outputs**

Outputs are the observable and measurable activities, actions or achievements that Irish Water must deliver to bring about the outcomes that customers and broader society value. Outputs are more easily measured and monitored than outcomes and are more likely to be within Irish Water's control. In general, they do not explicitly reflect things that customers and society value in themselves, but they contribute to achieving those things.

The fact that we have specified outputs in the revenue control provides Irish Water clarity and certainty over the capital projects and programs that they need to deliver.

Specific outputs include:

- delivering specific schemes, such as a new water treatment works or relining a specified number of mains, which could relate to a number of outcomes; and
- completing specific activities, such as a programme of replacing lead pipes, which, again, could relate to a number of outcomes.

As part of the RC3 process, Irish Water submitted a business plan to the CRU that specified a range of outputs that they intend to deliver over the RC3 period, that are aligned with the overall outcomes. These outputs were reviewed by CRU and accepted as necessary to deliver the stated outcomes. These cover a range of projects and programmes across water and wastewater services and are discussed in more detail in Section 3.2 A summary of the outputs is shown in Table 8 below.

The particular outputs that Irish Water will be delivering over the RC3 period, and how they relate to outcomes, are as follows:

| Metric | Planned Delivery | Outcome |
|---|---|---|
| Number of new Treatment Plants (water and wastewater) | 42 | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Number of Existing Treatment Plants Upgraded | 73 | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Water Treatment Plant Capacity (Total ML/day) | 606 | Water Supply - Quality of Service - Security of Water Supply |
| Wastewater Treatment Plant Capacity (Total Population equivalent) | 3,440,034 | Environmental Performance |
| Number of Reservoirs Upgraded | 132 | Water Supply - Quality of Service - Security of Water Supply |
| New Watermains (km) | 424 | Water Supply - Quality of Service - Security of Water Supply |
| Rehabilitated or lined mains (km) | 461 | Water Supply - Quality of Service - Security of Water Supply |
| Meters installed | 50,815 | Water Supply - Quality of Service - Security of Water Supply |
| New Sewers (km) | 237 | Environmental Performance - Sewerage Service |
| Rehabilitated Sewer (km) | 333 | Environmental Performance - Sewerage Service |

*Table 8 Irish Water's outputs for the RC3 period*

**Inputs**

Inputs are the resources that Irish Water uses to carry out its activities or to deliver particular outputs. Examples of inputs include:

- The operating costs it incurs to deliver its services such as the number of people it employs on a particular activity (such as those employed on mains relining or replacement, operating a sewage treatment works), or/and the amount of money a regulated firm spends on a particular activity;
- The capital costs that it incurs to carry out a particular activity or delivering an output (such as how much Irish Water spends on the cost of building a reservoir or a water treatment plant, or the investment needed to upgrade a plant to comply with drinking water or environmental standards);

In its business plan submitted to the CRU, Irish Water, in conjunction with the list of outputs it plans to delivery, identified the range of capital and operating expenditure that it estimated would be

required to operate its system for the five-year period, as well as to deliver the range of outputs listed above.

In order to facilitate the outcome of "Efficient Delivery of Services", the CRU examined the inputs proposed by Irish Water and assessed whether they are appropriate to meet the proposed outputs, and associated outcomes. As one of the outcomes is value for money, the CRU examines whether or not the proposed outputs and outcomes can be achieved more efficiently. In making its determination, the CRU has imposed an efficiency challenge on both the operating expenditure and the capital expenditure to meet the overall outcome of efficient delivery of services.

**Operating efficiency**

The CRU, based on benchmarking Irish Water costs against a range of comparator companies, considers that Irish Water has significant scope to improve the efficiency by which it delivers on its operating requirements over the RC3 period. The CRU considers that a 4% per annum efficiency gain is a reasonable target to meet from 2020 to 2024. However, the CRU recognises that projects and programmes are necessary to achieve these efficiency gains, and that these can take time to implement and generate results. The CRU therefore requires Irish Water to meet the following target efficiency gains on an annual basis:

| Irish Water Operating Costs Efficiency Targets | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 |
| Efficiency Target | 2% | 2% | 4% | 6% | 6% |

*Table 9 Irish Water Operating Costs Efficiency Targets*

The CRU also examined the efficiency of the proposed spending on capital projects. Approximately 1/3 of the capital investment due to take place during the RC3 period is already committed, i.e., under contract, and therefore not subject to a further efficiency challenge. The remaining 2/3 of the capital spend is subject to a 3% per annum efficiency challenge as CRU considers that cost efficiencies can be achieved in the Capex programme. The two large projects, Greater Dublin Drainage and Water Supply project, have been excluded as the scope of these projects has not yet been finalised. The CRU will monitor the progress of Greater Dublin Drainage and Water Supply project during the RC3 period and will engage with DHPLG on an annual basis to determine whether the funding in respect of these projects should be provided, depending on the progress made in relation to these projects.

As Irish Water provided updated information to the CRU in late October 2019 regarding the overall capital investment plan that they intend to deliver, along with changes in costs for projects and programmes, which appears to represent significant changes to the original consulted upon capital investment plan, the CRU was not able to do a comprehensive assessment of the reasonableness

of the proposed capex expenditure within the short timeframe remaining. The CRU is, therefore, not approving €788m of the Irish Water Capex request at this point in time, which represents the change in costs of existing projects and programmes and the costs of entirely new programmes identified by Irish Water and provided to CRU in October 2019. The underlying costs of these projects and programmes will be subject to an additional review over the coming months before any decision is taken to allow them.

Also, the CRU examined the efficiency and contingency levels included in Irish Water's non-network capital expenditure submission and reduced the allowed costs associated with non-network capital expenditure by €47m.

The CRU decision with regard to approved levels of capital and operating expenditure:

| Operational Expenditure, real 2017 | 2020 | 2021 | 2022 | 2023 | 2024 | Total RC3 |
|---|---|---|---|---|---|---|
| **Irish Water Request & CRU Allowance** | **€m** | **€m** | **€m** | **€m** | **€m** | **€m** |
| Irish Water request | 745 | 750 | 752 | 743 | 728 | 3719 |
| **CRU Decision** | **731** | **731** | **716** | **694** | **671** | **3544** |
| Irish Water request -v- CRU allowance | | | | | | -174 |

| Network Capital Expenditure, real 2017 | 2020 | 2021 | 2022 | 2023 | 2024 | Total RC3 |
|---|---|---|---|---|---|---|
| **Irish Water Request & CRU Allowance** | **€m** | **€m** | **€m** | **€m** | **€m** | **€m** |
| Irish Water request | 780 | 881 | 1083 | 1121 | 967 | 4,832 |
| Efficiency Challenge | -23 | -36 | -68 | -86 | -92 | -305 |
| Unapproved costs | 0 | -197 | -197 | -197 | -197 | -788 |
| **CRU Decision** | **757** | **648** | **819** | **838** | **678** | **3,739** |
| Irish Water request -v- CRU allowance | | | | | | -1,093 |

| Non-network Capital Expenditure, real 2017 | 2020 | 2021 | 2022 | 2023 | 2024 | Total RC3 |
|---|---|---|---|---|---|---|
| **Irish Water Request & CRU Allowance** | **€m** | **€m** | **€m** | **€m** | **€m** | **€m** |
| Irish Water request | 98 | 118 | 106 | 65 | 38 | 425 |
| **CRU Decision** | **90** | **105** | **92** | **58** | **33** | **378** |
| Irish Water request -v- CRU allowance | | | | | | -47 |

*Table 10 CRU's proposals for Irish Water Expenditure Allowances for the RC3 period (rounded to the nearest €m*

The CRU's capital expenditure allowances are within the allowances made available to Irish Water in the Strategic Funding Plan approved by the Minister in November 2018.

**Performance Measurement**

In order that Irish Water customers get value for money for the inputs approved by the CRU, the CRU carries out a range of monitoring activities, and consistent with the CRU values, is committed

to openness and transparency with regard to publishing the outcomes of those monitoring activities.

Monitoring activities fall into two categories –

- Look-back – at the end of each revenue control period, the CRU looks back at the actual capital and operating expenditure incurred by Irish Water for the period of the revenue control, compares that to the estimates forecast to be spent, and assesses the efficiency of the actual expenditure. Any over or under-expenditure is then taken into account in the following revenue control period;
- Annual monitoring – the CRU monitors delivery of outputs, outcomes and the level of inputs on an annual basis and reports on these publicly. For example, inputs are monitored via the Capital Investment Monitoring Report, which also reports on the quantity and type of outputs delivered in each year. The Performance Assessment Framework reports on a range of outcomes.

In addition, we specify the metrics by which we will monitor their progress towards their outcomes (their performance commitments) and their pledges to achieve certain service levels (their performance commitment levels). The CRU's Performance Assessment Framework specifies performance metrics across five areas. These include the quality and reliability of the water and wastewater supply, asset health, customer service and the environment. By measuring and incentivising companies against service failures, these performance commitments motivate water company management to identify and mitigate risks to their services. To date, the performance monitoring of Irish Water has focused on data collection and reporting, and the CRU has published reports on this area.

**Performance Commitments**

Performance commitments enable customers, other stakeholders and the CRU to monitor Irish Water's service performance and hold them to account for achieving their commitments. We have previously consulted on and agreed a range performance commitments. These cover the most important issues for customers such as

- Customer service
- Environmental performance;
- Quality of water supply
- Security of water supply
- Quality of sewerage services.

Performance commitments rely on good quality consistent data. Irish Water needs to collect performance data to allow monitoring of its performance commitments. This has been the focus of the IRC2 period. Irish Water has indicated that they will be in a position to report on all of these metrics by 2020/2021. This reporting will be the basis for assessing Irish Water's performance during the RC3 period. The CRU will consult on the appropriateness of the metrics included in the Performance Assessment Framework to ensure they still reflect key services areas for customers and will also set out the target performance commitments for each of the metrics. We will also examine whether these metrics need to be modified over the RC3 period to take account of the way that the business is now operating. These will be the minimum levels of performance that we consider Irish Water should be providing its customers. We also consider that there is significant scope to make performance commitments by Irish Water more stretching over time, so that customers benefit from better service. We will, therefore, include challenging target levels of performance, that Irish Water should deliver by the end of the RC3 period, for example, achieving a reduction in leakage of 176ML/day (net water savings in the water supply network). We will then monitor Irish Water's performance under the Framework, and as trends become available, we will be able to assess that performance.

# Table of Contents

# Glossary of Terms and Abbreviations

| Abbreviation or Term | Definition or Meaning |
|---|---|
| **Capex** | Capital Expenditure |
| **CBA** | Cost Benefit Analysis |
| **CIP** | Capital Investment Plan |
| **CRU** | Commission for Regulation of Utilities (previously CER) |
| **DBO** | Design Build Operate |
| **DHPLG** | Department of Housing, Planning and Local Government |
| **EPA** | Environmental Protection Agency |
| **GNI** | Gas Networks Ireland |
| **GWS** | Group Water Schemes |
| **HICP** | Harmonised Index of Consumer Prices |
| **HSQE** | Health & Safety, Quality and the Environment |
| **IRC1** | Interim Revenue Control 1 (Q4 2014-2016) |
| **IRC2** | Interim Revenue Control 2 (2017-2018 and subsequently extended to include 2019) |
| **IW** | Irish Water |
| **K-factor** | A revenue adjustment relating to a previous period. |
| **NIW** | Northern Ireland Water |
| **NNC** | Non-network Capital Expenditure |
| **Nominal prices** | Nominal prices are not adjusted for inflation, and so reflect the value in the year the cost item relates to. |
| **OFGEM** | Economic regulator of the electricity and gas sectors in England and Wales |
| **OFWAT** | Economic regulator of the water sector in England and Wales |
| **Opex** | Operational Expenditure |
| **PBT** | Plan Balancing Tool |
| **PMO** | Project Management Office |
| **Present value** | The value at the present point in time of a sum of money, in contrast to some future value it will have when it has been invested |

| | |
|---|---|
| | at compound interest and consideration has been given to inflation. |
| **RAB** | Regulated Asset Base |
| **Real prices** | Real prices are prices that have been adjusted for inflation. This removes the effect of inflation from year to year allowing monies to be compared in same-year terms. For example, for this paper when prices are quoted in '2015 monies', this means that inflation has been removed from figures referring to later years. |
| **SCADA** | Supervisory Control and Data Acquisition |
| **SFP** | Strategic Funding Plan 2019-2024 |
| **SLA** | Service Level Agreement |
| **TOM** | Target Operating Model |
| **WACC** | Weighted Average Cost of Capital |
| **WCP** | Water Charges Plan |
| **WFD** | Water Framework Directive |
| **WICS** | Water Industry Commission for Scotland |
| **WIOF** | Water Industry Operating Framework |
| **WSIP** | Water Services Investment Plan |
| **WSPS** | Water Services Policy Statement 2018-2025 |
| **WSSP** | Water Services Strategic Plan |
| **WTP** | Water Treatment Plant |
| **WWTP** | Wastewater Treatment Plant |

# 1. Introduction

## 1.1 The Commission for Regulation of Utilities

The Commission for Regulation of Utilities (CRU) is Ireland's independent energy and water services regulator. Established in 1999, the CRU has a wide range of economic, customer protection and safety responsibilities in energy.

The CRU is the regulator of Irish Water as the national utility for the provision of public water and wastewater services. The CRU's role is to protect the interests of water and wastewater customers, ensure the delivery of water services in a safe, secure and sustainable manner and ensure that Irish Water operates in an economic and efficient manner.

Further information on the CRU's role and relevant legislation is available on the CRU's website at **www.cru.ie**.

## 1.2 Background

The CRU is responsible for setting the level of revenue that Irish Water can receive, through Government subvention and various charges (new connections, non-domestic tariffs, etc.), to cover its efficiently incurred costs. The CRU does this by reviewing Irish Water's submissions, engaging with the utility, benchmarking its proposed costs against comparator companies, completing a public consultation process, and setting appropriate revenue allowances for operating costs, capital costs and other items. This process is known as a revenue control.

On the 31 July 2019, the CRU published a consultation detailing its proposals for allowances for Irish Water over the RC3 period. The consultation was open to comments from the public for a period of 6 weeks, closing on the 11 September 2019.

The CRU is today, 5 December 2019, publishing its decision on Irish Water's revenue allowances for the RC3 period. In reaching this decision the CRU considered all responses received to the consultation.

This is the third revenue control which the CRU has undertaken in respect of Irish Water. The first revenue control was for the period October 2014-December 2016 and was known as Interim Revenue Control 1 (IRC1), the second revenue control was for the period January 2017-December 2018 and was subsequently extended to include 2019 and was known as Interim Revenue Control 2 (IRC2). As set out in the CRU's Discussion Paper (CRU/18/240), the CRU is

of the view that a five year revenue control is now appropriate and therefore Revenue Control 3 (RC3) will be for the period 1 January 2020 – 31 December 2024.

## 1.3 Legislative Basis

Under Sections 39 to 43 of the Water Services (No. 2) Act 2013 ("the Act"), the CRU is tasked with the role of economic regulation of Irish Water. Those sections of the Act set out the functions and powers of the CRU as the economic regulator of Irish Water. The CRU's role includes to protect the interests of water customers, ensure public water services are delivered in a safe, secure and sustainable manner and that Irish Water operates in an economic and efficient manner.

Section 22 of the Act provides information on the approval of a Water Charges Plan (WCP) for the delivery of water and wastewater services, following submission of the WCP from Irish Water to the CRU. That section outlines that, in doing so, the CRU would have regard to the costs likely to be incurred by Irish Water in the performance of its functions. This decision paper is part of the process to set an appropriate level of costs, which feeds through into the approved Water Charges Plan (WCP) for the 2020-2024 period.

Further legislation was introduced in 2017 through the Water Services Act 2017. This Act amended previous legislation and required Irish Water to submit a Strategic Funding Plan to the Minister for Housing, Planning and Local Government for approval. The first Strategic Funding Plan was approved on the 7 November 2018 by the Minister and reflects the upper ceiling of funding available to Irish Water. The actual funding is subject to the outcome of this revenue control process.

This is the first revenue control under the new funding model which was introduced by the Water Services Act 2017. Following approval by the Minister of the Strategic Funding Plan, Irish Water made a submission to the CRU for its funding over the RC3 period (2020-2024) comprising Business Planning Questionnaires, presentations and ongoing engagement by means of a Questions and Answers process. The CRU scrutinised the data provided by Irish Water, with the assistance of expert economic and technical advisors. Benchmarking exercises were also carried out to compare Irish Water's performance with that of mature, comparable companies in other jurisdictions, notably the UK.

## 1.4 Purpose of the Paper

This paper sets out the CRU's decision for revenue allowances for Irish Water over the RC3 period (2020-2024). These include the operational expenditure allowance and capital expenditure allowance. This paper is part of the process to set an appropriate level of costs for Irish Water, which feeds through into the approved Water Charges Plan (WCP) for the 2020-2024 period, which is published alongside this paper.

## 1.5 Objectives of RC3

The CRU's objectives for this revenue control are detailed below:

- To ensure that the outputs and outcomes proposed by Irish Water are consistent with broader water services policy objectives;
- To ensure that the work being carried out by Irish Water in RC3 represents value for money and improved service to customers;
- To document the decision-making process in a transparent manner with full and adequate consultation with interested parties;
- To maintain regulatory certainty;
- To ensure that Irish Water is able to maintain and upgrade the water and wastewater network to an appropriate standard;
- To ensure that the interests of final customers are protected, in the short and long term. This involves ensuring that costs are contained to the maximum extent possible, while at the same time delivering efficient investment in water and wastewater infrastructure and supporting services;
- To ensure that Irish Water is able to complete the necessary level of capital investment to support the approved level of upgrading of water and wastewater systems. In doing so, the CRU wishes to ensure that Irish Water's investment plans provide value for money in terms of the benefits they add;
- To hold Irish Water to account in its achievement of its commitments to outputs and outcomes through the RC3 period (2020-2024)
- To ensure appropriate incentives are provided for Irish Water to improve its efficiency and reduce costs; and
- To seek the views of Irish Water customers and other stakeholders on the appropriate costs and revenues of Irish Water for the 2020-2024 period

## 1.6 Structure of the Paper

This paper should be read in conjunction with the CRU's RC3 response to consultation paper (CRU/19/148). The structure of this paper is outlined as follows:

- Section 1 – Introduction
- Section 2 – Details on the regulatory process
- Section 3 – Irish Water's Business Plan (for the RC3 period)
- Section 4 – Reviews Irish Water's proposed costs for RC3
- Section 5 – Incentive and Monitoring
- Section 6 – RC3 Cost of Capital
- Section 7 – Irish Water's cost during IRC2
- Section 8 – Calculation of Irish Water's RC3 Revenue Requirement
- Section 9 – Conclusion and next steps

## 1.7 Related Documents

Documents related to this consultation are listed below:

- CRU Consultation Paper Irish Water Revenue Control 3 - CRU19/091 – 31st July 2019
- CRU Discussion Paper Irish Water Revenue Control 3 – CRU/18/240 – 6th December 2018.
- CRU Irish Water 2019 Revenue Control Decision Paper – CRU/18/211 – 24th September 2018.
- CRU Revenue Model – 1st January 2017 – 31st December 2019 – CRU/18/212 – 24th September 2018.
- CRU Irish Water 2019 Revenue Control Information Paper – CRU/17/332 – 7th December 2017.
- CRU Decision on Irish Water Revenue 2017 – 2018 – CER/16/342 – 12th December 2016.
- Advice to the Minister on the Economic Regulatory Framework for the public water services sector in Ireland – CER/14/076 – 31 March 2014.

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

## 1.8 Respondents to the consultation

The CRU received 18 responses to the consultation from various stakeholders.

- American Chamber of Commerce
- An Fóram Uisce
- Carlow County Council
- City and County Management Agency
- Chambers Ireland
- Clare County Council
- Cork County Council
- Department of Business Enterprise and Innovation, Enterprise Ireland and IDA (joint response)
- Dublin Chamber of Commerce
- Environmental Protection Agency (EPA)
- Irish Business Employers Confederation (IBEC)
- Irish Congress of Trade Unions (ICTU)
- Irish Water
- Kerry County Council
- Kilkenny County Council
- Tigh Beag
- Waterford County Council
- Wexford County Council

The CRU has published a separate response comments paper addressing the issues raised in the responses. Please see (CRU/19/148a)

# 2. The Regulatory Review Process

## 2.1 Introduction

This section details how the Irish Water revenue control is conducted by the CRU. The regulatory regime adopted is similar to that used by the CRU in regulating the electricity and gas sectors, i considered best practice and commonly adopted by both the CRU and international regulators. This section outlines:

- The framework and methodology adopted by the CRU;
- Information on how the revenue control process has been carried out;
- A summary of the expertise used; and
- A summary of the discussion paper on the proposed approach for the RC3 revenue control. This was published by the CRU in December 2018 and invited comments on the approach to be followed in completing this revenue control.
- The Consultation Paper published by the CRU in July 2019, consideration of responses received and the subsequent process in reaching the decision. The consultation paper was published in July 2019 and invited comments on the CRU's proposals in respect of Irish Water's allowances for the RC3 period (2020-2024).

Each of the above are discussed in turn below.

## 2.2 Regulatory Framework

### 2.2.1 Introduction to Regulatory Framework and Revenue Caps

The CRU has established an economic regulatory framework which is intended to ensure that:

- Only reasonable, appropriate and efficiently incurred costs for the provision of water and wastewater services by Irish Water are recovered by the utility;
- Irish Water, as the single water utility in Ireland, has a strong incentive to improve service and reduce costs from the outset of regulation;
- All water services customers are provided with secure supplies of high-quality water, as well as excellent customer service;
- Irish Water is held to account in its achievement of its commitments to outputs and outcomes through the RC3 period (2020-2024); and

- Irish Water operates and provides water/wastewater services, in an environmentally-friendly and sustainable manner.

As outlined in the discussion paper "CRU Discussion Paper Irish Water Revenue Control 3", published by the CRU in December 2018[3], the CRU will continue to use a revenue-cap regulatory regime for the revenue control period covering 2020 to 2024. A revenue cap regime is where the regulator sets the maximum allowed revenue that the utility can recover for the duration of the revenue control. Revenue-cap regimes are widely used by other regulators internationally to drive down costs and improve outputs, as well as by the CRU, for regulating the energy and water sectors in Ireland.

Cost efficiency is one of the four key principles that informed the development of the economic regulatory framework that the CRU is applying in the case of Irish Water. Stability, predictability and sustainability of the framework make up the other three key principles that guide the development and operation of the water services regulatory framework. The regulatory framework must drive Irish Water to constantly look, year-on-year, for economic efficiencies to the benefit of customers. Essentially, Irish Water must provide more for less; it must constantly look to provide greater service and quality to its customers at a lower cost. The necessity for cost efficiencies must be balanced with the other principles underlying the economic regulatory framework, namely stability, predictability and sustainability. In setting efficiency targets, the CRU seeks to strike an appropriate balance between what is achievable by Irish Water in its efficiency drive and to continually challenge Irish Water in this regard.

### 2.2.2 Building Blocks

Under the revenue cap regulatory regime, the CRU puts in place a revenue control to apply to the utility. The CRU determines the appropriate level of revenue that is required to run the utility. There are a number of components required to estimate a level of revenue that will be sufficient to finance the utility while also imposing challenging but achievable targets for cost reduction over the period. The building blocks of the regime are as follows:

- The operating cost associated with operating the water and wastewater business;
- The capital costs of investment in infrastructure; and
- The value of the assets in Irish Water's regulated asset base.

[3] https://www.cru.ie/wp-content/uploads/2018/12/CRU18240-CRU-Discussion-Paper-Irish-Water-Revenue-Control-3.pdf

In addition to the key building blocks of the revenue cap regime, there are other essential components that feed into the determination of the overall allowed revenue. These elements and the above components of the revenue control are discussed in turn below.

### *Operational Expenditure*

The first building block is the allowance for Operational Expenditure (Opex) – the day to day running expenditure of the utility. Opex costs are made up of line items such as staff costs, customer operations, asset management, insurance and licences amongst others. It is important that the utility is provided with a level of revenue that is sufficient enough to operate its business efficiently and to high standards so as to provide value to the customer through improved service levels and a high standard of customer service. The overall revenue figure for opex that is decided upon by the CRU is the result of rigorous scrutiny of Irish Water's proposals. The challenge set by the CRU, for Irish Water to continue to reduce its opex over the course of the revenue control, while maintaining and improving service, is based on what has been achieved by utilities in other jurisdictions at similar stages of development (post the introduction of regulation). In carrying out this review, the CRU used a combination of approaches in setting the opex costs. These include the review and assessment of the information provided by the utility through business planning questionnaires, Q&A sessions and written reports. It also includes comparative benchmarking of Irish Water against efficient and mature English and Welsh companies. The CRU has also utilised the advice of industry experts to assist with completing the review. The combination of these methods alongside continuous engagement with the utility over the course of the consultation and decision process ensures that Irish Water's opex allowance was thoroughly analysed.

### *Capital Expenditure*

Another building block is an allowance for capital expenditure (capex) over the course of the revenue control period. The capex category relates to Irish Water's physical assets i.e. the water and wastewater network, treatment plants, vehicles, IT systems, as well as the upgrade, repair and maintenance of the existing network and treatment plants. The allowance approved by the CRU must be sufficient to promote a degree of investment in the water services infrastructure that is appropriate and justified while also encouraging the utility to drive efficiencies. In reviewing Irish Water's capex proposals, the CRU analysed whether the proposals are appropriate, fully justified, deliver benefits to the customer and whether estimated costs are realistic. Industry experts assisted the CRU in assessing the technical merit of the capital programme and whether the projects proposed reflect the best value solution. An in-depth review of the utility's proposed capex submissions, coupled with audits of individual projects, would ensure that the revenue proposed by the CRU is fair and appropriate.

**Determining the Regulated Asset Base**

A third important building block is the Regulated Asset Base (RAB) of Irish Water. In simple terms, a RAB is a measure of the net value of the assets allowed (those determined to be efficiently incurred by the CRU) to Irish Water in the operation of its regulated activities at any point in time. The RAB allows Irish Water to receive a proper and fair return on the efficiently incurred capital investments it has made in water and wastewater services infrastructure. The rate of return that Irish Water can earn on assets in the RAB is set by the CRU for the duration of the revenue control period. The CRU monitors and approves what assets and costs are added to the RAB over the course of the revenue control. This has been addressed in greater detail in Section 8.2 of this consultation paper.

**Determining the Approach to Rate of Return**

As mentioned above, the CRU sets the rate of return that Irish Water can earn on the efficiently incurred capital investments in its RAB. This is known as the Weighted Average Costs of Capital or WACC. This is essentially a weighted average of the cost of debt and the cost of equity (as most businesses are financed with a combination of debt and equity). The CRU, assisted by economic advisors, set a WACC that is used to derive a fair return on the capital investments made by the utility while also endeavouring to ensure that the utility is in a position to achieve an investment grade credit rating. This has been addressed in greater detail in Section 6 of this consultation paper.

**Determining Appropriate Incentives**

Incentives are an important area of regulation for monopoly entities. Incentives are intended to align the interests of the regulated companies with those of their domestic and non-domestic customers, by encouraging the utility to deliver better-than-required services. The CRU has, to date, in the regulation of the energy sector, placed financial and reputational incentives on energy companies. The incentive proposals for Irish Water for the RC3 period are discussed in Section 5 of this consultation paper.

**Determining the Allowed Revenue**

Combining all the component parts, as described above, the CRU generated a proposed overall revenue allowance for Irish Water for the duration of the revenue control and it is this revenue allowance that forms the basis of Irish Water's charges to its customers (including e.g. non-domestic customers and new connections). The residual amount, over and above charges paid by customers, will be recovered through Government subvention. This is discussed in greater detail in Section 8 of this decision paper.

For RC3, the funding model which was introduced by the Water Services Act 2017, will apply. This model is as follows:

The domestic water sector will continue to be funded by Government subvention with some additional domestic revenue in the form of charges for new connections, meter tests, meter reads, and, from 2020/2021, charges to customers that use water excessively. The non-domestic sector will continue to be funded by the revenue collected from non-domestic customers.

The capital programme is now to be funded through equity[4] (capital contribution) and cash from operations. Under the new model, Irish Water can only raise debt against its revenue stream from the non-domestic sector.

All State funding (subvention and capital contributions) to Irish Water in respect of domestic water services will be channelled through the DHPLG budgetary process.

For clarity, the figure below sets out how the CRU's revenue decision ultimately results in Irish Water receiving its Government subvention.

[4] Note that 'equity' takes the form of capital contributions provided by the Government to Irish Water.

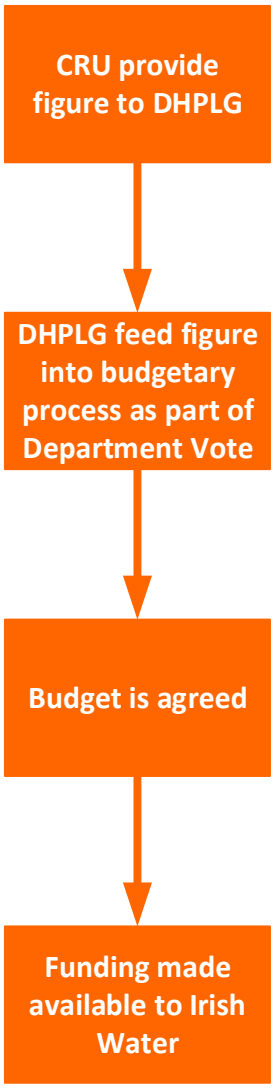


*Figure 3 Flowchart of Irish Water Revenue Figure feeds into budgetary process*

Given the changes to Irish Water's funding model, the CRU has reviewed the regulatory framework applied to determine allowed revenues to ensure it remains fit for purpose. This was considered as part of the RC3 Discussion Paper. The CRU has decided that no amendments are required to be made to the regulatory process for RC3. Further detail on this is discussed in the relevant sections throughout the remainder of this paper.

## 2.3 Process to Date

In order to ensure that there is clarity as to the underlying data and assumptions of Irish Water's submission, as well as the analysis itself, this project has involved, as is usual, a high level of interaction with Irish Water. The high-level steps associated with this process are outlined below.

The first part of public consultation was undertaken in December 2018 when the CRU published a

discussion paper[5] requesting comments on the proposed scope of the third revenue control for Irish Water. Further detail on the content of, and comments received in response to, the discussion paper is provided below in Section 2.4.

In parallel with the discussion paper, the CRU procured specialist advisors for the provision of economic, technical and financial advice over the course of the project. This supplements internal expertise within the CRU. Detail on this is provided below in Section 2.3.1.

To ensure that the CRU attained an adequate understanding of Irish Water's RC3 submission, the CRU engaged with the utility to ensure that relevant data was provided in a useable format. A Business Planning Questionnaire was issued to Irish Water detailing the technical, economic and financial data required by the CRU for review. Irish Water then completed the questionnaire in two stages: providing historic data first and then progressing to forecast information. Following submission there was a period of interaction between the CRU and Irish Water during which further information and clarifications were sought.

As part of each revenue control the opex incurred by the utility over the previous revenue control period is reviewed in order to assess cost efficiency, whether the utility's actual revenue outturn was inside the limits of the revenue allowed by the CRU, deliverables for revenue incurred and also to help inform decisions for the coming revenue control period. Following this methodology, the opex incurred by Irish Water over the 2017-2019 period[6] was reviewed. This involved assessing improvements in efficiency made by Irish Water during that period, bearing in mind developments that occurred over the period.

For the 2020-2024 period, the opex which Irish Water forecasts it will incur was reviewed, with particular focus on ensuring value for money and efficiency improvements.

A benchmarking study was conducted in order to compare Irish Water's current position to that of established utilities in other jurisdictions. Irish Water's glide path to efficiency, which is the length of time that is deemed reasonable for Irish Water to move towards achieving the same costs as an efficient comparator utility, is also determined through benchmarking studies.

Similar to the review of opex, the capex incurred by Irish Water over the 2017-2019 period[7] was also reviewed. The appropriateness and efficiency of the investments made during that period were assessed. This analysis included an assessment of actual versus allowed capex over the period, in terms of the cost, need for the investment and benefit to customers

[5] The Discussion Paper (CRU/18/240) available at: https://www.cru.ie/wp-content/uploads/2018/12/CRU18240-CRU-Discussion-Paper-Irish-Water-Revenue-Control-3.pdf
[6] It should be noted that September 2018 to December 2019 values are forecast.
[7] It should be noted that April 2018 (for network capex) and October 2018 (for non-network capex) to December 2019 are forecast.

The capex programme required for the 2020-2024 period as forecast by Irish Water was examined with particular focus on ensuring value for money, improving water and wastewater infrastructure in order to meet quality standards, environmental obligations, satisfy demand, improve security of supply and customer service.

An audit of a sample of projects, capital maintenance programmes and national programmes was conducted as part of the review of proposed RC3 capex. These audits were supplemented by a review of Irish Water's approach to the development of the Capital Investment Plan (CIP) submission, including 'plan balancing' and Irish Water's Project Costing Tool as well as capital programme management and governance arrangements.

This interaction allowed the CRU to complete a comprehensive review of Irish Water's historic and forecast performance, leading to the proposed approach set out in the consultation paper.

Subsequent to the publication of the consultation paper, further submissions by Irish Water were received, particularly in relation to capex. This is set out in detail in section 2.5 of this paper.

### 2.3.1 The Expertise Used

The CRU has completed numerous revenue reviews of regulated utilities since its foundation in 1999 and has developed its internal expertise during that period. To augment these skills, and reflecting the range of analysis required, the CRU acquired the services of economic experts to assist in the review of Irish Water's historic and forecast costs as well as its performance in IRC2, where required.

Following a public procurement process, NERA Economic Consulting was procured to provide advice on the technical and economic aspects of the review. This includes reviewing Irish Water's capital and operational expenditure and providing advice on the regulated asset base. NERA also advised on efficiency and provided expert technical engineering and project delivery advice.

Following a public procurement process, Europe Economics was procured to provide advice on the financial aspects of the review. The main body of work being completed by Europe Economics is the provision of advice on the approach to and the appropriate cost of capital for Irish Water for the five-year period from 2020 to 2024.

The advice put forward by the CRU's advisors has fed into the CRU's consulted upon approach and decision, as set out in this paper. In addition, reports by both NERA and Europe Economics were published alongside the consultation paper. The CRU's consultation paper should be read in conjunction with the NERA and Europe Economics' reports in order to gain fuller understanding of all aspects of the CRU's review of and consulted upon proposals on Irish Water's RC3 request.

## 2.4 CRU Discussion Paper

In December 2018, the CRU published a discussion paper[8] outlining its proposals for the revenue control and how it intended to set allowed revenue to meet Irish Water's efficiently incurred business costs. The purpose of the discussion paper was to provide information on the high-level approach to a number of key aspects of RC3. These include matters such as:

- Approach to setting opex and capex allowances.
- Incentives;
- Monitoring;
- Weighted Average Cost of Capital in the context of the new funding model (WACC);

Due to changes to Irish Water's funding model brought about by the Water Services Act 2017, the domestic sector capital programme is now funded through equity (capital contribution) and Government subvention. Under the new model, the only debt to be raised by Irish Water can be against the revenue stream from the non-domestic sector.

As a result of the change in Irish Water's funding model, the CRU considered its approach to deciding on the revenue control allowance for the RC3 period. The CRU has decided to continue to assess Irish Water's costs through examination and benchmarking of Irish Water against comparable utilities in other jurisdictions.

The CRU has also decided to continue its approach to incentives on Irish Water to reduce its costs and customer service and proposes to continue with the incentives already in place under IRC2 and decided on an additional incentive regarding leakage reduction for the RC3 period.

The CRU has also decided to continue with its current monitoring regime through its Capital Investment Monitoring, Performance Assessment Framework, First Fix Programme and the Irish Water Customer Handbook. The CRU will also continue to publish periodic reports on these monitoring activities, where appropriate.

Finally, the CRU also considered whether it is suitable to apply a Weighted Average Costs of Capital (WACC) to Irish Water's regulated asset base (RAB) or whether an alternative approach to a WACC would be appropriate. The CRU has now decided that it will continue with this approach, as it would need more time to consider this important factor of the revenue control process before making changes, if appropriate, to it. The CRU intends to consider this matter further during the RC3 period.

[8] The Discussion Paper (CRU/18/240) available at: https://www.cru.ie/wp-content/uploads/2018/12/CRU18240-CRU-Discussion-Paper-Irish-Water-Revenue-Control-3.pdf

## 2.5 Consultation Paper and Subsequent Process

The CRU published the RC3 Consultation Paper on 31 July 2019 and requested comments from interested parties until 11 September 2019. The CRU received 18 responses from interested parties. These responses are published alongside this decision paper and a summary of the responses, along with the CRU's response to them is set out in the Consultation Response Paper (CRU/19/148a), also published alongside this paper.

The CRU also engaged with Irish Water during this time. This has resulted in changes to Irish Water's request, and consequently the CRU's decision, as summarised below.

In response to the CRU's RC3 Consultation Paper, Irish Water provided the CRU with a revised list of outputs and outcomes which it stated were in fact the outputs and outcomes it would be able to achieve over the RC3 period. For the most part, the CRU saw a reduction in what Irish Water would now deliver over the RC3 period[9].

The CRU sought the reasoning behind this reduction and Irish Water provided updated costs to the CRU for the top 100 (in value) projects and programmes to be undertaken by Irish Water[10] during the RC3 period. These projects amounted to €4.1bn of the requested €4.8bn. The CRU's analysis shows that costs have, on average, increased by approximately 22%.

Irish Water has not to date provided a detailed rationale for the changes set out above. The CRU considers that the changes in the mix of outputs and outcomes effectively amounts to a new business plan submission (albeit incomplete) and the CRU cannot, in the short time available, assess the cost estimates to determine its value for money and efficiency. While the CRU does not see the value in holding Irish Water to the outputs and outcomes along with the cost estimates provided in its original submission, and subsequently as consulted upon, the CRU cannot yet approve the updated cost estimates. Furthermore, the CRU cannot yet accept the updated outputs and outcomes as the target for delivery against which Irish Water will be held to account at the end of the RC3 period. The CRU is of the view that these are the absolute minimum outputs and outcomes which Irish Water must achieve over the RC3 period. In relation to the costs, the CRU is approving a portion of the requested network capex (€3,739m) at this stage and Irish Water will be provided with an opportunity to demonstrate to the CRU that the remainder is required (€788m). Further information on this opportunity is set out in section 4.7.3 below.

The CRU is also very concerned that Irish Water has submitted what essentially amounts to a new business plan at this late stage in the revenue control process which raises further concerns about

[9] Note that in some cases, the reason for the reduction was due to Irish Water delivering outputs and outcomes by the end of 2019.
[10] An aggregate figure was provided for 'remaining projects and programmes'

Irish Water's project planning process, particularly as this is not the first time that Irish Water has substantially updated its Capital Investment Plan in similar circumstances. Prior to the CRU reaching its IRC2 decision, Irish Water updated its CIP and amended the CIP again shortly after the IRC2 decision. This posed a number of issues for the CRU in terms of capex monitoring and undertaking the IRC2 lookback process. This impacts upon the transparency of Irish Water's expenditure and value for money for the Irish Water consumer. The CRU is of the view that Irish Water needs to ensure that its CIP is developed in a robust and sustainable manner and not subject to such significant changes. This is of the utmost importance when Irish Water is about to enter a five-year revenue control period with a high level of planned capital expenditure.

The CRU was of the view that a five-year price control period was appropriate for Irish Water given that it has been operating subject to economic regulation since 2014. Previously, the CRU considered shorter revenue control periods appropriate while it was still transitioning to its current operational structure. As this is no longer the case and the CRU is now of the view that Irish Water should have sufficient knowledge regarding its assets and its operating capabilities to be better able to plan its projects and programmes to put in place a robust five year business plan, the CRU took the decision that a five-year revenue control period would be appropriate at this stage. In these circumstances, it is a real concern that the CIP has been amended so significantly during the revenue setting process.

Considering the above, the CRU is not approving the full capital expenditure request, or the outputs and outcomes proposed by Irish Water for the RC3 period. The completion of an external review will be required for the CRU to further analyse and determine whether further capex allowance should be made and if so, the appropriate amount along with whether the outputs and outcomes set out by Irish Water are reasonable and proportionate to the level of allowance provided.

This issue is discussed in further detail in Section 4.7.3 below.

# 3. Overview of Irish Water's Business Plan

## 3.1 Introduction

Irish Water submitted a business plan in November 2018 to the CRU covering their planned operations for the 2020-2024 regulatory period. This business plan provided information on the proposed scope of outcomes and outputs that the utility plans to deliver during the five-year period, and the forecast operating and capital costs that they estimated would be required to deliver on their business plans. The business plan outlines how Irish Water intends to deliver on its strategic objectives over the five-year period, including transitioning to a single public utility, fair and efficient delivery of water and wastewater services with a customer focus, as well as prioritising health and environmental quality outcomes across the sector.

The business plan submission also includes a lookback at the expenditure Irish Water incurred during the IRC2 period, for both capital expenditure and operating expenditure, and provides an indication of the adjustments that they requested from the approved amounts in the IRC2 decision.

**Updates to the Capex Business Plan**

As part of its response to consultation, Irish Water provided two significant changes to its business plan, compared to that submitted in November 2018. First, it provided a revised set of outputs and outcomes that it intended to deliver over the RC3 period. This reflected changes to priorities, timelines for delivery and, inevitably due to the cap of the Strategic Funding Plan, a reduction in outputs and outcomes, in response to cost changes. Secondly, Irish Water provided updated cost estimates for the "Top 100" projects and programmes by value amounting to €4.1bn, covering both the updated total capital cost of each project, and the updated spend during the RC3 time period. Irish Water also indicated the total level of expenditure during the RC3 period that would apply to the other projects. No changes in operating expenditure were provided, and all other elements of the business plan were unchanged.

A high-level summary of the outputs and outcomes have been included earlier in the executive summary.

In this section, we describe at a high level the outputs and outcomes that Irish Water are proposing to deliver, as well as an analysis of their costs.

## 3.2 Irish Water's Outputs and Outcome Proposals

**Outputs & Outcomes for the RC3 Period**

As mentioned in the customer impact statement above, in this revenue control we look at the outcomes that we expect Irish Water to deliver over the five years. Tied to these outcomes are an extensive and detailed set of outputs, covering projects and programmes across water and wastewater, that we will hold Irish Water accountable for delivering.

There is a hierarchical relationship between inputs, outputs and outcomes, that determines our decision making

- Outcomes are the things that customers and society value, e.g., clean drinking water;
- Outputs are specific things that the companies deliver to (help to) achieve those outcomes, e.g., water treatment plants;
- Inputs are the resources the companies need to deliver those outputs.

All the inputs that a company needs should be traceable, through the outputs they will deliver, to outcomes that customers and society value.

**Outcomes**

The high-level outcomes that Irish Water will deliver in the next revenue control period are consistent with those for IRC2, namely:

- High quality customer service and customer satisfaction;
- Providing a high quality of service for water supply, including security of supply;
- A reliable service to remove and treat wastewater:
- Efficient delivery of services, i.e. value for money;
- Achieve compliance with public health and environmental standards; and
- Environmental performance (for example, a good quality water environment).

In its RC3 business plan, Irish Water provided a list of capital projects and programs that it intends to deliver over the RC3 period. These projects and programs are designed to achieve a range of outcomes. Some projects and programmes will deliver on more than one outcome. Below, we group the expected outcomes, and what outputs will deliver those outcomes, across the high-level categories that we are focusing on for the RC3 period – namely water supply – quality of service, security of water supply, environmental performance and wastewater service. These metrics were revised during the consultation period, and the CRU here reports on the revised metrics provided

by Irish Water. These outputs and outcomes represent the delivery obligations that Irish Water is now proposing to deliver during RC3, and the associated costs to deliver these are assessed in the remainder of this decision paper.

The table below sets out the outcomes which Irish Water intend to deliver over the RC3 period. It shows the value previously consulted on and the updated figures which Irish Water now propose to deliver.[11]

| Revenue Control 3 Outputs & Outcomes | | | |
|---|---|---|---|
| | Change over RC3 period | Updated Change over RC3 period | Variance |
| **Water Supply - Quality of Service** | | | |
| Population on a boil water notice for more than 200 days | 5 | No update provided | N/A |
| Number of Water Treatment Plants with Ortho-phosphate Dosing | 81[12] | 27 | -67% |
| Number of Water Supplies removed from the EPA's RAL | 34 | 13 | -62% |
| Reduction in the number of properties with risk of Microbiological Non-Compliance | 634,839 | 561,915 | -11% |
| Reduction in the Number of properties with risk of THM Non-Compliance | 68,949 | 132,122 | 92% |
| Number of Common Lead Service pipes in the network | 11,168 | No update provided | N/A |
| Number of individual Lead pipes in the network | 8,139 | No update provided | N/A |
| Number of Lead Services replaces | 41,600[13] | 13,231 | -68% |
| | | | |
| **Security of Water Supply** | | | |
| Leakage Reduction (ML/day) | 176 | 176 | 0% |
| Additional Water Supply Capacity (ML/day) | 71 | 46 | -36% |
| | | | |
| **Environmental Performance** | | | |

11 Not all outcomes were updated and some outcomes not listed in the table above have been updated by Irish Water. Some outcomes have reduced due to work completed in before the end of 2019.
12 Irish Water stated that the figure of 81 should have read 68 as 81 a cumulative figure which includes sites with ortho-phosphate treatment by the end of 2019.
13 Irish Water stated that the figure of 41,600 should have read 15,700 as 41,600 is a cumulative figure which includes lead services replace pre 2020.

| Revenue Control 3 Outputs & Outcomes | | | |
|---|---|---|---|
| Number of agglomerations removed from EPA's Priority Urban Area Action List | 57 | 41 | -28% |
| Wastewater treatment works compliant with Urban Waste Water Treatment Directive (Population Equivalent) | 314,656 | No update provided | N/A |
| Number of Wastewater Treatment Plants overloaded serving >2000 population | 1 | No update provided | N/A |
| Number of Wastewater Treatment Plants overloaded serving < 2000 population | 1 | No update provided | N/A |
| Number of Agglomerations in the ECJ Urban Waste Water Treatment Directives | 15 | 10 | -33% |
| Additional Wastewater Treatment Capacity (Population Equivalent) | 1,247,348 | 1,158,984 | -7% |
| Number of Wastewater Treatment Plants compliant with EPA discharge increase ELVs | 8 | No update provided | N/A |

*Table 11 - Irish Water's outputs and outcomes for the RC3 period*

In addition to these water and wastewater service-based outcomes, the CRU also specifies, within the domestic and non-domestic handbooks expectations of levels of customer service that Irish Water needs to meet. During RC3, Irish Water will be implementing several new water policy decisions, including a new approach to non-domestic tariffs, as well as excess usage charges for domestic customers. The CRU expects that these policies will be implemented by Irish Water with no reduction in the level of customer service provided. The customer service outcomes are reported on in the annual performance assessment reports published by CRU (discussed below).

**Outputs**

Outputs are the observable and measurable activities, actions or achievements that Irish Water must deliver to bring about the outcomes that customers and broader society value. Outputs are more easily measured and monitored than outcomes and are more likely to be within Irish Water's control. In general, they do not explicitly reflect things that customers and society value in themselves, but they contribute to achieving those things.

The fact that we have specified outputs in the revenue control provides Irish Water clarity and certainty over the capital projects and programmes that they need to deliver.

Specific outputs include:

- delivering specific schemes, such as a new water treatment works or relining a specified number of mains, which could relate to a number of outcomes; and
- completing specific activities, such as a programme of replacing lead pipes, which, again, could relate to a number of outcomes.

As part of the RC3 process, Irish Water submitted a business plan to the CRU that specified a range of outputs that they intend to deliver over the RC3 period, that are aligned with the overall outcomes. Following the consultation, Irish Water submitted a revised set of outcomes and outputs, based on a revised CIP, due to changes in costs, priorities and timelines.

Following Irish Water's review of its capital investment portfolio, Irish Water submitted further updated outputs which it now expects to deliver over the RC3 period.

The table below sets out the outputs which Irish Water intend to deliver over the RC3 period. It shows the value previously consulted on and the updated figures which Irish Water now proposes to deliver.

| Revenue Control 3 Outputs & Outcomes | | | | |
|---|---|---|---|---|
| **Metric** | **Planned Delivery** | **Updated planned Delivery** | **Variance** | **Outcome Supported** |
| Number of new Treatment Plants (water and wastewater) | 45 | 42 | -7% | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Number of Existing Treatment Plants Upgraded | 125 | 73 | -42% | Environmental Performance Water Supply - Quality of Service - Security of Water Supply |
| Water Treatment Plant Capacity (Total ML/day) | 644.15 | 606 | -6% | Water Supply - Quality of Service - Security of Water Supply |
| Wastewater Treatment Plant Capacity (Total Population equivalent) | 4,169,790 | 3,440,034 | -18% | Environmental Performance |
| Number of Reservoirs Upgraded | 144 | 132 | -8% | Water Supply - Quality of Service - Security of Water Supply |
| New Watermains (km) | 682 | 424 | -38% | Water Supply - Quality of Service - Security of Water Supply |
| Rehabilitated or lined mains (km) | 2,975[14] | 461 | -85% | Water Supply - Quality of Service - Security of Water Supply |

[14] Irish Water have stated that this should have read 730km due to an error in their submission.

| Revenue Control 3 Outputs & Outcomes | | | | |
|---|---|---|---|---|
| Meters installed | 22,900 | 50,815 | 122% | Water Supply - Quality of Service - Security of Water Supply |
| New Sewers (km) | 1,004[15] | 237 | -76% | Environmental Performance - Sewerage Service |
| Rehabilitated Sewer (km) | 336 | 333 | -1% | Environmental Performance - Sewerage Service |

*Table 12 - Irish Water's outputs for the RC3 period*

***CRU Decision on Outputs and Outcomes***

The CRU notes that Irish Water is now broadly proposing a reduced level of outputs and outcomes over the RC3 period. This is very concerning to the CRU for several reasons. While the CRU recognises that priorities can change in response to a number of factors, the CRU would expect that Irish Water's planning approach to be more accurate and that such significant changes would not be required in the short space of time between Irish Water's original submission to the CRU and the updated submission.

The CRU notes that Irish Water significantly changed its capital investment plans during the IRC2 period (further discussed in section 7.3.2 below). Irish Water stated that the changes were due largely to the underestimation of project costs for projects inherited from the Local Authorities. However, Irish Water also stated that it had taken a number of actions to mitigate this risk from reoccurring, namely setting up a dedicated team to manage the project costing tool and cost database, to ensure all projects are costed suing the Irish Water Project Costing Tool and Irish Water cost database. In this instance, Irish Water has not provided sufficient information to explain the significant changes it now proposes to its Capital Investment Plan and it is concerning that this would happen again, so soon after the capital investment plan had been submitted to the CRU.

Second, while the CRU accepts that the funding cap in place as a result of the SFP means that if costs do increase, fewer outputs and outcomes can be delivered for the fixed amount of available funds for capital investment. In the consultation, the CRU proposed an allowance for construction price inflation in excess of HICP, that would enable Irish Water to incorporate costs increases within the SFP constraints, without any reduction in outputs or outcomes. That said, the CRU considers that the reductions in outputs and outcomes now proposed by Irish Water are in excess of what would be expected arising from construction price inflation, raising serious concerns for the CRU. Given Irish Water is no longer in its infancy, the CRU would not expect to see such significant changes at this stage in the revenue control process, especially with a lack of rationale from Irish Water to explain these changes.

[15] Irish Water have stated that this should have read 277km due to an error in their submission.

The CRU therefore concludes that Irish Water is now proposing to deliver less for the same amount of money over the RC3 period and while the CRU has not had time to interrogate the data provided by Irish Water on the outputs and outcomes, to the required extent, the CRU does not see the value in expecting Irish Water to deliver on an old set of proposed outputs and outcomes when Irish Water state that they cannot achieve this.

Therefore, the CRU will expect Irish Water to deliver, at a minimum, the revised set of outputs and outcomes over the RC3 period. It must be emphasised, however, that these outputs and outcomes should be the minimum which Irish Water must deliver, and the CRU expects to see additional outputs and outcomes delivered over the RC3 period, when it carries out its lookback process at the end of the RC3 period.

In addition, the CRU expects that Irish Water's external review, as required by the CRU, will encompass the revised outputs and outcomes and conclude on whether these are a reasonable level of outputs and outcomes for Irish Water to deliver.

**Inputs**

Inputs are the resources that Irish Water uses to carry out its activities or to deliver particular outputs. Examples of inputs include:

- The operating costs it incurs to deliver its services such as the number of people it employs on a particular activity (such as those employed on mains relining or replacement, operating a sewage treatment works), or/and the amount of money a regulated firm spends on a particular activity;
- The capital costs that it incurs to carry out a particular activity or delivering an output (such as how much Irish Water spends on the cost of building a reservoir or a water treatment plant, or the investment needed to upgrade a plant to comply with drinking water or environmental standards);

In its business plan submitted to the CRU, Irish Water, in conjunction with the list of outputs it plans to deliver, identified the range of capital and operating expenditure that it estimated would be required to operate its system for the five-year period, as well as to deliver the range of outputs listed above. This analysis and discussion is included in Section 4.7 below.

The CRU notes that as the outputs and outcomes have changed since the original business plan submission in November 2018, the capital expenditure estimates for projects and programmes have been updated. There has been no change in the operation cost submission provided by Irish Water, even though there is a reduction in the outcomes to be delivered over the RC3 period.

## 3.3 Irish Water's Operating Expenditure Proposals

### 3.3.1 IRC2 2017 – 2019 Operating Expenditure

At the start of IRC2, the CRU reviewed and approved a level of operating expenditure (including 2019), which was needed for Irish Water to operate its water and wastewater systems, and to meet other customer service obligations, including billing. As part of this review of Irish Water, the CRU carried out a lookback on the actual expenditure incurred by Irish Water, compared this to the amounts approved at the start of IRC2, and examined the rationale proposed by Irish Water for any differences.

Table 13 below shows CRU's allowed operating expenditure for the IRC2 period, Irish Water's actual expenditure, and the difference.

| CRU Operating Expenditure Allowance -v- Irish Water Actual Expenditure | | | |
|---|---|---|---|
| Operating Expenditure | CRU Allowance €m | IW Actual/Outturn €m | Variance €m |
| Operations and Maintenance (Incl. SLA) | 1,549 | 1,559 | 10 |
| Target Operating Model (TOM) | 310 | 301 | -9 |
| Shared Services Centre & Group | 110 | 118 | 8 |
| Irrecoverable VAT and Insurance | 53 | 59 | 6 |
| Uncontrollable Costs | 23 | 14 | -9 |
| **Total** | **2045** | **2051** | **15** |

*Table 13 - CRU Opex Allowance vs. Irish Water Outturn 2017 – 2019 (real, 2017)*

### 3.3.2 Irish Water Forecast RC3 (2020-2024) Operating Expenditure

As part of its business plan for the 2020-2024 period, Irish Water provided a forecast of its planned operating expenditure for the five-year revenue control period. This includes the operating costs for both their existing water and wastewater treatment plants, but also the costs associated with new plants that are due to come into operation during the period. Irish Water has assumed that a certain amount of operating efficiencies

Table 12 below sets out Irish Water's forecast, (2017 prices, rounded to the nearest million where

appropriate). Please see section 4 for details of the CRU's full review.

| Irish Water Proposed Operating Expenditure RC3 2020-2024 | | | | | | |
|---|---|---|---|---|---|---|
| Operating Expenditure | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m | Total RC3 €m |
| Operations and Maintenance (incl. SLA) | 464 | 383 | 314 | 326 | 332 | 1,819 |
| Target Operating Model (TOM) | 147 | 216 | 277 | 261 | 245 | 1,145 |
| Shared Service Centre & Group | 57 | 75 | 84 | 80 | 74 | 369 |
| Irrecoverable VAT and Insurance | 22 | 22 | 22 | 22 | 22 | 108 |
| Uncontrollable | 56 | 56 | 56 | 56 | 56 | 278 |
| **Total Opex 2020 - 2024** | **745** | **750** | **752** | **743** | **728** | **3,719** |

*Table 14 – Irish Water's Proposed Operating Expenditure Costs 2020-2024 (€m, 2017 prices)*

The graph below shows the level of Irish Water operating expenditure requests to 2024, the CRU allowances, including those approved in this decision, and the Irish Water actual outturns (up to the end of IRC2).

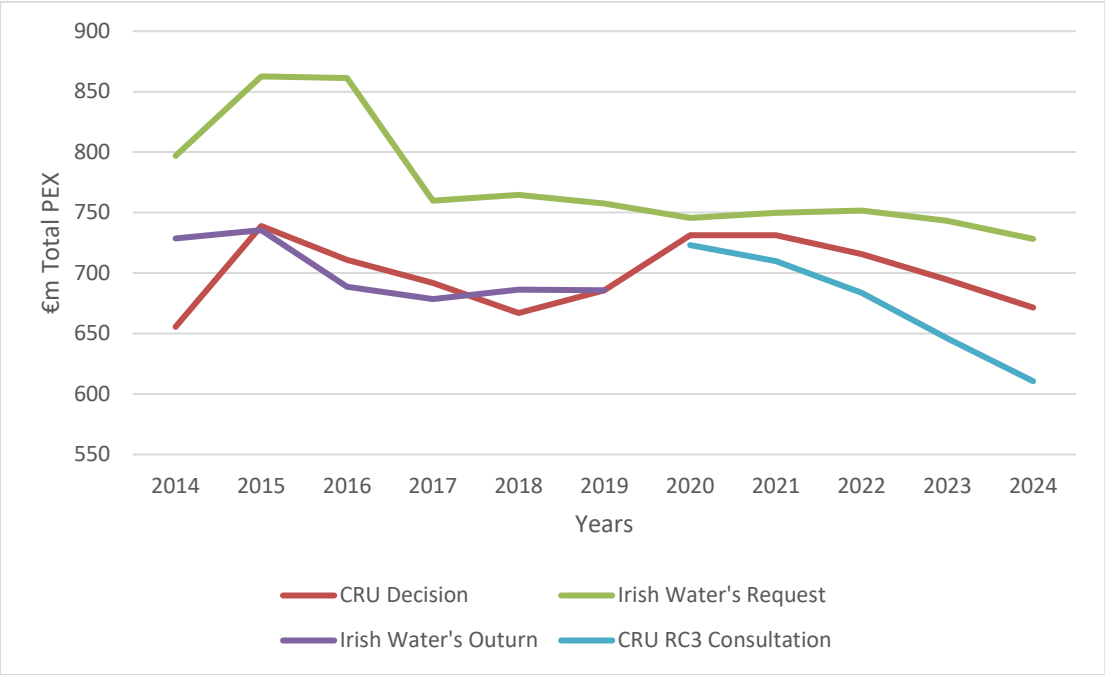


*Figure 4 - Level of Irish Water Operating Expenditure request, CRU allowance and Irish Water actual outturns (up to end of IRC2)*

## 3.4 Irish Water's Capital Expenditure Proposals

### 3.4.1 2017-2019 Capital Expenditure

The CRU allowed Irish Water €2,026m for capital expenditure during the IRC2 period in the IRC2 Decision Paper published in 2016 and the 2019 Revenue Control Decision Paper published in 2018. In its RC3 submission to the CRU in November 2018 (and following engagement with Irish Water), Irish Water provided an updated forecast capex of €2,012m for the period to the end of 2019. In relation to Irish Water's submission, Irish Water has provided:

- For network capital expenditure: the actual expenditure from January 2017 to end March 2018 and Irish Water's estimate of forecast expenditure thereafter to the end of December 2019; and
- For non-network capital expenditure: the actual expenditure from January 2017 to end September 2018 and on Irish Water's estimate of forecast expenditure thereafter to the end of December 2019.

The CRU is proposing to recognise Irish Water's network capex outturn as Irish Water has underspent and for non-network capex, the CRU is proposing to recognise the allowance with the exception of clawing back €41m for WIOF which Irish Water have advised cannot be spent during the IRC2 period due to delays in implementing WIOF but €40m of which will be required during the RC3 period as WIOF progresses.

For a review of Irish Water's IRC2 capex see Section 4.7.

| Irish Water IRC2 Capital Expenditure | | | |
|---|---|---|---|
| | CRU Allowance 2017-2019 €m | IW Actual/Forecast 2017-2019 €m | Variance €m |
| Total Network Capex | 1,832 | 1,902 | +70 |
| Non-network Capital Expenditure | 194 | 158 | -36 |
| Customer Contributions | N/A | -89 | -89 |
| Uncategorised spend | N/A | 40 | +40 |
| **Total Capex** | **2,026** | **2,012** | **+14** |

*Table 15 – Irish Water IRC2 Capital Expenditure*

### 3.4.2 Irish Water's Forecast RC3 (2020-2024) Capital Expenditure

In conjunction with the request for operating expenditure, Irish Water also submitted a request for capital expenditure in order to deliver the outputs and outcomes included in the Irish Water business plan. In its response[16] to the CRU's RC3 consultation paper, Irish Water informed the CRU that Irish Water had undertaken a review of the Capital Investment Plan as a result of the CRU's proposed construction inflation allowance as set out in the consultation paper along with other change drivers. These include new emerging needs, scheduling updates and the identification of additional requirements as initial project scoping progressed and developed. Irish Water later provided further updates to the CRU following a further review of its outputs and outcomes.

The CRU is very concerned that Irish Water would update its outputs and outcomes so significantly during the revenue control process, however, the CRU has analysed and considered these new outputs and outcomes to the extent possible in the time available. Irish Water has also provided updated cost forecasts for much of its anticipated capital expenditure programme for the RC3 period. For a review and assessment of the reasonableness of Irish Water's proposed capital expenditure for the RC3 period see Section 4.7.

Irish Water's RC3 submission to the CRU includes two key components:

1. The Capital Investment Programme (CIP) sets out Irish Water's proposed delivery of projects and programmes that Irish Water consider necessary to achieve a range of outcomes, as well as the associated spend to deliver the relevant outputs. The CIP covers core water and wastewater capital investments such as water and waste water

[16] Published alongside this paper.

treatment plants and networks, national programmes such as the disinfection programme and the national lead programme and capital maintenance on their existing assets. Irish Water has provided the CRU with an updated list of outputs and outcomes which it states it will achieve over the RC3 period along with updated forecast costs for many of the projects which will be carried out over the RC3 period.

2. The non-network capital investment request (NNC) addresses proposed expenditure for the RC3 period on associated matters such as information technology (IT) and fleet and facilities.

Together these two requests are referred to as the Irish Water capital investment submission in this paper. To further supplement the CIP, Irish Water submitted a Business Planning Questionnaire providing a detailed breakdown of Irish Water's proposed project and programmes including yearly capital expenditure profiles, investment drivers and associated outcomes for projects and more developed programmes. Irish Water provided the CRU with an updated and amended version of its planned investment programme, at a high level, in late October 2019. The CRU has serious concerns with the updated project and programme costs submitted by Irish Water and due to the timing of the submission, has not had time to interrogate this data to the extent required. The changes between this planned expenditure and the consulted-on plan are discussed below in section 4.7.

Irish Water are continuing to request a total of €4.8bn in network capex and €425m in non-network capex for the RC3 period. Irish Water has, however, provided an annual profile of this request to the CRU for non-network capex and the top 100 capex projects and programmes for network capex.

## 3.5 Summary

In its IRC2 decision, the CRU allowed €2,026m in capital expenditure and €2,045m in operational expenditure.

In its submission to the CRU in November 2018, Irish Water submitted a revised forecast of €2,012m in capital expenditure (an underspend of €14m) and €2,051m in operating expenditure (an overspend of €6m).

A detailed examination of the operating and capital expenditure for IRC2 can be found in Section 7, while the proposed RC3 expenditure is considered in Section 4.

For the forecast RC3 period, Irish Water has requested €3,719m in operating expenditure and €5,257m in capital expenditure.

# 4. Review of 2020-2024 Costs

## 4.1 Introduction

As discussed in Section 3, Irish Water made a submission to the CRU outlining how it intends to operate the water and wastewater system during the RC3 period, and what capital projects and programmes it plans to deliver, along with the associated outputs and outcomes. The outputs and outcomes are described in section 3.2, and in this section, we examine the costs that Irish Water estimate will be required to deliver those outputs and outcomes. The planned expenditure falls into two categories, operational expenditure and capital expenditure. We review these separately below.

## 4.2 Review of Operational Expenditure

### 4.2.1 Introduction

This section details Irish Water's proposed operating costs for the RC3 period, the CRU's view of Irish Water's proposals, and the CRU's decision on Irish Water's allowance for the period. In its role to ensure value for money for customers, the CRU examined the costs that Irish Water proposed to incur, to meet a range of operating outcomes. By setting an appropriate allowance for these costs, the CRU drives Irish Water to achieve efficiencies while still delivering an appropriate level of service.

In developing its decision, the CRU reviewed Irish Water's business plan which details Irish Water's proposed approach to operating its water and wastewater treatment plants, its customer service operations, and other operating activities. This operational expenditure is identified by specific functional areas (cost categories). The CRU held detailed workshop sessions with Irish Water in relation to its business plan, and reviewed supporting information requested through a Q and A process. The CRU also reviewed and fully considered the 18 responses to the consultation in reaching its decision.

The CRU commissioned a comparative benchmarking exercise to assist its assessment of Irish Water's operating costs. This benchmarking includes a comparison of Irish Water relative to UK water and wastewater companies, considering factors in equivalence of scale. The CRU considers the average level of operating costs met by mature English and Welsh companies as an appropriate target at this stage for Irish Water, to move to over time.

In setting out its decision below, the CRU acknowledges that Irish Water is operating within a different environment than many comparator utilities. The CRU acknowledges the challenge Irish

Water faces in reducing its operating costs while also required to meet increased levels of compliance as well as the impact of strong economic growth on the demand for water and wastewater services (and maintaining adequate levels of service). The CRU also acknowledges that Irish Water inherited an operating model from the local authorities and that implementation of its WIOF programme is key to its transition to an efficient single public utility. However, this transition is not unique to Irish Water.[17]

The CRU does not expect Irish Water to reduce its operating costs to the level of efficient UK water and wastewater companies immediately, as such a rapid change would likely have a negative impact on the level of service experienced by customers. However, the CRU does expect Irish Water to make progress over the RC3 period towards an efficient level of costs[18] by making necessary operational process changes.

The CRU has also considered the rate at which Irish Water should move towards an efficient level of operating costs (i.e. comparable to the average costs incurred by English and Welsh water and wastewater companies). It considered evidence from utilities at comparable stages of development, which supports an achievable challenge for Irish Water while being cognisant of the context in which it operates. Sections 4.4 and 4.5 discuss benchmarking, and the expected rate of improvement in Irish Water's operating costs in further detail.

In reaching its decision on Irish Water's operating expenditure allowance for RC3, the CRU also reviewed each of Irish Water's operating cost categories (as provided by Irish Water in its business plan). Each cost category is explained and detailed in section 4.2 and 4.3 below.[19]

While it has examined each cost category, the CRU has set an overall operational expenditure allowance rather than an individual allowance for each specific cost category. This is because some cost categories are substitutes for each other, and the CRU considers Irish Water should have operational flexibility to determine the optimal way to deliver services to its customers. For example, as Irish Water transitions to a single public utility, the level of costs categorised as 'Target Operating Model costs (TOM)' will increase, while there will be a corresponding decrease in the level of costs incurred under the 'Operating and Maintenance costs (O&M incl. SLA costs)' category. Irish Water will be required to manage its expenditure within this overall allowance.

The CRU's analysis indicates that there are areas where Irish Water can improve on its efficiency. Under the approach adopted by the CRU it will be up to Irish Water to determine how

[17] Scottish Water began operations in 2002, taking over the functions of three regional operators who in turn replaced the functions of the Scottish Regional Councils (nine mainland regions and three island areas) in 1996.
[18] The average level of operating costs met by water and wastewater companies in England and Wales.
[19] The CRU requested a different line by line breakdown however Irish Water was unable to provide this information.

and where it delivers improvements by using its own specialist knowledge and skills. This approach is consistent with that taken by the CRU for Irish Water for IRC1 and IRC2, and for other energy utilities in Ireland. It is also the approach taken by water regulators in other jurisdictions.

### 4.2.2 Review of Irish Water Operating Cost Categories (2020 – 2024) & Overview of CRU Decision

As part of its RC3 submission, Irish Water requested a total of €3,719m to cover its operating costs for 2020-2024. Irish Water state that this request is inclusive of its proposed annual efficiency target and growth forecast for the period.

Irish Water's operating costs are broken into the following cost categories:

- Operations and maintenance (incl. SLA and Design Build & Operate (DBO) expenditure; 49% of total proposed opex);
- Target Operating Model (31%);
- Group and Shared Service Centre (10%);
- Irrecoverable VAT & Insurance (3%) and,
- Uncontrollable operating costs (7%).

**CRU Decision**

The CRU has decided on an efficiency challenge for Irish Water on all costs deemed by the CRU as 'controllable' of 2% year on year for the first two years of the RC3 period (2020 & 2021), increasing to 4% in 2022, and finally to 6% year on year for the final two years of the period (2023 & 2024). This efficiency challenge is based on the 2019 actual operating expenditure as the starting point.

The CRU has also decided to allow Irish Water €188m to cover the costs associated with operating new and upgraded assets which are due to become operational during RC3, in order to meet EU and national compliance requirements. The CRU has decided that this allowance will be built into Irish Water's controllable operating costs (as consulted on) and is will be subject to the above efficiency challenge. This leads to an increase in Irish Water's overall approved operational expenditure of €171m for the RC3 period, compared to the consulted-on level. For further details of the CRU's efficiency challenge please see section 4.3 below.

The CRU does not specify exactly where these savings are to be made and it is not proposing that Irish Water achieve savings in each individual cost area as profiled above, but rather that its total savings over the RC3 period amount to €174m, compared to the Irish Water request.

The CRU has also decided to provide Irish Water with an allowance of €4m for innovation projects over the RC3 period. This allowance is not subject to the CRU's efficiency challenge and is discussed in detail in section 7.2.7.

| Overview of Irish Water's Operating Cost Request and CRU Decision for RC3 | | | |
|---|---|---|---|
| **Operating Costs** | **Irish Water's Request (2017 monies, €m)** | **CRU Consultation Proposal (2017 monies, €m)** | **CRU Decision (2017 monies, €m)** |
| Total Controllable Costs | 3,441 | *3,091* | 3,263 |
| Uncontrollable Costs | 278 | *278* | 278 |
| Innovation Fund (one off allowance not subject to efficiency challenge) | 4 | *4* | 4 |
| Total Operating Costs | 3,719 | *3,373* | 3,544 |
| Total Savings to Customer from CRU Efficiency Challenge | | *346* | 174 |

*Table 16 - Overview of Irish Water's Operating Costs and CRU's Decision for RC3 (figures are rounded to the nearest €m)*

### 4.2.3 Controllable Operating Costs

In this section we examine the controllable operating costs that Irish Water estimate that they will incur over the five-year revenue control period. Irish Water reports its controllable operating costs under several different headings - Target Operating Model (TOM), Operation and Maintenance (SLAs), and Shared Services. In addition, there are other controllable operating costs such as VAT and Insurance.

While Irish Water's business plan has these broken down by categories, we examined them in aggregate. The reason for this is that the cost category distinction is driven by the Irish Water business model, rather than by any outcome objective. Assessing these costs in aggregate also facilitated the benchmarking of Irish Water against other companies, who operate with a more integrated business model. It also enabled the CRU to take a holistic approach to assessing value for money for customers in the delivery of its services.

***Operation & Maintenance (incl. SLA Costs)***

Upon its establishment, Irish Water was required to enter into Service Level Agreements (SLAs) with each local authority for the delivery of water and wastewater services. The first SLA runs for a period of 12 years, and is due to expire in 2025, after the end of the RC3 period.

The costs in the Operation and Maintenance category are referred to as 'SLA costs' and relate to the costs of delivering water and wastewater services in partnership with the local authorities through SLAs (where the statutory responsibility has transferred to Irish Water). SLA costs also include the operational component of Design Build and Operate (DBO) costs which are contracted to external suppliers. SLA costs account for the largest proportion of Irish Water's

proposed operational expenditure (49% of total proposed opex or 53% of Irish Water's total proposed controllable opex).

***Target Operating Model (TOM)***

TOM refers to the business capabilities and processes within Irish Water. It describes the organisation structure, processes and systems that Irish Water need to carry out its business activities. Key functions within the TOM cost category are Asset Management, Customer Operations, Support Services, Operations and Maintenance, Finance and Facilities.

The activities carried out within the TOM category accommodate the SLA partnership between Irish Water and the 31 Local Authorities to deliver water services. They enable regional and national operations to be co-ordinated between Irish Water through the SLAs to deliver water services in an efficient, coordinated manner. TOM costs account for 30% of Irish Water's proposed operational expenditure.

***Shared Services & Group Centre***

Irish Water, as subsidiary of the Ervia group, shares several functions with its sister utility company Gas Networks Ireland. These functions are referred to as Shared Services and Group Centre, the costs of which are spilt on a 65:35 basis, reflective of the activity level of each utility and the relative size of each network (Irish Water 65%; Gas Networks Ireland 35%). The same approach to allocating Shared Services and Group Centre costs between Irish Water and Gas Networks Ireland was taken at IRC2.

Shared Services and Group Centre accounts for 10% of Irish Water's proposed operational expenditure. Shared Services costs relate to support across the Ervia group in the areas of finance, procurement, facilities, HR and IT. Group Centre costs refer to those related to managing governance, strategic direction and risk. Irish Water state that the Group Centre is critical to supporting Irish Water in business projects such as the implementation of the Single Public Utility.

***Irrecoverable VAT & Insurance***

All Irish Water's costs are inclusive of VAT however, Irish Water is exempt from VAT, meaning it cannot recover VAT from Revenue. As Irish Water cannot recover VAT in the same manner as other companies it has included it as a separate cost, to be collected through the revenue control process. This is referred to as 'Irrecoverable VAT'. Irrecoverable VAT does not include expenditure on shared services within the Ervia Group Centre. These items are costed exclusive of VAT as these entities have VAT recoverability.

Insurance costs relate to a centralised Self-Insured Retention (SIR) model of insurance managed through Ervia. The SIR model is in line with the existing approach adopted by Gas Networks Ireland and other water utilities in the UK.

**Irish Water's Request**

***Operation & Maintenance (incl. SLA Costs)***

As part of its RC3 submission Irish Water requested €1,819m to cover its SLA costs for 2020 – 2024, an average of €364m per annum. There are numerous components within this amount, with payroll, goods and services, energy, overheads and DBO contracts accounting for majority of the costs. Irish Water state that this request includes its targeted efficiencies for the RC3 period.

In comparison, Irish Water's IRC2 request was €546m for 2017, €547m for 2018 and €523m for 2019.

***Target Operating Model (TOM)***

TOM costs are comprised of Labour cost (e.g. payroll, training, recruitment etc.) and non-Labour costs (e.g. customer operations, billing, etc.). Irish Water requested €1,145m to cover its TOM costs for 2020 – 2024, an average of €229m per annum. Irish Water forecasts that TOM costs will significantly increase in the years 2019[20] to 2022, as the functions carried out by the local authorities are expected to transfer to Irish Water. Irish Water explain that this increase is offset by the corresponding reduction in SLA costs, as it moves to the Single Public Utility model.

Irish Water state TOM costs will peak in 2022, and then decline by around 10% (from the 2022 peak) by the end RC3 (2024) as a result of realising efficiencies from Irish Water's transformation to an efficient Single Public Utility model.

In comparison, Irish Water's IRC2 request was €119m for 2019, €152m for 2018 and €153m for 2017.

[20] CRU approved €97m TOM costs for 2019 (CRU18/221) Irish Water's revenue control 2019 decision paper, pg. 34)

***Shared Services & Group Centre***

Irish Water also requested €369m to cover its Shared Service and Group Centre costs for 2020 – 2024. Irish Water state that activity levels in Shared Services have been significantly rising over the IRC2 period and that this is expected to continue into the majority of RC3.

Irish Water note in its RC3 submission that the increase in Shared Service costs is a result of increased capital expenditure and an increase in the level of operational support required for asset management applications and software.

***Irrecoverable VAT & Insurance***

Irish Water requested €108m to cover its irrecoverable VAT and Insurance costs for 2020 – 2024. This request is broken down as €4.9m for each year of RC3 to cover its irrecoverable VAT, and €17m for each year of RC3 for its Insurance costs.

The table below shows Irish Water's request for the RC3 Period:

| **Irish Water's proposed Controllable Operating Costs for the RC3 period** | | | | | | |
|---|---|---|---|---|---|---|
| | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m | Total |
| **O&M (incl. SLA & DBO cost)** | 464 | 383 | 314 | 326 | 332 | **€1,819m** |
| **Target Operating Model (TOM)** | 147 | 216 | 277 | 261 | 245 | **€1,145m** |
| **Shared Services & Group Centre** | 57 | 75 | 84 | 80 | 74 | **€369m** |
| **Insurance & Irrecoverable VAT** | 22 | 22 | 22 | 22 | 22 | **€108m** |
| **Total Controllable Operational Expenditure** | | | | | | **€3,441m** |

*Table 17 - Irish Water's proposed controllable operating costs RC3 period (2017 monies, rounded to nearest €m)*

In terms of the overall cost trends, Irish Water identified two factors that will affect the overall level of operating costs during the RC3 period (the costs associated with these factors are included in Irish Water's overall operational expenditure request).

First, in its submission to the CRU, Irish Water identified specific areas of growth where it is experiencing increasing costs. Irish Water states that it expects to face €122m[21] (in aggregate €360m) in upward costs relating to growth during the RC3 period. Irish Water categorised these costs in the following categories:

- **Compliance / Delta Opex** – the additional operational expenditure required to operate and maintain new assets which address the compliance deficit in its current water and wastewater treatment, over and above the operational costs to deliver the current service levels. Irish Water state that this expenditure is to meet the requirements of the Water Framework Directive (WFD) and the Urban Wastewater Treatment Directive (UWWTD). Irish Water also note that increased activity in sludge management; a new Fat Oils and Grease project; and a new national standard approach to management of Trade Effluent are all the key growth cost drivers.
- **External factors** – costs arising from population and economic growth; the impact of climate change and market driven increase to energy prices. Economic and population growth, according to Irish Water, are putting pressure on the cost of key variable inputs like energy and chemicals, which are forecast to increase in line with GDP projections. Irish Water state that its energy costs are growing due to the rising trend in prices of international fossil fuel. Irish Water has also included costs associated with responding to damaging extreme weather events in the future.
- **Policy** – Irish Water indicated that various aspects of government policy are leading to an increase in customers served and the length of network to be serviced. These include an increase of 1,900 residential sites, an associated network expansion of 1,500km, a transfer of 250 Group Schemes to Irish Water that require an increase in network length of a further 1,500km, and cooperation in the operation and maintenance of Developer Provided Infrastructure Schemes. Other cost drivers in this category are statutory requirements related to waste management; promoting water conservation (educating customers to reduce excessive use charges); and costs relating to non-domestic tariff harmonisation.
- **Industry Transformation** –additional operating costs associated with transformation relate operation site maintenance standard and site security. Certain security levels on Irish Water sites are required to protect Irish Water property, assets, and water supply. They are also needed to ensure the safety of Irish Water and LA partner staff, the public

[21] Irish Water's proposed growth costs (€122m) are included as part of its overall operational expenditure request to the CRU. However, Irish Water did not provide a breakdown of these costs into its different cost categories (TOM cost SLA etc.).

at large, and meet Irish Water's obligations under the Safety, Health and Welfare at Work Act 2005.

Second, Irish Water states that it is targeting €130m of efficiencies[22] across its business operations[23] for the RC3 period. Irish Water has claimed that realisation of its targeted efficiencies is critically dependant on Irish Water's transformation to the Single Public Utility during the RC3 period. In materials provided as part of the response to consultation, Irish Water indicated that this value of €130m was the end year value, and that aggregate efficiencies over the entire five-year period amounted to €319m. These are discussed in more detail in section 4.5.3 below.

### 4.2.4 Uncontrollable Operating Costs

Irish Water's operating costs are split into two categories - controllable and uncontrollable:

- Controllable operating costs are those over which the CRU considers the utility has control, such as staff costs, consumable materials, etc.
- Uncontrollable operating costs are not directly controlled by the Irish Water, such as levies and rates.

This section outlines Irish Water's uncontrollable costs.

Where the CRU accepts that a cost is uncontrollable it generally will allow an estimate of the cost for the period but will correct the allowance for the actual cost when completing the ex-post review. This ensures that if these costs are higher than expected the Irish Water's revenue is adjusted upwards to ensure it recovers these costs. Equally, if these costs are lower than forecast Irish Water's revenue is adjusted downwards to ensure it only receives enough revenue to cover these costs.

As part of its RC3 submission Irish Water requested €278m to cover its Regulatory Levies and Commercial Rates for 2020 – 2024. The table below shows a further year by year breakdown of Irish Water's request.

Commercial Rates (i.e. Local Authority Rates) are an annual charge on non-domestic property. Irish Water was not required to pay rates for the IRC2 period under the Water Services Act 2015.

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[22] Pg. 13 Irish Water's Look Forward submission (CRU19/091i)

[23] Under the CRU's proposed approach Irish Water is not required gain efficiencies within a specific cost category but rather achieve overall efficiency gains within total opex.

However, under the Water Services Act 2017, Irish Water is now required to pay commercial rates from 2020. Irish Water estimate these rates €50m per annum resulting in a large increase in uncontrollable costs relative to the CRU's IRC2 decision.

Regulatory levies include the CRU levy and EPA licence fees for which Irish Water has limited control.

The table below shows Irish Water's Uncontrollable RC3 operating costs.

| **Irish Water's uncontrollable for RC3 period** | | | | | | |
|---|---|---|---|---|---|---|
| | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m | Total |
| **Regulatory Levies** | 6 | 6 | 6 | 6 | 6 | €29m |
| **Commercial Rates** | 50 | 50 | 50 | 50 | 50 | €249m |
| **Total Uncontrollable Operating Costs** | 56 | 56 | 56 | 56 | 56 | **€278m** |

*Table 18 - Irish Water's uncontrollable opex for RC3 period (rounded to the nearest €m 2017 monies)*

## 4.3 CRU Decision on Irish Water Operating Costs 2020-2024

### 4.3.1 Controllable Operating Costs

The CRU notes the overall trend in controllable operating costs proposed by Irish Water during the RC3 period, which shows an increase in the early years, followed by decreases in the latter years of the revenue control. In this review, as stated above, the CRU looked at the trend in the overall level of controllable costs. The graph below shows the level of Irish Water operating expenditure requests, the CRU decisions (allowances) and the Irish Water actual outturns (up to the end of IRC2).

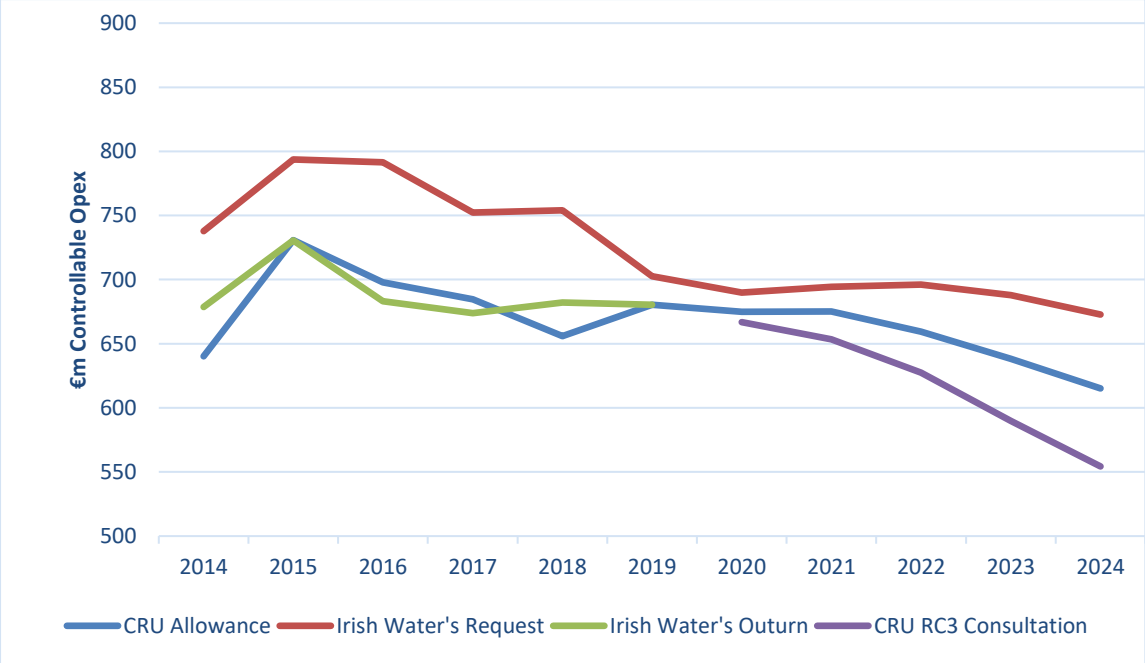


*Figure 5- Level of Irish Water Controllable Operating Expenditure Request, CRU Allowances and Irish Water actual outturns (up to the end of IRC2)*

**Operation and Maintenance (incl. SLA costs), Target Operating Model, Shared Services & Group Centre**

The CRU notes that SLA costs form the majority of Irish Water's proposed operational expenditure. However, Irish Water forecasts a significant reduction in SLA costs from €523m in 2019 to €332m in 2024 at the end of the RC3 period. Irish Water state that these savings will be achieved through a steady decrease in payroll, resulting from the transition to the Single Public Utility model. However, the CRU understands these savings will be offset by an increase in other

labour cost categories, reflected in an increase in TOM from €105m to €246m over the same period.

The CRU notes that the increase in Shared Service costs, together with the increase in TOM costs above is offset by the decrease in SLA costs over RC3. The CRU acknowledges that the increase in Shared Service costs up to 2022 and subsequent decrease in the following years is consistent Irish Water's proposed timing for transformation to the Single Public Utility, as outlined in its RC3 submission made in November 2018.

As part of its review the CRU requested Irish Water to provide a breakdown of its TOM cost at a function level. The CRU also requested Irish Water to detail the breakdown of Labour and Non-labour as it has done for previous revenue controls. In its response to the CRU, Irish Water state that a more detailed breakdown at a functional level is not available at this time as the programme for transformation to a single public utility is of enormous scale and complexity requiring engagement and agreement with multiple stakeholders. The CRU understands that Irish Water is currently engaging with these stakeholders and that outcome of these engagements will impact on the more detailed allocation of costs, but that the achievement of the stated operating cost levels, is predicated on transitioning from a SLA based service delivery to services provided directly by Irish Water staff.

***Irrecoverable VAT & Insurance***

The CRU notes that Irish Water's request for irrecoverable VAT and Insurance costs is in line with its 2019 request and the SIR insurance model is in line with the existing approach adopted by Gas Networks Ireland and other water utilities in the UK.

***Employment costs***

The CRU compared Irish Water's unit costs at a functional level[24] to UK comparators (in addition to its econometric benchmarking analysis) and the results of this exercise indicates that Irish Water's has higher employment and material costs, of which SLAs comprise the larger element. The CRU acknowledges the proposed operating cost efficiencies included in Irish Water's business plan are largely based on Irish Water's WIOF programme (i.e. its transformation to a single public utility), and the elimination of certain charges that are payable by Irish Water to the Local Authorities. The CRU also acknowledges Irish Water's assertion that the WIOF programme is central to driving efficiencies and can lead to significant savings for customers. However, the CRU is of the view that there are additional areas where Irish Water can make savings during the

[24] CRU carried out a unit cost analysis on Irish Water's functional expenditure (employment costs, energy, hired contracted services, materials) on per population served basis

RC3 period. The CRU's view is based largely on the benchmarking exercise it carried out, which is discussed in detail in section 4.4 below.

**Growth and Compliance**

Irish Water states that it is facing upward cost pressures relating to additional compliance requirements, growth in its asset base and the economy, changes in government policy and costs relating to the move to a single public utility model of operating. The CRU considers that these additional costs are factored into the benchmarking analysis, as the benchmarking considers the costs of serving more customers, with longer networks, etc.

IRC2

As part of the IRC2 review, the CRU considered a number of factors and challenges faced by Irish Water when setting the operating cost component of the revenue allowances. In the establishment years of Irish Water, it was noted that certain activities were not undertaken uniformly across all local authority areas. A uniform approach to service delivery across Ireland assists in improving service for customers and environmental compliance, as well as allowing Irish Water to drive efficiencies and savings within its cost base over time. Therefore, in its IRC2 decision (2017 - 2018) the CRU provided Irish Water with an additional *"specific one-off allowance"*[25] of €19.8m (€9.9m per annum) to 'invest in capabilities'. This allowance reflected the cost associated with additional work to be undertaken to ensure effective operation of required activities and covered the following areas:

- Wastewater source control and licensing and the management of trade effluent from customers, which was not always carried out in a uniform way by the majority of local authorities.
- Asset delivery: Irish Water stated that some required services are not completed uniformly by all local authorities and need to be consolidated. These include Project Control, Design Services, Land Planning and Wayleaves.
- Data capture: Irish Water stated that prior to it taking responsibility in 2014, very limited data capture and planned maintenance was carried out by the Local Authorities. Irish Water stated that it must go to all currently identified Irish Water sites (circa 4,000 individual relevant sites), to capture missing asset data and maintenance practice.

[25] Pg. 69 CRU16342 CRU's IRC2 Decision paper

- Regional monitoring: Irish Water stated that a lack of available monitoring capability in the local authorities has led to serious non-compliance issues at a number of Irish Water sites. It stated that resources are urgently required to improve monitoring, reporting and analysis of regional water and wastewater plant operation and compliance.

The CRU expected the costs associated with this work to be incurred by Irish Water on a 'once-off' basis. The purpose of this allowance was for Irish Water to invest in processes which would benefit customers in terms of service delivery, and in time, also result in cost savings. However, these costs now appear to have been built into Irish Water's recurring operating cost base.

*IRC2 2019 Extension*

Subsequently, in its IRC2 decision (2019 one-year extension) the CRU provided Irish Water with an additional expenditure allowance of €34.9m to address additional growth and compliance requirements, address any essential additional expenditure gaps and continue investing in capabilities. The CRU viewed this work as bringing benefits to customers and leading to increased environmental compliance. However, the CRU stated that it expects the cost of this work to either reduce over time or be more than offset by reductions in costs in other areas. The CRU also noted in its IRC2 decision (2019 one-year extension) "it does not foresee any 'additional expenditure' allowances being granted as part of RC3 and expects that all of Irish Water's controllable opex requests for the RC3 are included, whole, as part of a single RC3 submission." The CRU decided to allow an additional allowance (the €34.9m noted above) together with Irish Water's controllable operating expenditure allowance. The CRU was clear in its decision that this additional allowance was provided for following reasons:

- To extend the 'investing in capabilities' one-off allowance for 2019 (€9.9m).
- €15m to address additional compliance requirements such as drinking water compliance and sludge management.
- A once-off allowance of €10m for taking in charge of housing estates, administrative costs associated with customer billing, GDPR.

The CRU also granted Irish Water the flexibility to spend a further €26m in controllable operating expenditure allowance should it be required during 2019. The CRU considers Irish Water capable of prioritising essential items however the funding model[26] (and the short nature of the 2019 revenue period) constrained Irish Water. The CRU was clear in its IRC2 decision (2019 one-year extension) that this level of funding would not set precedent for future review periods.

[26] Under the WSA 2017 Irish Water is funded through voted Government expenditure for the provision of domestic water and wastewater services.

The objective of making such one-off allowances was that they would facilitate reductions in operating costs going forward, and therefore Irish Water could achieve increased efficiencies without a negative impact on customer services.

*RC3*

The CRU accepts that Irish Water will have some upward cost pressures over the RC3 period (2020-2024). However, the CRU notes that utilities in other jurisdictions absorbed certain cost pressures while substantially reducing costs in the years following the introduction of economic regulation, and improved service levels (this is discussed in further in section 5.2 below). The CRU is of the view that Irish Water should also be expected to absorb these cost pressures. For example, as Irish Water continues to reduce leakage levels its operating costs should reduce.

In considering Irish Water's request for increased costs associated with compliance, specifically its request for 'delta opex' (or 'enhancement opex' associated with increased capital expenditure), the CRU notes that Ofwat does not make additional allowances for such costs[27]. The CRU however acknowledges that Irish Water may be different to water and wastewater utilities in England and Wales where 'delta opex' relates to first time provision of a water / wastewater service (for example, first-time provision of wastewater treatment) rather than upgrading existing levels of service. While the CRU acknowledges there may be additional operating costs associated with first time provision of a water / wastewater service, the CRU also expects these additional costs to be somewhat offset by improved ways of working and operating, particularly given the one-off opex allowances provided in earlier revenue controls to achieve this outcome.

In the consultation, the CRU did not propose to make any specific allowances for Irish Water's RC3 growth request. The CRU noted that in previous revenue controls Irish Water was explicitly funded by the CRU to address additional growth and compliance requirements, address any essential additional expenditure gaps and continue investing in capabilities. The CRU considered Irish Water's growth request when setting an appropriate efficiency challenge for Irish Water and considered that it was implicitly included in the operating expenditure allowance proposed by the CRU in the consultation, since the CRU set the baseline for RC3 opex at the 2019 out-turn level. In benchmarking Irish Water, the CRU allowed for growth in the number of connections, and increased network length (i.e. determined the efficient level of costs for the expected larger network in 2024). The benchmarking exercise also assumed that Irish Water was achieving similar levels of compliance as its UK peers, and this was the basis for the CRU's efficiency challenge.

However, following the provision of more detailed information by Irish Water on the annual cost

[27] Ofwat (2019) Securing cost efficiency – our approach to setting efficient cost baselines at the IAP, technical appendix 2 securing cost efficiency, p. 19

increases associated with various activities, and further engagement with Irish Water, it was clear that given the compliance gap that existed, Irish Water would not be in a position to meet improved compliance requirements within the proposed level of operating expenditure, without a negative impact on customers, or delaying achieving improved environmental compliance.

The difference between Irish Water and other companies (that already meet required compliance standards), is that when they bring new assets into operation, they are replacing older, less efficient assets. Therefore, the addition of new and upgraded assets leads to a reduction in costs (as the new assets are more efficient than those they replaced), or no change in costs. In the case of Irish Water, this may not apply, as in many cases when new assets are brought into operation, they are incremental (rather than replacing old assets).

In a submission to the CRU in response to its consultation, Irish Water identified the specific projects driving these increased operating costs, relative to the costs incurred during IRC2. The new and upgraded assets outlined by Irish Water as driving its 'delta opex' are designed to address existing compliance deficits in water / wastewater treatment to meet EU requirements.

The CRU accepts that as a result of legacy underinvestment in water services, Irish Water has not been operating at the level needed to meet environmental compliance requirements. The CRU has therefore decided to allow an additional allowance of €188m (subject to efficiency challenge) over the five-year period to cover the following increases in compliance related costs:

- Irish Water's 'Delta opex' request. These are the costs associated with operating new and upgraded assets due to become operational during RC3, in order to meet EU and national compliance requirements.
- Compliance and enforcement of Fats Oils and Greases (FOGs) and Trade Effluent related activities.
- Management of increased levels of wastewater sludge to ensure environmental compliance requirements are met.

The CRU has allowed the large majority of Irish Water's compliance related growth request. However, the CRU has not approved Irish Water's request for additional costs relating to lead management. The CRU expects Irish Water should be able to absorb these costs, given they account for a relatively small percentage of its total operating cost request (0.2%). Also, the CRU notes that Irish Water has included a target outcome for customers of 13,200km lead service pipe replacements by the end of RC3.

The CRU has decided that this allowance will be built into Irish Water's controllable operating costs and is will be subject to the same efficiency challenge. This leads to an increase in Irish Water's overall approved operating expenditure of €171m for the RC3 period.

Given the significance of meeting EU compliance requirements, and the fact that the CRU has already provided the capital allowance for these assets, the CRU considers that it is in the public interest to allow for this increase in Irish Water's operating expenditure. Providing this additional allowance supports the overall public policy goal of meeting EU water and wastewater treatment standards, compliance with the European Drinking Water Directive and the Urban Wastewater Treatment Directive. The CRU is of the view that this benefit to the public outweighs the additional costs.

The CRU recognises that by providing Irish Water with this additional operating expenditure, that at the end of RC3, Irish Water will not achieve the expected efficiencies, or have closed the efficiency gap with the English and Welsh companies to the extent that was envisaged by the CRU in the consultation. Therefore, Irish Water will continue to be subject to a challenging efficiency target in subsequent revenue control periods.

Irish Water will however continue on a glide path towards operating at a cost level comparable with efficient water / wastewater companies in other jurisdictions and will be on a trajectory towards full compliance with all water quality and wastewater discharge obligations.

The CRU does not expect to provide this type of allowance to Irish Water in the next revenue control period. As Irish Water develops as an established single public utility, the CRU expects it to absorb upward cost pressures while continuing to realise efficiencies and deliver savings for customers. The CRU's efficiency challenge is discussed in further detail in section 4.6 below.

### 4.3.2 Uncontrollable Costs

Irish Water's request for uncontrollable operating costs is consistent with the CRU's IRC1 decision which defined Licences / Levies and Commercial Rates as uncontrollable costs.

The CRU has received confirmation from DHPLG that Irish Water will be required to pay commercial rates for the period 2020-2024.

**CRU Decision**

The CRU has decided to allow commercial rates as pass through costs given Irish Water is not directly in control of these costs.

## 4.4 Operational Expenditure Benchmarking 2020-2024

**Overview**

The CRU's reviewed Irish Water's operating costs by each specific cost category (as presented by Irish Water in its business case to the CRU) and the basis for these costs. The CRU considered Irish Water's request for additional operational expenditure to fund increasing cost pressures due to additional compliance requirements, economic and population growth and changes in government policy. The CRU also considered the environment in which Irish Water currently operates in (costs associated with the SLAs) and the complexity of the WIOF[28] programme.

As part of the process to reach a decision on the appropriate costs, the CRU commissioned a comparative benchmarking exercise to assist its assessment of Irish Water's operational costs. This benchmarking includes a comparison of the cost performance of Irish Water relative to UK water and wastewater companies. The benchmarking exercise also includes an assessment of the rate at which Irish Water should progress towards an efficient level of operating costs.

This benchmarking is discussed in sections 4.5 and 4.6.

### 4.4.1 Comparison of Irish Water to Established Utilities

As mentioned above, the benchmarking exercise commissioned by the CRU includes a comparison of the cost performance of Irish Water relative to UK water and wastewater companies. These UK water and wastewater comparators have been operating under a regulatory framework for many years, during which time they have driven efficiencies into the business and delivered value for customers. Irish Water is a relatively less mature utility in comparison. The CRU acknowledges that Irish Water has driven significant efficiencies over IRC1 and IRC2, however it is expected that it will be several years before Irish Water can reduce its operating costs to a comparable level of water and wastewater companies in the UK.

Section 4.5 provides information on the expected rate of improvement by Irish Water over the RC3 period.

### 4.4.2 CRU Benchmarking – Techniques and Data

The techniques and data associated with the benchmarking commissioned by the CRU as part of its RC3 review are published alongside this paper. The key points are summarised below:

- To ensure consistency with relevant regulatory precedents, when developing this benchmarking, models used by other regulators were assessed. This included models

[28] Water Industry Operating Framework

developed by Ofwat (PR19), the UK's Competition and Markets Authority (CMA), and the Utility Regulator in Northern Ireland (UREGNI).

- Following this review, it was decided to use a range of models developed at IRC2 to assess Irish Water's cost performance[29]. This approach acknowledges that it is difficult to identify a definitive statistical model that fully explains water companies' costs.
- The impact of Irish Water's specific characteristics on its comparative efficiency was considered. This included considering Irish Water's higher wages costs and greater length of water network per connections. However, the CRU notes that in general, models developed by Ofwat, CMA and UREGNI show that the number of connections rather than network length is the main cost driver.
- The models generate "predicted" costs for each company, based on the relationship between cost drivers and cost levels from the panel of English and Welsh companies. These modelled ranges do not represent an efficiency frontier, rather they represent the expected cost based on the average performance of the English and Welsh companies. Some companies therefore will have costs higher or lower than to the predicted range.
- The CRU implicitly assumed that both Irish Water and the comparator companies were delivering similar levels of compliance, i.e. that the cost comparison was done on a like for like basis with respect to service delivery.

The differences between the techniques and data used in the CRU benchmarking and that provided by Irish Water are summarised below and can be seen in further detail in NERA's benchmarking report (CRU/19091m) which is published alongside this paper.

### 4.4.3 CRU Benchmarking – Results

The overall conclusion from the benchmarking exercise is that Irish Water's proposed RC3 operating expenditure (including the efficiencies that it considers achievable by 2024) is high compared to the benchmark level of efficient expenditure (based on UK water and wastewater companies). The CRU notes that Irish Water met the efficiency targets placed on them during IRC1 and IRC2 and has reduced its operating costs in the face of upwards cost pressures from an expansive capital programme. In its IRC2 decision the CRU acknowledged that it would take some years for Irish Water to drive enough efficiencies within its operating costs to reach a level comparable with UK water and wastewater companies, and therefore the result of the benchmarking exercise is as expected.

[29] These are based on models developed for NIW. Models employed by Ofwat at PR19 use a 'botex' approach which includes cost drivers which are not available for Irish Water. 'Botex' is equal to opex plus capital maintenance.

Irish Water is currently in the progress of moving to a single public utility model of operating. At present, Irish Water delivers water and wastewater services to customers in partnership with the local authorities (SLAs model). The SLA model combines expertise from 31 local authorities and requires an increased level of co-ordination and communication across Irish Water. A consequence of this operational model is that it may be very challenging for Irish Water to achieve cost reductions at the rate that has been seen by the best performing water and wastewater companies in other jurisdictions.

Irish Water outlined in its RC3 business plan that it expects to fully implement its WIOF[30] programme (i.e. transition to a single public utility model) by the end of 2022. However, following further discussions with Irish Water, the CRU understands that there is a delay in the implementation of the WIOF programme and that the timing of the programme is uncertain. When determining the appropriate efficiency challenge for Irish Water the CRU considered both the expectation that the WIOF programme will be completed during the RC3 period (as assumed in Irish Water's business plan), and the delay in timing. The CRU is of the view that Irish Water has scope to drive efficiencies outside of those driven by its WIOF programmme. Notwithstanding, the CRU accepts that if the WIOF programme does not progress over the RC3 period that Irish Water will not be able to reduce its costs the extent envisaged by the CRU. Under this circumstance a reassessment of Irish Water's operating costs will be required to ensure the Irish Water can continue to deliver the appropriate level of services to its customers.

The results of benchmarking exercise show that under Irish Water's proposed operating expenditure, Irish Water's costs for both water and wastewater services combined are around 30 – 50% above the average operating cost of utilities in the UK (i.e. the benchmark level of efficient expenditure), assuming that all utilities are operating at similar levels of environmental compliance.

When Irish Water's proposed operating costs for its water service are compared to the result generated by the models, they are about 28 – 42% higher than the benchmarking level in 2019. This gap in efficiency then reduces to 20 - 32%[31] higher than the predicted average costs at the end of the RC3 period, based on Irish Water's business plan. This includes assumptions regarding growth in number of connections additional network length, and wages differences.

For wastewater service the picture is similar. Irish Water's proposed operating costs for wastewater are more than 49 – 62% higher than the benchmarking level in 2019. This gap in efficiency then reduces to 40 - 52%[32] higher than the predicted average costs at the end of the RC3 period, due to

[31] This reduction is as a result of the efficiencies Irish Water state in its business it can achieve over the RC3 period.
[32] This reduction is as a result of the efficiencies Irish Water state in its business it can achieve over the RC3 period.

a combination of lower operating costs arising from efficiencies proposed by Irish Water, and increase in population served and network length etc.

As Irish Water has stated that it is uncertain of the timing of the WIOF programme, the benchmarking exercise was repeated under a scenario where implementation of the WIOF programme is delayed by one year. The results indicate that, with a one-year delay in implementing the WIOF programme, Irish Water's proposed operating costs for water are around 27 – 39% (up from 20 - 32% under Irish Water's submission) higher than the predicted average costs at the end of the RC3 period.

For wastewater service, under the one-year WIOF delay scenario, Irish Water's proposed operating costs are 48 – 61% (up from 40 - 52% under Irish Water's submission) higher than the predicted average costs at the end of the RC3 period.

#### 4.4.4 Benchmarking Provided by Irish Water

The benchmarking provided by Irish Water also indicates that Irish Water is inefficient in relation to both water and wastewater operating costs, but that costs are closer to the benchmark level than was previously considered.

Benchmarking provided by Irish Water suggests that Irish Water's combined water and wastewater operating costs are 35 – 40% higher than the benchmark level of efficient costs. Irish Water notes the significant gap in the efficiency but considers that the benchmarking results should be adjusted for 'special cost factors', namely the stringent licencing conditions for treatment of sludge and sewerage.

Irish Water also made an adjustment to the benchmarking results for real price effect (RPE) (net of improvements in productivity) and allowed for an increase in scale factors equal to population growth. Considering these adjustments, Irish Water's benchmarking suggests that its water operating costs were 28% higher than the benchmarking level in 2017, this gap in efficiency then reduces to 26% in 2020 and further reduces to 19% by the end of RC3.

For wastewater, the results (accounting for additional adjustments noted above) indicate that Irish Water's costs are 24% higher than the benchmark level in 2017, this gap in efficiency then reduces to 16% in 2020 and further reduces to 8% by the end of RC3.

#### 4.4.5 Differences between Irish Water and CRU Benchmarking (Techniques and Data)

The differences between the techniques and data used in the benchmarking commissioned by the CRU, and the benchmarking provided by Irish Water are discussed in detail in the NERA report which is published alongside this paper. Some relevant differences include:

- Irish Water uses a single scale driver for each model run through and then weights the individual model results. In contrast the CRU uses composite scale variables (CSV) as its scale cost driver. The CSV is a weighted combination of the set of likely cost drivers (connections, length of mains and throughput).
- The CRU excludes Irish Water from the modelling specification whereas Irish Water does not make this exclusion. By including Irish Water costs in the modelling specification, the average benchmarked cost level is higher, thereby making the efficiency gap appear lower.
- The CRU's benchmarking exercise includes time specific dummies[33] whereas Irish Water do not.
- As mentioned in section 4.4.4 above, the benchmarking provided by Irish Water allows for a positive real price effect (RPE) net of productivity improvements, whereas the CRU assumes a rate of zero. The CRU's analysis suggests that Irish Water's assumptions of productivity growth is understated. Evidence suggests improvements in productivity will offset certain price increases.
- Irish Water considers that the results of the benchmarking exercise should be adjusted for 'special cost factors'[34] (SCF), whereas the CRU does not make this adjustment.

For these reasons, the CRU is of the view that the benchmarking which it has undertaken provides a more comprehensive study of Irish Water and its performance against comparable utilities, using actual data and noting its early stage of development.

Notwithstanding the differences in techniques and data used, the results of both Irish Water and CRU's benchmarking exercises were broadly similar (prior to Irish Water's adjustment for real price effect (RPE) or special cost factor (SCF)).

### 4.4.6 Conclusion

The benchmarking commissioned by the CRU and the benchmarking provided by Irish Water both indicate that Irish Water's cost base is inefficient relative to established water and wastewater utilities in other jurisdictions. The results of both benchmarking exercises indicate that Irish Water's business plan is not sufficiently stretching in reducing its costs. For this reason, the CRU considers that it is appropriate to require Irish Water to meet an additional efficiency challenge.

Section 4.5 and 4.6 of the paper outlines the rate at which Irish Water will be required to realise

[33] Time dummies control for specific shocks in a particular year that may have changed the cost environment and pick up any trend in cost over time.
[34] Irish Water considers stringent licencing conditions for wastewater treatment as a 'special cost factor'.

efficiencies over the next 5 years (RC3 period) to continue a path to reduce its costs to the efficient benchmark level of mature UK water and wastewater companies.

## 4.5 Expected Improvement in Irish Water Costs over Time

### 4.5.1 Introduction

In its IRC2 decision the CRU set Irish Water an efficiency challenge of 5% per annum (applied to controllable costs, excluding DBOs). Irish Water has broadly achieved the efficiency target put in place by the CRU for IRC2 (See Section 7.2) and has made good progress in reducing its operating costs while continuing to maintain appropriate levels of service. However, Irish Water's operating costs remain significantly higher than those of more mature utilities in the UK. The CRU is conscious that Irish Water cannot reduce its operating costs in the short term to a level that is comparable with established utilities in the UK without impacting service delivery. Setting unachievable efficiency targets for Irish Water could ultimately impact on customers through deteriorating service levels.

Therefore, this section outlines relevant points regarding an appropriate efficiency challenge for Irish Water over the RC3 period. It looks at what has been achieved by water and wastewater companies in other jurisdictions and Irish Water's proposed efficiencies for the RC3 period. The CRU is proposing a challenging but achievable efficiency challenge for Irish Water over the RC3 period. The CRU's decision is outlined in Section 4.6

Detail on what Irish Water achieved with the amount of revenue it received for the IRC2 period is provided above in Section 7.2 of this paper.

### 4.5.2 Improvements in other Jurisdictions in Early Stages

This section provides information on the rate at which utilities in other jurisdictions reduced their operating costs in the early stages of regulation. In particular, the CRU focuses on the experience of Northern Ireland and Scotland as the water and wastewater sectors in those jurisdictions experienced a change comparable to that experienced in Ireland (the establishment of Irish Water and the introduction of economic regulation).

Scottish Water began operations in 2002, taking over the functions of three regional operators who in turn replaced the functions of the Scottish Regional Councils (nine mainland regions and

three island areas) in 1996. In the first strategic review period, running from 2002 to 2006, Scotland's economic regulator, the Water Industry Commissioner (WICS) set Scottish Water a challenge to reduce operating expenditure by an amount equivalent to a reduction of around 10% per annum. A report by "Audit Scotland" in 2005 noted that "*In its Strategic Business Plan 2003-06, Scottish Water explained how it intended to achieve the WICS efficiency savings target. Most of these savings were expected to come from significant reductions in its workforce allied to redesigning processes and systems and investing in automation*".[35] Elsewhere in the report, it cites Scottish Water's business plan as stating that it expects 42% of its efficiency improvements to be related to staffing costs (payroll),

Evidence from WICS suggests that Scottish Water outperformed on its efficiency challenge, delivering reductions at an annualised unit cost improvement of around 11%, and evidence suggests that only some of these efficiencies related to staffing/payroll costs. After the significant reductions achieved in the early years post introduction of incentive-based regulation, Scottish Water's operating costs have been relatively flat.

In Northern Ireland, Northern Irish Water (NI Water) achieved substantial cost reductions over the course of the first regulatory period PC10. This reduction followed an initial increase in operating costs between 2003-2004 and 2008-2009. At PC10 in Northern Ireland (covering the period 2010-2011 to 2012- 2013), Utility Regulator (UR; the Northern Ireland economic regulator) set a target reduction of 6.5% per annum against which NI Water outperformed. In its PC15 determination, UR allowed for a slight initial increase in costs early in the period, offset by a decline in the latter years to 2021. In its latest annual performance report, UR notes that NI Water's operational expenditure for 2017-2019 is marginally above its allowance. The UR also note that when compared to the benchmark level (English and Welsh companies), NI Water has closed the gap in efficiency (to the best performing company) from 49% in 2007-2008 to an estimated 13% in 2014-2015.

Water utilities in both Northern Ireland and Scotland have been able to achieve annual reductions in their operating costs in the years following the introduction of regulation, while facing increasing cost pressures from growth and compliance issues. This is discussed further in the NERA report published alongside this paper which was commissioned by the CRU as part of its RC3 review.

[35] https://www.audit-scotland.gov.uk/docs/central/2005/nr_051013_water_overview.pdf. P. 17.

### 4.5.3 Irish Water's proposed Efficiencies over RC3

Irish Water in its RC3 submission to the CRU, set out its view of what efficiencies it might be possible to make during the RC3 period. Irish Water states that its proposed efficiencies assume that it will be operating under the single public utility model during RC3. Irish Water proposes to deliver a total of €130m efficiencies (€319m cumulative), which are split out into three different categories as follows:

- Single Public Utility Direct Savings – €54m[36]. Irish Water state that it can deliver substantial payroll and related savings following implementation of the single public utility by working with consistent processes, systems and standards across Ireland.
- Lean Single Public Utility Efficiencies – €61m[37]. Irish Water note that through improving the value of systems and processes it expects to deliver savings. Irish Water plan to focus on automation and improved analytics across its operational activities to realise savings, while delivering appropriate service to its customers. Irish Water also note that energy and fleet are two core areas where it expects to realise efficiencies.
- Supply Chain - €15m[38]. Irish Water note that it expects supply chain actions to standardise agreements and improve economies of scale will realise further efficiencies.

While Irish Water plans to drive efficiencies of €130m (€319m cumulative), it also expects upward cost pressures of €122m (€360m cumulative) over RC3. Irish Water's proposed operating expenditure (as per its business plan) is relativity flat as a result, with upward cost pressures outweighing efficiency gains over the five-year period. This means that Irish Water, in its submission expects to close only a minimal amount of the efficiency gap, between it and the average benchmarked utility.

## 4.6 Operating Costs and Benchmarking – CRU Decision

As part of its RC3 review the CRU analysed Irish Water's business plan submission, including all additional information provided to the CRU through a Q and A process. The CRU considered the specific cost categories put forward by Irish Water and any relevant comments on each area outlined in the sections above. However, consistent with previous decisions, the CRU does not approve costs for Irish Water's specific cost categories. The CRU instead approves an overall

[36] Per annum value in the last year of the revenue control
[37] Per annum value in the last year of the revenue control
[38] Per annum value in the last year of the revenue control

allowance for Irish Water's operating costs within which it will be required to manage its expenditure. The CRU notes that Irish Water is subject to annual expenditure limits under the Strategic Funding Plan.

In addition to its review of the cost categories put forward by Irish Water, the CRU also carried out a benchmarking exercise on Irish Water's operational costs. The results of the CRU's benchmarking exercise (and the benchmarking provided by Irish Water) indicates that the costs proposed by Irish Water remain relatively high compared to established utilities in the UK.

The CRU notes that Irish Water broadly kept within its IRC2 operational expenditure allowances. The CRU also stated in its IRC2 decision, and subsequently in its 2019 decision (IRC2 one-year extension) that the cost of meeting upward cost pressures related to growth should be absorbed by Irish Water within its current operating expenditure levels. As noted in section 4.3 above, within Irish Water's operating expenditure allowances, some expenditure was recurring, and some was provided by CRU on a one-off basis. For Irish Water to achieve any real efficiencies, it would need to be able to operate on an enduring basis, absent any one-off allowances. This is the basis on which the CRU accepted Irish Water's statement that it had met its efficiency challenges and was the basis for the operating expenditure allowance proposed by the CRU in the consultation.

The CRU recognises the challenge Irish Water faces in reducing its operating costs while delivering an expansive capital programme and considered this when reaching its decision on an appropriate efficiency challenge for Irish Water. The CRU also acknowledges that Irish Water may be constrained in its operating model, and therefore may not be able to achieve efficiencies at a comparable rate as those seen by other utilities.

The CRU is conscious that Irish Water cannot reduce its costs in the short term to a level that is comparable with established mature utilities elsewhere while providing an adequate level of service to customers. However, the CRU considers that it is important to continue to set challenging but achievable objectives for Irish Water such that it can continue a path to achieving comparable cost levels with efficient water and wastewater utilities elsewhere. Setting unachievable efficiency challenges for Irish Water would negatively impact on customers through deteriorating service levels. Therefore, the CRU has set an efficiency challenge based on what has been achieved in other jurisdictions following the introduction of economic regulation. As noted above, the CRU also considered Irish Water's specific circumstances outlined in its RC3 submission when determining the efficiency challenge, including Irish Water's claim that its planned efficiencies are highly dependent on implementation of its WIOF programme.

The figure below shows Irish Water's IRC1 and IRC2 outturn, alongside the CRU's allowance for the same periods. Irish Water has broadly kept within the CRU's operating expenditure allowances over this period. The figure also shows the trajectory of Irish Water's operating costs for the RC3 period (as per its business plan). If Irish Water's planned efficiencies are not achieved within the RC3 period, the level of its operating costs will continue on an upward trajectory. Given the significance of the efficiency gap the between Irish Water and the efficient benchmark level (the average costs of mature English and Welsh companies), the CRU considers that Irish Water should go beyond absorbing growth and drive further efficiencies such that it makes a real reduction to the overall level of its operating costs.

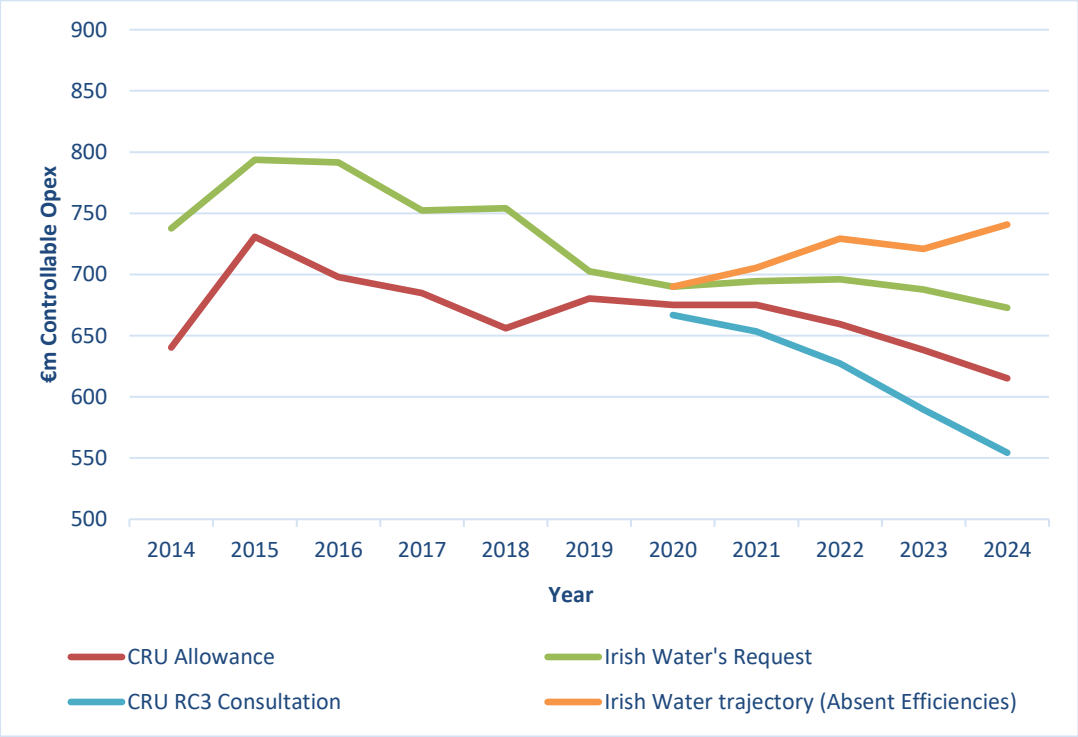


*Figure 6 Total Level of Irish Water RC3 Operating Expenditure Request, trajectory of Irish Water's opex minus any efficiencies, Irish Water's actual outturns (up to the end of IRC2) CRU RC3 Consultation proposals and CRU RC3 Decision*

The CRU recognises that the funding model within which Irish Water operates is different to other regulated utilities who have more flexibility to spend over or under its agreed per year operating costs over the regulatory period. The CRU was cognisant of this when setting the appropriate efficiency challenge for Irish Water. Irish Water has a range of projects and programmes underway, one of which is WIOF, the CRU therefore decided to profile the efficiency challenge over the five years of the revenue control in recognition of the fact that efficiency gains take time to materialise. The CRU set an operating cost efficiency challenge of 2% year on year cost reduction in first two years of the RC3 period (2020 & 2021), increasing to 4% in 2022, and finally to 6% year on year for the final two years of the period (2023 & 2024). This is to be applied

against Irish Water's 2019 expenditure on its controllable costs (inclusive of Design Build Operate costs).

For IRC2 the CRU excluded DBO costs from the efficiency challenge as DBO contracts were already committed and the CRU considered that Irish Water had little scope within which to drive efficiencies. The CRU has included DBO costs in Irish Water's efficiency challenge for RC3 given that Irish Water reported savings during the IRC2. Also, a small number of DBO's are due to expire during the RC3 period which provides Irish Water with opportunity to drive further efficiencies.

As noted in section 4.3.1 above, Irish Water made a detailed submission to the CRU in response to its consultation, in which, it provided further details on its request for an additional operational expenditure allowance for areas where it expects to experience cost increases over RC3. The CRU has accepted Irish Water's rationale for why it would not be possible for them to deliver on environmental compliance standards within the operating expenditure allowance as consulted on. The CRU therefore has decided to allow an additional €188m (€171m post efficiency challenge), to recover the costs associated with Irish Water's compliance related growth request.

Under the CRU's Decision Irish Water will receive an additional €171m in operational expenditure over the RC3 period (rounded to the nearest €m) to that proposed in the consultation (€3,485m). The CRU accepts that by providing this additional allowance to Irish Water, that at the end of the RC3 period, Irish Water will not have achieved the expected reduction in its operating costs as outlined in the consultation. However, the CRU has decided to hold Irish Water to a challenging but achievable target, ensuring that Irish Water remains on a glide path towards operating at a level of costs comparable with efficient water / wastewater companies in England and Wales.

| CRU's Efficiency Challenge on Irish Water's Controllable Operating Costs for RC3. | | | | | | | |
|---|---|---|---|---|---|---|---|
| | **IW Spend 2019, €m, 2017 prices** | **2020 €m** | **2021 €m** | **2022 €m** | **2023 €m** | **2024 €m** | **Total** |
| Irish Water's Controllable Operating Costs (as per its RC3 business plan) | | 690 | 694 | 696 | 688 | 673 | 3,441 |
| Irish Water's Controllable Operating Costs (outturn) | 680.5 | | | | | | |
| *Irish Water's 'Compliance Opex' Request ('In Year' Operating Costs)* | | *8* | *14* | *12* | *19* | *16* | |
| CRU Additional Allowance 'Compliance Opex' cumulative (Pre-Efficiency Challenge) | | 8 | 22 | 34 | 53 | 70 | 188 |
| CRU Predicted Controllable Operating Costs for Irish Water (Pre-Efficiency Challenge) | | 689 | 703 | 715 | 734 | 750 | 3,590 |
| CRU Efficiency Challenge | | 2% | 2% | 4% | 6% | 6% | |
| **Total CRU Approved Controllable Operating Costs (Post Efficiency Challenge)** | | 675 | 675 | 659 | 638 | 615 | 3,263 |

*Table 19 - CRU's Decision on Irish Water's Controllable Operating Costs for the RC3 period*

The following information outlines how the efficiency challenge in table 9 above is applied to reach the figures outlined for 'Total CRU Approved Controllable Operating Costs':

- Irish Water's outturn for 2019 is used as the baseline for the efficiency challenge (€680.5m)
- For example, to calculate the CRU approved controllable operating cost allowance for 2020 we take Irish Water's baseline of €680.5m and add Irish Water's '*Compliance Opex Request 'In Year' Operating Costs)*' for 2020 of €8m
- We then apply the efficiency challenge for 2020 (2%), resulting in an allowance of €675m for 2020
- To calculate the allowance for 2021 we take the allowance from the previous year (2020) of €675m and add Irish Water's '*Compliance Opex Request 'In Year' Operating Costs)*' for 2021 of €14m

- We then apply the efficiency challenge for 2020 (2%), resulting in an allowance of €675m for 2021
- This process is then repeated for each of the remaining years of RC3 (2022 -2024).

The table below shows total allowed operating costs for Irish Water for the RC3 period. It adds uncontrollable opex costs to the totals in Table 9. As outlined in Section 4.3.2 the uncontrollable costs which the CRU proposes to allow are in respect of commercial rates, licences and levies. No efficiency challenge is applied to uncontrollable costs, or to the allowance for the innovation fund.

| CRU's Decision on Irish Water's Total Operating Costs for RC3. | | | | | | |
|---|---|---|---|---|---|---|
| | **2020 (€m, 2017 prices)** | **2021 (€m, 2017 prices)** | **2022 (€m, 2017 prices)** | **2023 (€m, 2017 prices)** | **2024 (€m, 2017 prices)** | **Total (€m, 2017 prices)** |
| Controllable operating costs (inclusive of efficiency challenge) | 675 | 675 | 716 | 694 | 671 | 3,263 |
| Innovation Fund Allowance | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 4 |
| Uncontrollable costs | 56 | 56 | 56 | 56 | 56 | 278 |
| **Total CRU Approved Operating Costs** | 731 | 731 | 716 | 694 | 671 | 3,544 |

*Table 20 - CRU's Decision on Irish Water's Total Operating Costs for RC3 (rounded to the nearest €m)*

The CRU has decided to allow a once off allowance for innovation of €4m (€0.8m a year) as discussed above.

This brings the total allowed opex to €3,544m for the 2020-2024 period.

This challenge does not bring Irish Water to the average level of operating costs for English and Welsh utilities (under either the CRU's benchmarking or that provided by Irish Water) by 2024 but is aimed at moving Irish Water to the average level of costs (and in time to the efficiency frontier). The CRU expects that the efficiency challenge outlined in this section will be met by Irish Water without it needing to defer any of the activities to which it has committed. The targets set out by the CRU should be achieved through efficiencies which do not impact negatively on the service that Irish Water provides to customers.

The graph below shows the level of Irish Water's operational expenditure requests, the CRU proposed allowance at consultation, Irish Water's actual outturns (up to the end of IRC2) and the CRU's decision on Irish Water's allowed operational expenditure for the RC3 period.

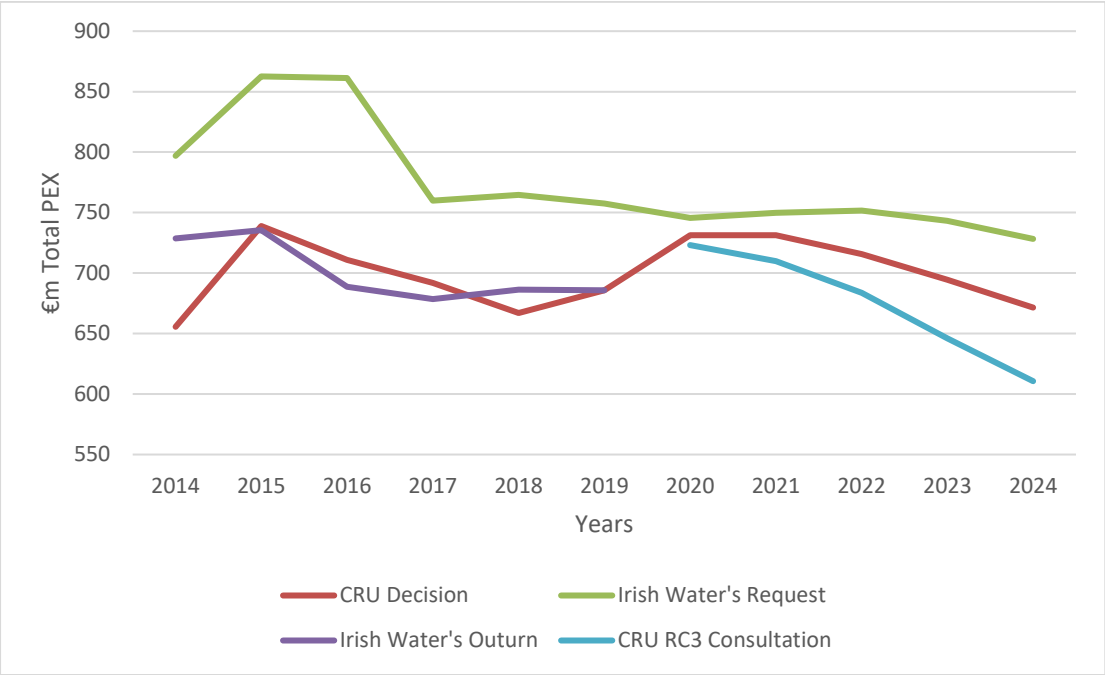


*Figure 7 Level of Irish Water Operating Expenditure Requests, the CRU Allowance and Irish Water actual outturns (up to the end of IRC2*

# 4.7 Review of Capital Expenditure 2020-2024

## 4.7.1 Introduction

This section sets out Irish Water's request for capital expenditure for the RC3 period (2020-2024). An overview of Irish Water's submission is provided in section 3.4, followed by the CRU's review and decision in relation to Irish Water's request. The monitoring of capital investment during the RC3 period is discussed in Section 5.

## 4.7.2 Irish Water's 2020 – 2024 Capital Expenditure Submission

### 4.7.2.1 Introduction

This section sets out the CRU's decision, following public consultation and further engagement with Irish Water, in relation to Irish Water's allowed capital expenditure for the RC3 period (2020-2024).

Capital expenditure can often be large in value and may be spent over a number of years. Therefore, some expenditure allowed for during the RC3 period will not result in the output being delivered or the outcome being achieved until beyond the RC3 period. Therefore, the CRU's RC3 decision may have implications for expenditure beyond that period, as expenditure committed to in this revenue control may continue in a future revenue control until the project or programme is fully completed. This is always the case for revenue control periods, both in water and also in the energy sector, where a decision is taken on allowances in respect of a specific period.

### 4.7.2.2 Irish Water's Capital Expenditure Submission: Overview

Irish Water's capital expenditure submission to the CRU in November 2018 comprised of two elements:

- A capital investment plan (CIP) that described the projects and programmes that Irish Water plan to deliver, the associated **network capital expenditure** to cover the period 2020-2024 and supporting documentation. This proposal relates to investments associated with studies, construction, enhancement, operation and maintenance of the infrastructure and non-infrastructure assets required to deliver water and sewerage services; and

- Proposals in respect of **non-network capital investments** and associated expenditure in this category for the 2020-2024 period and supporting documentation. This proposal sets out investment required for Irish Water's critical business assets in the areas of Fleet and Facilities, IT, Business Change, and in the continued transformation of the water services sector to a single public utility (the WIOF programme).

Irish Water requested a total capital expenditure of €5,257m for the RC3 period (€4,832m CIP/network capex + €425m NNC).[39]

In its response[40] to the CRU's RC3 consultation paper, Irish Water informed the CRU that Irish Water had undertaken a review of the Capital Investment Plan as a result of the CRU's proposed construction inflation allowance as set out in the consultation paper along with other change drivers including new emerging needs, scheduling updates and the identification of additional requirements as initial project scoping progressed and developed. Irish Water later provided further updates to these new outputs and outcomes to the CRU following a further review by them for the RC3 period.

Irish Water provided further information[41] to the CRU including updated costs for the projects in RC3 which had increased by approximately 10.8% and provided updated costs for the top 100 projects and programmes (amounting to €4.1bn) planned for RC3. Irish Water has provided an annual profile of this expenditure for the top 100 projects, accounting for €4.1bn of the €4.8bn requested in network capex for the RC3 period.

Given the magnitude of the changes in the capital investment priorities, and associated costs, which have an impact on the outputs and outcomes deliverable over the RC3 period, the CRU is of the view that it would not be in the interest of Irish Water's customers to decide that Irish Water should deliver the initial outputs and outcomes which Irish Water previously submitted to the CRU for the original costs submitted. Therefore, as set out below, in the short time available the CRU has undertaken some analysis on the updated submission provided by Irish Water and has concluded that while the total amount of money requested has not changed, broadly overall there is a reduction in the proposed outputs and outcomes and an increase in the forecast costs. The CRU is extremely concerned at the updated reduced outputs and outcomes proposed by Irish Water for the RC3 period along with the updated increased costs, especially given that it was received so late in the process.

[40] Published alongside this paper.
[41] Irish Water submission - outcomes and outputs (CRU/19/148w)

### Irish Water's Network Capital Expenditure Submission

Irish Water's original five-year CIP proposed investment on projects and programmes to address a number of statutory obligations, including compliance with environmental legislation, and capacity requirements over the period 2020-2024 with an expenditure of €4,832m. Irish Water's updated submission now demonstrates increased costs on individual projects and programmes (although the overall amount remains the same) along with reduced outputs and outcomes. Therefore, the CRU must conclude that a number of projects and programmes are no longer planned to be undertaken during the RC3 period.

*Major Projects*

Despite there being five major projects previously identified at IRC2, in line with the approach set out in the RC3 consultation paper, only two of these projects will be included in this category for the RC3 period: the Water Supply Project for the East and Midlands Region (WSP); and the Greater Dublin Drainage project (GDD). This because the other three major projects have progressed sufficiently through construction and delivery. As can be seen from the below profiles, the expenditure profile relating to these two major projects (combined) is considerable (€704m) (15% of forecast network capital expenditure) over the period. However, it should be noted that, as part of their updated submission, Irish Water have requested increased expenditure for Cork Lower Harbour and Ringsend WWTP during the RC3 period.

| Major Projects Forecast Expenditure for RC3 period | | | | | | |
|---|---|---|---|---|---|---|
| | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| Project | €m | €m | €m | €m | €m | €m |
| WSP | 24 | 50 | 25 | 39 | 155 | 294 |
| GDD | 5 | 37 | 89 | 177 | 103 | 410 |
| **Total** | **29** | **87** | **113** | **216** | **258** | **704** |

*Table 21 Major Projects Forecast Expenditure for RC3 period*

The table below sets out Irish Water's original estimates along with the updated expenditure estimates for the five major projects during the RC3 period, with the majority of the change driven by reduced spend planned on the WSP of almost €100m, during RC3 because of delays in progressing the project:

| Cost submitted for RC3 €m | Updated cost submitted for RC3 €m | Variance |
|---|---|---|
| 846 | 704 | -17% |

### Irish Water's Non-network Capital Expenditure Submission

Non-network capital expenditure is split into four categories, as shown profiled over the RC3 period in table 22 below.

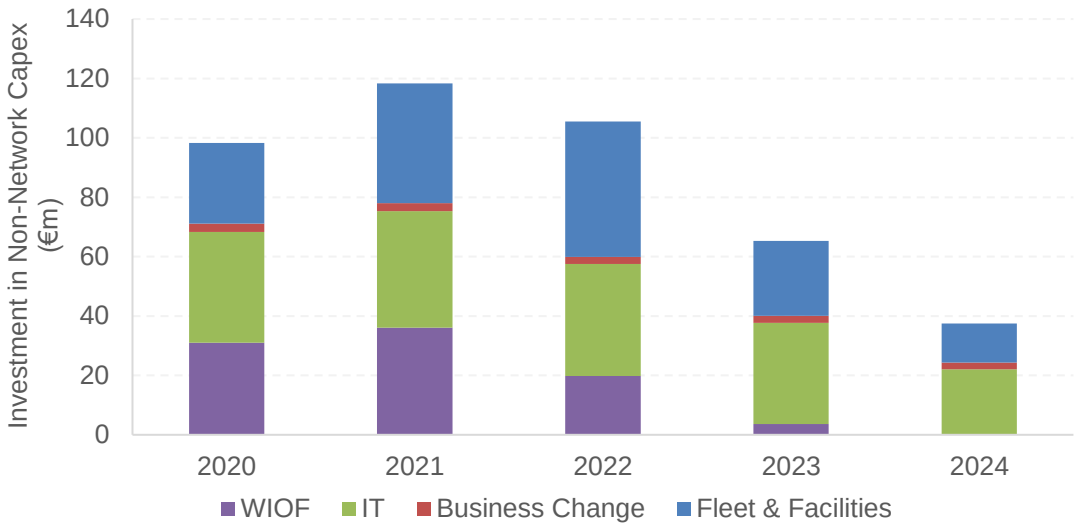


*Figure 8 Irish Water's RC3 Non-network Proposal*

| Irish Water's RC3 Non-network Capex Proposal | | | | | | |
|---|---|---|---|---|---|---|
| NNC Category | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m | Total RC3 €m |
| Fleet & Facilities | 27 | 40 | 46 | 25 | 13 | 152 |
| Business Change | 3 | 3 | 2 | 2 | 2 | 13 |
| IT | 37 | 39 | 38 | 34 | 22 | 170 |
| WIOF | 31 | 36 | 20 | 4 | 0 | 91 |
| **Totals** | **98** | **118** | **106** | **65** | **38** | **425** |

*Table 22 Irish Water's RC3 Non-network Capex Proposal (rounded)*

### Scale of the RC3 Network Capex Plan

Irish Water proposed a network capital expenditure of €4,832m over the RC3 period in its submission of November 2018. As part of its response to the consultation, Irish Water provided an updated list of projects and programmes along with updated outputs and outcomes for the RC3 period, Irish Water provided an annual profile of expenditure for this capital programme for just the top 100 projects and programmes planned for the RC3 period, amounting to approximately €4,100m of the total network capex request. In these circumstances where the

CRU does not have all the required data or time available to carry out the required analysis, the CRU has analysed the updated outputs and outcomes along with the updated project and programme costs insofar as is possible within the available timeframe and with the data provided to the CRU by Irish Water. The CRU has set out a summary of its analysis along with its decision below.

## 4.7.3 CRU Review and Decision

### 4.7.3.1 Review of Irish Water's Network Capex Submission

This section sets out the CRU's analysis of Irish Water's updated network capex for the RC3 period along with the CRU's decision. Given the limited time available to undertake this analysis since Irish Water made its updated submission at the end of October 2019 and the need to issue a decision in order to facilitate the voted expenditure for Irish Water for 2020, the CRU has carried out a limited analysis of the submission.

In reaching its decision on the regulatory contract for the RC3 period (i.e. the amount of money allowed for the committed outputs and outcomes), the CRU has looked at the following:

- Updated proposed outputs and outcomes including the unit cost; and
- Updated costs for the 100 highest value projects and programmes to be completed during the RC3 period.

**Outputs and Outcomes**

Before looking at the costs, we examined the outcomes and outputs Irish Water now intends to deliver during the RC3 period versus what Irish Water had previously proposed to deliver.

*Outcomes*

Outcomes are the high-level objectives that matter most to consumers of water and wastewater services. Outcomes are generally continuous, long-term requirements that do not necessarily fit into one price control period.

The high-level outcomes that Irish Water will deliver in the next revenue control period are consistent with those for IRC2, namely:

- High quality customer service and customer satisfaction;
- Providing a high quality of service for water supply, including security of supply;
- A reliable service to remove and treat wastewater:
- Efficient delivery of services, i.e. value for money;
- Achieve compliance with public health and environmental standards; and

- Environmental performance (for example, a good quality water environment).

As part of the RC3 process, Irish Water submitted a business plan to the CRU that specified a range of outputs that they intend to deliver over the RC3 period, that are aligned with the overall outcomes. These outputs were reviewed by the CRU and accepted as necessary to deliver the stated outcomes. These cover a range of projects and programmes across water and wastewater services, grouped according to the following high-level categories.

- water supply – quality of service;
- security of water supply;
- environmental performance; and
- sewerage service.

In addition to these water and wastewater service-based outcomes, the CRU also specifies, within the domestic and non-domestic handbooks, expectations of levels of customer service that Irish Water needs to meet. During RC3, Irish Water will be implementing several new water policy decisions, including a new approach to non-domestic tariffs, as well as excess usage charges for domestic customers. The CRU expects that these policies will be implemented by Irish Water with no reduction in the level of customer service provided.

The customer service outcomes are reported on in the annual performance assessment reports published by the CRU (discussed below).

*Outputs*

Outputs are the observable and measurable activities, actions or achievements that Irish Water needs to do in order to bring about the outcomes that customers and broader society value. Outputs are more easily measured and monitored than outcomes and are more likely to be within Irish Water's control. In general, they do not explicitly reflect things that customers and society value in themselves, but they contribute to achieving those things.

The fact that specified outputs have been included in the revenue control provides Irish Water clarity and certainty over the capital projects and programmes that they need to deliver during the period. They know the outputs they must deliver and delivering these outputs is largely within their control.

Specific outputs include:

- delivering specific schemes, such as a new water treatment works or relining a specified number of mains, which could relate to a number of outcomes; and

- completing specific activities, such as a programme of replacing lead pipes, which, again, could relate to a number of outcomes.

**Inputs**

Inputs are the resources that Irish Water uses to carry out its activities or to deliver particular outputs. Examples of inputs include:

- The operating costs it incurs to deliver its services such as the number of people it employs on a particular activity (such as those employed on mains relining or replacement, operating a sewage treatment works) amount of money a regulated firm spends on a particular activity;
- The capital costs that it incurs to carry out a particular activity or delivering an output (such as how much Irish Water spends on the cost of building a reservoir or a water treatment plant, or the investment needed to upgrade a plant to comply with drinking water or environmental standards);

In its business plan submitted to the CRU, Irish Water, in conjunction with the list of outputs it plans to deliver, identified the range of capital and operating expenditure that it estimated would be required to operate its system for the five-year period, as well as to deliver the range of outputs listed above.

In relation to costs, the CRU carried out the following analysis on Irish Water's updated submission to the CRU:

- Project cost changes;
- Unit cost changes;

**Irish Water's Response to the CRU Consultation**

As mentioned in section 2.5 above, in response to the CRU's RC3 Consultation Paper, Irish Water provided the CRU with a revised list of outputs and outcomes which it stated were in fact the outputs and outcomes it would be able to achieve over the RC3 period. The CRU observed that the majority of these were lower than those that Irish Water stated they would achieve in their original submission for the RC3 period[42].

The CRU sought the reasoning behind this reduction and Irish Water provided updated costs to the

[42] Note that in some cases, the reason for the reduction was due to Irish Water delivering outputs and outcomes by the end of 2019.

CRU for the top 100 (in value) projects and programmes to be undertaken by Irish Water[43] during the RC3 period. These projects amounted to €4.1bn of the requested €4.8bn. The CRU's analysis shows that the costs for these projects and programmes have, on average, increased by approximately 22% (excluding the GDD and the WSP).

Irish Water has not, to date, provided a detailed rationale for the changes set out above. The CRU considers that the magnitude of the changes in the submission amounts to effectively a new business plan submission (albeit incomplete). The CRU, therefore, cannot, in the short time available, assess the cost estimates to determine its value for money and efficiency. While the CRU does not see the value in holding Irish Water to the original outputs and outcomes, along with the cost estimates, as consulted upon, the CRU cannot yet approve the updated cost estimates. Furthermore, the CRU cannot yet accept the updated outputs and outcomes, and therefore, the CRU is of the view that these are the absolute minimum outputs and outcomes which Irish Water must achieve over the RC3 period. In relation to the costs, the CRU is approving a portion of the requested network capex (€3,739m) at this stage and Irish Water will be provided with an opportunity to demonstrate to the CRU that the remainder is required (€788m). Further information on this opportunity is set below.

The CRU is also very concerned that Irish Water has submitted what essentially amounts to a new business plan at this late stage in the revenue control process. This raises further concerns about Irish Water's project design, costing and prioritisation process, particularly as this is not the first time that Irish Water has substantially updated its Capital Investment Plan. In similar circumstances, prior to the CRU reaching its IRC2 decision, Irish Water updated its CIP and significantly amended the CIP again shortly after the IRC2 decision. This posed a number of issues for the CRU in terms of capex monitoring and undertaking the IRC2 lookback process. This impacts upon the transparency of Irish Water's expenditure and value for money for the Irish Water consumer. The CRU is of the view that Irish Water needs to ensure that its CIP is robust from a planning point of view, and not subject to such significant changes. This is of the utmost importance when Irish Water is about to enter a five-year revenue control period.

The CRU was of the view that a five-year price control period was appropriate for Irish Water given that it has been in existence now for a number of years. Previously, the CRU considered shorter revenue control periods appropriate while it was still in its infancy. As this is no longer the case and the CRU is now of the view that Irish Water should be better able to plan its projects and programmes and that plans should remain stable, the CRU took the decision that a five-year revenue control period would be appropriate at this stage. In these circumstances it is a real

[43] An aggregate figure was provided for 'remaining projects and programmes'

concern that the CIP has been amended so significantly during the revenue setting process.

Considering the above, the CRU is not approving the full capital expenditure request submitted by Irish Water, or the outputs and outcomes proposed by Irish Water for the RC3 period, other than as minimum targets to be achieved. The completion of an external review will be required for the CRU to further analyse and determine whether further capex allowance should be made and if so, the appropriate amount along with whether the outputs and outcomes set out by Irish Water are reasonable and proportionate to the level of allowance provided.

More detail regarding the specific changes proposed by Irish Water is provided below.

Project Cost Changes

Irish Water submitted updated costs to the CRU for the "Top 100" (ranked by cost) projects and progrmames to be undertaken during the RC3 period, and an aggregate cost for the remaining projects and programmes. Irish Water noted that costs had increased by an average of 10.8% across its entire portfolio, including the two major projects (WSP and GDD). Irish Water said that this average cost increase was due to a number of change drivers as set out below:

| Driver | Variance on total network portfolio investment |
|---|---|
| Emerging needs and scope additions | +6% |
| Accelerated delivery within RC3 period | +2% |
| Updated delivery durations for early stage projects | -5.2% |
| Increased capital maintenance requirements | +1% |
| Early concept to detailed design progression | +7% |
| Impact of Construction inflation | included in above change drivers |
| **Total** | **+10.8%** |

*Table 23 Irish Water's Project Cost Changes*

The total planned expenditure that Irish Water submitted for the remaining projects and programmes is €715m. Irish Water has provided only outputs and outcomes which they expect to deliver during the RC3 period for this funding in aggregate. The CRU would require further detail on the specific spend profiles and specific outputs/outcomes on a project by project basis in order to review.

Also, as stated earlier, the WSP and GDD make up €704m (or 15%) of the total €4,832m requested for network capex. As the CRU stated that it would review the costs of the GDD and the WSP separately, the CRU analysed the remaining project cost changes with these two projects

stripped out. This analysis showed that costs have increased by approximately 22% on average. Further analysis is set out below.

The CRU has serious concerns with the resubmitted costs for several reasons. The magnitude of the changes to the underlying programme and associated costs means that the CRU has not had the required time to interrogate these figures to the extent it usually would do. It is also not clear that the conclusions of the CRU analysis included in the consultation regarding the reasonableness of the overall investment programme can continue to apply, given the changes in the investment programme. Irish Water has also, within these top 100 projects, included four new projects at a cost of €108m over the RC3 period and €207m overall. Irish Water has only provided outputs and outcomes associated with just one of these projects. Irish Water has not provided a rationale for the inclusion of these new projects and programmes or the reasons why they had not been identified at an earlier stage. Given the lack of information surrounding these projects, and the magnitude of spend without a detailed rationale being provided, the CRU has decided not to include these projects in the capex allowance.

In addition to the above concerns, the CRU is also concerned about the magnitude of changes in the submitted costs for the "Top 100" projects as described earlier in this section. From the CRU's initial analysis, it seems that the cost increases are significantly in excess of the construction price inflation allowance included in the consultation. The costs of some projects have increased by significant amounts. One area where the CRU has seen a significant increase in project cost forecasts is building and upgrading of waste water treatment plants where Irish Water has requested an additional €295m (or 65%) for the RC3 period and €270m (or 35%) overall.

It is also concerning to the CRU that of the "Top 100" projects, the costs of 24 projects have not been updated for the RC3 period in the revised submission. The forecast costs for these projects total almost €1bn for the RC3 period and €1.4bn overall. This demonstrates to the CRU that the average cost increase for impacted projects is even greater than the average figure would suggest. When projects with no cost changes have been removed from the average cost change calculation, along with the major and new projects, the CRU sees an increase in requested expenditure for the RC3 period of 33% and 24% of total project cost.

This demonstrates to the CRU that, along with it costing more to deliver less outputs and outcomes, Irish Water's project costs previously submitted to the CRU are not accurate. While the CRU accepts that there is evidence to suggest that once tendered, Irish Water generally delivers projects within budget, at the early stages of the planning, further work is required to ensure that robust project estimates are determined.

In relation to the remaining projects and programmes, the CRU carried out an initial comparison with the previous submission and found that when the projects included in the updated list were removed, Irish Water had sought €1.5bn in respect of 491 projects in its November 2018

submission. Irish Water are now seeking an aggregate sum of €715m in respect of the remaining projects and programmes. Irish Water, however has not provided a list of projects which will be undertaken and has only provided the outputs and outcomes expected to be achieved from these projects in aggregate. This implies that a number of the projects previously expected to be carried out will not now be carried out resulting in a reduction in the delivery of outputs and outcomes. This is likely driven by all the factors outlined above being the significant increase in costs across specific projects and the inclusion of new projects that were not included in the original submission.

It is also clear to the CRU, that the timelines for some projects have been pushed out as the number of overall outputs and outcomes has decreased, albeit as achievement of some have been brought forward to 2019, for much of the difference between the original and updated outputs and outcomes, these will still need to be delivered but will not now be delivered during the RC3 period and so will be deferred to the next revenue control period.

Unit Cost Changes

The CRU also carried out an analysis of the unit cost of outputs and outcomes and compared them between the November 2018 submission and the revised submission. The CRU did this by adding up the total amount of each output (e.g. new treatment plant) and outcome (e.g. additional water supply treatment capacity ML/day) and divided the total cost for the projects and programmes to deliver this outcome and output. The CRU accepts that this is a particularly crude analysis as a project or programme may deliver a number of outputs and outcomes, which this analysis ignores. Furthermore, the specifics of projects cannot be taken into account in this analysis. However, in the limited time available and in the absence of information from Irish Water, this was a useful exercise to understand the magnitude of changes in the cost estimates. The CRU found that most unit costs had dramatically increased and that the level of outputs and outcomes has broadly reduced disproportionately.

#### 4.7.3.2 The CRU's Decision on Cost Efficiency and Real Price Effects

***Cost Efficiency***

Irish Water did not include any assumption for improvement in efficiency over RC3 in its original investment plan submission. In its Consultation Paper, the CRU proposed an efficiency challenge of 3% on all non-committed network capex. This amounted to a cut of €303m in Irish Water's allowance.

The CRU remains of the view that, five-years following Irish Water's formation, there remains scope for Irish Water to improve its capex cost efficiency, in light of the circumstances where Irish Water has very recently provided an updated submission covering costs, outputs and outcomes. Therefore, consistent with the CRU's approach in the Consultation Paper, the CRU

has decided that a 3% efficiency challenge shall apply to Irish Water's non-committed capital expenditure. However, given the late submission by Irish Water of its data along with the gaps in that data, the CRU has applied a 3% efficiency challenge based on the old profile of Irish Water's earlier submission. In line with the CRU's approach at the consultation stage, the efficiency challenge does not apply to the two major projects (WSP & GDD). This results in an efficiency challenge of €305m across the five years, as set out in the table below.

| | 2020 | 2021 | 2022 | 2023 | 2024 | Totals |
|---|---|---|---|---|---|---|
| | €m | €m | €m | €m | €m | €m |
| Efficiency Challenge | 23 | 36 | 68 | 86 | 92 | 305 |

*Table 24 Capex - CRU Efficiency Challenge*

The CRU expects Irish Water to strive to achieve efficiencies in all capex projects which will be evaluated at the end of the RC3 period and any inefficient expenditure will be disallowed at that stage.

**Real Price Effects**

Although the CRU proposed an allowance of €297m in its RC3 Consultation Paper in respect of Real Price Effects, based on an assumed level of construction price inflation in excess of HICP, as Irish Water has now included an element of real price effects due to construction inflation in their submission, a separate allowance for this is no longer required. However, it is not clear how much construction inflation has been included in the updated cost estimates and how this compares to the CRU's allowance as set out in the Consultation Paper. Irish Water's external review should set out clearly, based on demonstrable evidence, the amount of construction inflation and the basis for that amount. The CRU will consider the appropriateness of the level of construction inflation incorporated in Irish Water's forecast costs at that stage.

**CRU Decision on Irish Water's Network Capital Expenditure**

The CRU has serious concerns with the reduced outputs and outcomes Irish Water is now planning to deliver over the RC3 period for the increased proposed project and programme costs. The CRU has decided that the updated outputs and outcomes will be the minimum which Irish Water will be required to achieve during the RC3 period. The CRU, however, cannot approve Irish Water's full proposed costs at this stage.

The CRU has, therefore, decided that the CIP, insofar as it relates to the updated list of planned projects and programmes, with some exceptions as set out below, along with the associated outputs and outcomes, will apply for the period 2020-2024. The CRU cannot, however, yet accept the reduced level of outputs and outcomes along with the increased costs of the projects and

programmes recently submitted by Irish Water to the CRU as the CRU has not had sufficient time to analyse and interrogate the updated submission to the extent that it usually would.

However, in order to ensure that Irish Water has funding available to it, the CRU has decided on the basis of a capital expenditure request of €4.8bn, to impose a €305m efficiency challenge, and to reduce the capital expenditure allowance by a further €788m. This reflects the increased project and programme costs that the CRU has not had time to review and approve. Irish Water is, however, being provided with an opportunity to make a case for the additional €788m over the RC3 period by completing the process set out below. The reduction in the requested capital expenditure allowance is due to the following:

- The CRU has decided not to approve, at this point in time, the change in project costs associated with the "Top 100" projects and programmes, on the basis that the proposed cost changes significantly exceed the construction price inflation allowance included in the consultation, and sufficient explanation has not been provided for the additional cost increase. This amounts to €680m.
- The CRU has decided not to approve the four additional new projects which Irish Water has now included in the list of projects and programmes. This is because Irish Water has not provided sufficient explanation as to why they are required. This results in a reduction of €108m. These projects are:
    - GDA Groundwater Augmentation Programme;
    - National Leakage Management Planning Costs;
    - Waste Water Above Ground Gate 1 Feasibility Studies; and
    - Water Supply Above Ground Feasibility Studies.
- In order to ensure certainty for the 2020 capital programmes, the CRU will not reduce the amount allowed for 2020, however the €788m will be deducted in equal amounts (€197m) from the remaining years (i.e. 2021-2024 inclusive).
- Irish Water can, however, seek further funding in respect of the above by justifying the requirement to the CRU by 31 March 2020, by following the process below.
- An efficiency challenge of €305m has also been applied to Irish Water's network capex allowance.

Therefore, the CRU has decided to allow Irish Water €3,739m in network capex for the RC3 period.

***Process for accepting updated costs and seeking additional funding***

As discussed above, the CRU is concerned that Irish Water has updated its costs, outputs and outcomes since its original submission in November 2018. Changes of such a magnitude, as provided by Irish Water during this process, undermine the regulatory process whereby a revenue allowance is agreed for the delivery of a defined list of outputs and outcomes which is agreed to by both parties and consulted upon before a final decision is reached. Given Irish Water's late submission in this regard, defining a regulatory contract in these circumstances is difficult. However, the CRU is of the view that its decision, as set out, strikes a balance of ensuring that Irish Water verify their updated costs and deliverables for the RC3 period whilst ensuring that Irish Water has funding available to them in order to continue to improve the water infrastructure for its customers.

Given the magnitude of changes which have taken place in Irish Water's business plan, the CRU currently does not have confidence in Irish Water's planning process, particularly at the early stages of planning. The CRU has therefore decided that Irish Water will be required to carry out an external review to provide the CRU with the confidence that Irish Water's planning process is fit for purpose and that the currently planned business plan is reasonable, in terms of costs and deliverables, over the five-year regulatory period.

In order to accept the updated costs, the CRU will require Irish Water to undertake an external review of the updated costs. The Terms of Reference for this review will be required to be approved by the CRU. The Terms of Reference should include the following; however, this list should not be considered exhaustive:

- A review of the portfolio of projects (top 98[44]) put forward by Irish Water to ensure efficiency and reasonableness of project and programme costs;
- A review of the sub 100 projects (totalling €788m) including spend profiles and outputs/outcomes on a project by project basis as is normally provided for revenue control purposes;
- Irish Water's project planning process, in terms of scoping, in order to determine if it is fit for purpose in order to deliver a stable plan which is not subject to significant changes; and
- Verify that the updated outputs and outcomes for all projects (top and sub 100) represent the minimum of what can be achieved by Irish Water for their capital expenditure allowance. The CRU will expect additional outputs and outcomes to be achieved by Irish

[44] Excluding the WSP and GDD as these are already subject to separate oversight by the CRU and including the four new projects proposed by Irish Water in October 2019.

Water should the external review find that the outputs and outcomes proposed are disproportionate to the project cost estimates already submitted by Irish Water.

Once completed, a report and full submission covering all capital investment should be submitted to the CRU by 31 March 2020 which the CRU will consider. Irish Water must inform the CRU by 17 January 2020, with its terms of reference (in relation to the external review), if it plans to make such a submission. If so, following review of the report and submission from Irish Water, the CRU considers that Irish Water's increased costs are not justified, the CRU will expect Irish Water, for the not yet justified spend, to deliver additional projects and programmes along with appropriate outputs and outcomes within the SFP cap. This means if the additional costs are not justified and Irish Water wishes to spend up to the SFP cap Irish Water will need to provide all necessary information to the CRU to demonstrate what it plans to deliver with the additional funding. However, if the report demonstrates that Irish Water's costs are justified, the CRU will consider an appropriate additional allowance to Irish Water over the period 2021-2024.

The CRU will make a decision on the additional allowance by 30 June 2020. The CRU will engage with DHPLG to ensure that the decision will be fed into the budgetary process for 2021 and beyond.

The CRU has also decided that Irish Water will be required to, at the very minimum, deliver the updated outputs and outcomes during the RC3 period. Subject to the outcome of the external review carried out by Irish Water, the CRU will monitor Irish Water's progress against these outputs and outcomes during the RC3 period and will use these outcomes and outputs as the baseline of minimum expected outputs and outcomes against which it will review Irish Water at the end of the RC3 period to determine Irish Water's delivery and efficiency.

#### 4.7.3.3 Conclusions on Network Capex

Section 34 (3) of the Water Services (No. 2) Act 2013 provides for the CRU to determine the period for Irish Water's Capital Investment Plan. The CRU has decided that the relevant period will be for five years being 2020-2024.

The CRU has decided on a network capex allowance of €3,739m for the RC3 period. However, Irish Water have an opportunity to increase their network capex allowance by up to €788m in line with the process set out above. The CRU expects that Irish Water will deliver the updated outputs and outcomes, set out in this paper, at a minimum, over the RC3 period.

The table below sets out the CRU's decision in respect of Irish Water's network capex allowance during the RC3 period.

| | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
|---|---|---|---|---|---|---|

| | €m | €m | €m | €m | €m | €m |
|---|---|---|---|---|---|---|
| Irish Water Network Capex Request | 780 | 881 | 1,083 | 1,121 | 967 | 4,832 |
| Efficiency Challenge | -23 | -36 | -68 | -86 | -92 | -305 |
| Irish Water Unapproved Costs | 0 | -197 | -197 | -197 | -197 | -788 |
| **Approved Network Capex** | **757** | **648** | **819** | **838** | **678** | **3,739** |

#### 4.7.3.4 CRU review of Irish Water's Non-Network Capital Investment Submission

Irish Water made a submission with regard to the level of non-network capital investment they plan to undertake to deliver overall outcomes, including those related to customer service.

Included within the NNC categories of Fleet & Facilities, IT and Business Change was a contingency of 10%. The CRU has decided to remove these contingencies as the CRU is of the view that these should no longer be required. In relation to the category of WIOF, Irish Water requested a contingency of €9.4m. The CRU is proposing to reduce this to €2.5m. The removal of the contingencies and the reduction in the WIOF contingency results in a reduction in the NNC request of €40.3m.

In line with the CRU's approach in IRC2, the CRU has decided to apply an efficiency challenge of 5% on all new NNC projects. This results in a reduction of €5.9m. In addition, the CRU has decided to apply an efficiency challenge on two projects, which have been carried over from IRC2, relating to the delivery of the National Laboratory. The CRU is applying an efficiency challenge to these projects as Irish Water has not provided adequate information, to determine whether or not the project has been committed to (given CRU's decision to apply efficiency challenges to uncommitted projects). This results in a further reduction of €1.8m.

This results in the NNC capital expenditure reducing by €47m, from €425m to €377m, profiled as set out in 25 below. Therefore, the CRU has decided not to alter its approach form the consultation paper.

| Non-Network Capex (€m) | 2020 | 2021 | 2022 | 2023 | 2024 | Totals |
|---|---|---|---|---|---|---|
| Irish Water RC3 Non-Network Capex proposals | 98 | 118 | 106 | 65 | 38 | 425 |
| **RC3 Non-Network Capex Allowances - Decision** | **90** | **104** | **92** | **57** | **33** | **377** |
| **Reductions from Irish Water Request** | **-8** | **-14** | **-14** | **-8** | **-5** | **-48** |

*Table 25 - Recommended allowance for Non-Network Capex (rounded)*

### 4.7.4 Capital Expenditure Conclusions

The CRU is proposing the following expenditure allowances for RC3:

| Category | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m | Total €m |
|---|---|---|---|---|---|---|
| Network Capex | **757** | **648** | **819** | **838** | **678** | **3,739** |
| Non-network Capex | 90 | 104 | 92 | 57 | 33 | 377 |
| **Total** | **848** | **752** | **910** | **895** | **711** | **4,116** |

*Table 26 - CRU's Proposed Capex Allowance for Irish Water during RC3*

# 5. Incentives and Monitoring

## 5.1 Introduction

Performance-based incentives are an important component of revenue control regulation. They complement and enhance the requirement for a regulated monopoly business to efficiently manage costs by ensuring that the business has an incentive in the delivery of its responsibilities, particularly with regard to quality, efficiency and timeliness of service delivery to the customer.

Incentives should be meaningful, measurable and implementable and can either be financial incentives which can include a corresponding penalty or reputational incentives, where performance against key metrics is published. For financial incentives, the success of an incentive regime is contingent on the correct balance being struck between risk and reward for the utility. If a regulator sets an incentive which is either overly rewarding to the utility (which exposes the customer to unnecessary costs) or overly punitive (which threatens the financial viability of the utility) this would be of little benefit to the utility and ultimately the customer.

Incentives are used by the CRU to encourage the utility to run its business in an efficient manner to reach targets set by the CRU. If targets are met, the utility would receive an incentive payment. However, if the utility fails to reach the target, in many cases an equivalent penalty would apply.

In previous Irish Water revenue controls, the CRU has included performance-based incentives on Irish Water similar to the approach which the CRU applies to the energy sector. For IRC2, the CRU decided that a combination of financial and reputational incentives (through monitoring and publication) should be utilised to incentivise Irish Water to improve its performance in key areas.

For RC3, the CRU has decided to continue the approach taken in IRC2 in order to build upon work currently being undertaken by Irish Water on a number of these incentives. In addition to continuing the incentives introduced at IRC2, the CRU has also decided to introduce further financial incentives, which may also have penalties associated with them.

The areas where financial incentives for RC3 will apply are:

- Rolling retention of additional opex efficiencies;
- The three pre-existing Non-Domestic billing incentives; and
- Leakage Reduction incentive.

Areas where the CRU has decided to continue reputational incentives through monitoring and reporting of Irish Water over the RC3 period are:

- The Irish Water Performance Assessment;
- The Customer Handbook; and,
- Capital Expenditure Monitoring.

## 5.2 Financial Incentives

### 5.2.1 Rolling Retention of Additional Opex Efficiencies

***Background***

The CRU has decided to continue the approach taken at IRC2 for the rolling retention of additional opex efficiencies, as set out below.

For electricity and gas utilities, allowances for operating costs are fixed for the duration of the revenue control. If the regulated utility spends more than it is allowed, it bears the cost. On the other hand, if the utility spends below what it is allowed due to making savings in an efficient manner, it can continue to earn that surplus for a specified period (often 5 years). The rolling element of the incentive, where the utility can earn the same number of years' worth of revenue regardless of what point during the revenue control the saving is made, is designed to incentivise the utility to make efficiency savings as soon as they are identified (that is, rather than waiting until the start of the next revenue control). This approach is used to deliver increased savings to consumers in the medium term.

It is important to note, however, that the utility cannot simply make savings through the avoidance of expenditure, which could be to the detriment of the relevant network and its customers. Customers benefit in the medium term by the progressive decrease in operating costs allowed at subsequent revenue reviews.

In relation to the retention period, the standard approach is to match the retention period with the length of revenue control period, usually five years.

To date, Irish Water has not sought to implement this incentive. As set out in section 4 of this paper, the CRU notes that Irish Water must reduce its opex costs and achieve more efficiencies in order to reach a level of comparable utility companies at a similar stage of development.

***CRU Decision***

The CRU has decided to continue to include a mechanism for the rolling retention of additional opex efficiencies for the next revenue control for Irish Water's controllable operating costs. The CRU has decided that:

- The incentive relates to the sum of all controllable operating costs only. It does not apply to uncontrollable costs. Irish Water's RC3 outturn will be compared with Irish Water's RC3 allowance and no claw back for an underspend of opex costs would apply.
- The rolling element of the incentive will be for a period of five years, i.e. the duration of the revenue control. That is, Irish Water will be permitted to earn five years' worth of revenue related to operating costs which were avoided for efficient reasons. The reduction must be sustained, that is, it cannot be a reduction for one year followed by an increase in any subsequent years related to the same item of work.
- Overspends will not be subject to the rolling element of this incentive.

### 5.2.2 Non-domestic Billing Incentives

***Introduction***

For RC3, the CRU has decided to continue the three financial incentives relating to the billing of non-domestic customers in the same form as decided upon for the IRC2 period. These three incentives are as follows:

- Non-domestic Bad Debt;
- Efficient Billing; and
- Billing Correction.

Irish Water now bill non-domestic customers centrally. However, at the time of the IRC2 decision, billing of non-domestic customers was carried out by local authorities on behalf of Irish Water. Therefore, while the non-domestic bad debt incentive came into effect for IRC2, the implementation of the other two incentives was dependent upon the formation of a robust baseline of data and therefore, these incentives could not come into effect immediately. Since 2018, Irish Water has engaged with the CRU on setting this baseline and Irish Water is currently progressing the implementation of these two incentives.

The incentive schemes outlined below are intended to apply to all regulated charges set by (or on behalf of) Irish Water to non-domestic customers (including mixed use customers).

In order to ensure that the utility is incentivised to actively pursue these incentives and the incentives do not overly reward the utility, the CRU has decided to place the following caps on the incentive payment that can be earned by the utility:

- €50k cap on the revenue that can be gained on individual customers to ensure that no single customer receives a bill for a very large amount (relating to efficient billing and billing correction incentives);
- €4m cap on each individual incentive per annum; and

- €10m cap on the total amount of revenue the utility can earn through these three incentives combined per annum.

### *1. Non-domestic Bad Debt*

*Background*

In order to encourage the utility to actively pursue outstanding debt amongst its non-domestic customers, at IRC2, an incentive mechanism associated with bad debt was decided upon. An incentive payment applied where Irish Water reduced their bad debt to a level lower than the level set by the CRU. This was set at 9.39% for IRC1 and 5% for IRC2. A penalty of €4m applied where Irish Water's actual bad debt was higher than the level set by the CRU and an incentive of €4m applied where Irish Water's actual bad debt was lower than the level set by Irish Water. The incentive, and corresponding penalty were capped at €4m per annum for each of the associated revenue control periods.

*Progress to Date*

In its IRC2 decision paper, the CRU decided to set the bad debt level at 5% bad debt provision of the billed amount for the IRC2 period. As part of their RC3 submissions to the CRU, Irish Water included an assessment of non-domestic bad debt for 2017 and 2018 which was higher than the 5% level set by the CRU. For 2019, Irish Water are forecasting that revenues will be equal to the allowances. Irish Water has assessed that for 2017 and 2018, it will be unable to collect €34.7m of the amount billed and accrued over the 24-month period. This is after the €4m penalty for 2017 and 2018 has been applied.

Please refer to section 8.8 for further details on adjustments in this regard.

*Decision for RC3*

The CRU is of the view that it is important that Irish Water continue to reduce its level of bad debt and has therefore decided to continue this incentive for the RC3 period. As in IRC2, an incentive payment will apply where Irish Water can reduce their bad debt to a level lower than the level set by the CRU. The CRU has decided to retain the 5% level set for IRC2. A penalty of €4m will apply where Irish Water's actual bad debt is higher than the level set by the CRU and an incentive of €4m will apply where Irish Water's actual bad debt is lower than the level set by Irish Water. The incentive, and corresponding penalty will continue to be capped at €4m per annum for the RC3 period.

Similar to the approach set out at IRC2, after what is deemed an appropriate period of time by Irish Water, the utility may make a request to the CRU for the shortfall in revenue that it was unable to collect from non-domestic customers. This would be in addition to the provision already set by the CRU relating to the corresponding revenue control period i.e. 9.39% and 5% respectively. In line with the approach taken at IRC2, the CRU has decided that, subject to Irish Water providing detailed breakdowns of the correction requested and the details of actual bad debt levels, the CRU will make a further provision for the uncollected revenue subject to a penalty. A penalty of €4m (maximum) per annum will be subtracted from the correction which was to be provided. If Irish Water do not make this request or do not provide sufficient information relating to its bad debt collection activities, the CRU has decided not to make any revenue correction and the utility must bear the loss of any additional uncollected revenue.

Through this incentive, Irish Water will be incentivised to:

1. Reduce bad debt levels within its non-domestic customer sector in order to achieve or beat the bad debt provision set by the CRU;

2. Investigate the specifics as to how the bad debt correction will be implemented, taking future bad debt collection rates into account, in order to be in a position to request a bad debt revenue correction from the CRU.

### *2. Efficient Billing*

The efficient billing scheme created an incentive to identify and correctly bill any non-domestic customers connected to the Irish Water network that do not receive a bill for the use of water and wastewater services. The intention is that if Irish Water bill more connected properties (i.e. above the baseline amount), they keep a certain percentage of the additional revenue billed.

In order for this incentive to be effective, the number of non-domestic connections that are currently billed is an important baseline. During IRC2, Irish Water has engaged with the CRU in order to implement this incentive. This process is ongoing, and therefore, in order to build upon the work carried out by Irish Water to date, the CRU is has decided to continue this incentive during RC3.

In setting this incentive, the CRU drew upon experience from other jurisdictions where a similar incentive scheme had been utilised. When putting this incentive in place in England and Wales (E&W), Ofwat decided to allow utilities retain a portion of extra revenue billed. This was done by multiplying the difference between expected billing and actual billing levels by an efficient billing factor of 42% of the average bill. For Irish Water, the CRU therefore previously decided to allow this approach whereby the utility may retain 42% of the additional revenue billed i.e. the

difference between expected billing and actual billing amounts multiplied by an efficient billing factor of 42%.

For the RC3 period, the CRU has decided to continue this incentive and the method set out above. This will incentivise Irish Water to prioritise large non-domestic customers that have not been billed in the past. This will also be subject to the cap on revenue that can be gained on individual customers.

The CRU has decided to continue this as an asymmetrical incentive for the RC3 period as the opportunity to earn additional revenue through the incentive (with no downside) will further act as an incentive for the Irish Water to bill all eligible customers in a timely and efficient manner, given that the migration of non-domestic customers to Irish Water is now complete. This incentive may be changed to a symmetrical incentive in the future, where appropriate

### *3. Billing Correction*

The billing correction scheme creates an incentive for Irish Water to identify and correct instances where properties are being charged less than they should be charged. Under this incentive, if Irish Water identifies eligible non-domestic customers that have been under-billed and start to bill those customers correctly, it is allowed to keep a portion of the additional revenue collected.

In order for this incentive to be effective, it was acknowledged that Irish Water will be required to provide appropriate information to demonstrate the amount of additional revenue it has billed out as a result of identifying these errors. As with the Efficient Billing incentive above, this data only became available following the completion of the data migration project.

Similar to the above, the CRU drew on experience from other jurisdictions when introducing this incentive. The CRU previously decided to follow Ofwat's approach in regulating utilities in England and Wales which aligned with the efficient billing incentive whereby 42% of the additional revenue billed could be retained by the utility. The calculation is: additional revenue billed to customers as a result of errors being identified and correct bills being issued multiplied by 42%. Ofwat has linked this incentive to back-billing in its regulation of utilities in England and Wales, where it revisits previous years and corrects for under-billing. However, the CRU has previously decided not to include back-billing within this billing incentives. The CRU has decided to continue with this approach for RC3.

For the RC3 period, the CRU has decided to continue this incentive and the method set out above. This will be subject to the cap on revenue that can be gained on individual customers.

The CRU has decided to continue to make this incentive asymmetrical as the opportunity to earn additional revenue through the incentive (with no downside) will further act as an incentive for the utility bill all eligible customers correctly in a timely and efficient manner. This incentive may be changed to a symmetrical incentive in the future, where appropriate

### 5.2.3 Leakage Reduction Incentive/Penalty

The CRU recognises the progress that Irish Water has made in water conservation, since it was established as the sole public water and wastewater utility. The CRU's analyses of data from meter reads and the First Fix Scheme show that customer-side leakage repair is also contributing to water conservation.

For RC3, the CRU recognises the need for Irish Water to accelerate its progress in leakage reduction. The severe weather events in recent years have highlighted the need for Irish Water to increase its efforts to fix leaks, reduce and then maintain leakage at lower levels than is currently the case.

At IRC1 and IRC2, Irish Water was allocated funding for the first fix programme to fix customer-side leaks. The CRU is of the view that this is an important area for Irish Water to target and will continue to support this programme. The CRU also acknowledges that significant progress will need to be made on public-side leakage to improve security of supply.

Leakage is monitored as part of the CRU's Performance Assessment metrics and as part of the Capital Expenditure Monitoring Framework. However, in its RC3 Discussion Paper, the CRU considered the introduction of an incentive which may act to accelerate a reduction in leakage. The CRU has therefore decided to introduce a leakage reduction related incentive mechanism.

In order to ensure that this incentive is as effective as possible, for the RC3 period, the CRU has decided to make this incentive symmetrical as the opportunity to earn additional revenue through the incentive will exist, however a penalty will be imposed if targets are not met which will ensure that Irish Water implement the incentive.

Irish Water has proposed an outcome of a reduction in leakage of 176ML/day (net water savings in the water supply network) by the end of RC3 as part of its submission to the CRU. Irish Water is currently in the process of implementing its new Leakage Management System (LMS) and will report to the CRU on its level of leakage following this implementation at the end of 2019. This will be the baseline, against which the CRU will monitor Irish Water during RC3. The CRU will engage with Irish Water during 2020 in order to finalise the incentive.

In line with the incentives above, the incentive and penalty will be capped at €4m per annum during the RC3 period.

### 5.2.4 Quality Data Provision

Recognising the need for Irish Water to provide good quality data to the public on its plans and activities, in its RC3 Discussion Paper, the CRU proposed introducing an incentive and/or penalty for quality data provision by Irish Water through publication in the provision of information to the CRU and other organisations.

Specifically, as Irish Water is no longer a newly-established utility, the CRU expects that the quality of data that it can provide to the regulator and knowledge that it has on its asset base will improve significantly during RC3. In the past, the CRU has encountered difficulties in obtaining information from Irish Water either due to lack of available data or lack of data available in a useful format.

While the CRU continues to consider the provision of quality data to regulators and the public, following further consideration of this, the CRU has now decided not to introduce an incentive and/or penalty for this during the RC3 period. In reaching this decision, the CRU considered the approach taken towards companies in England and Wales on this issue. However, differences also exist between companies in these jurisdictions and Irish Water. First, there are a number of companies in these jurisdictions, which provides for a competitive element upon which performance can be compared and secondly, these companies have licences which can be breached where quality data is not provided. As Irish Water is a monopoly water company which does not have a licence, as it is not required to do so, a similar incentive on the provision of quality data does not seem appropriate in this context. Furthermore, given the subjective element which would be required in determining what is ‘quality data’, the CRU has decided not to introduce this incentive for Irish Water in respect of the RC3 period. However, the CRU will continue to consider how to ensure that Irish Water delivers quality data to the public and regulators during the RC3 period and beyond.

### 5.2.5 Commercial Rates

In accordance with the Water Services Act 2017, commercial rates will be payable by Irish Water during RC3. As a result, in its RC3 Discussion Paper, the CRU set out that it may consider the application of an incentive, similar to the incentive it currently applies to Gas Networks Ireland (GNI), whereby, commercial rates are treated as a passthrough (uncontrollable) cost with a 50%

sharing factor (between GNI and the customer) on the Value of the Asset.[45] The CRU does this in the case of GNI to ensure that the customer only bears the cost of half the commercial rates.

As per section 4.2.4 of this paper, the CRU has decided to treat commercial rates as an uncontrollable cost for Irish Water. Therefore, the CRU has decided not to include an incentive in respect of commercial rates for the RC3 period. The CRU may, however, introduce an incentive for commercial rates in the future.

## 5.3 Reputational Incentives – Monitoring and Reporting

In addition to the financial incentives, the CRU has decided to continue to place reputational incentives on Irish Water through monitoring and reporting.

### 5.4 Monitoring of the Performance Assessment

The CRU developed a Performance Assessment Framework (CRU/16/308) which is a set of key performance indicators that measure Irish Water's performance with metrics covering several areas relating to customer service, environmental performance, quality of service for water supply, security of water supply and sewerage service. The monitoring and reporting of these metrics will, over time, enhance transparency regarding what service improvements are being delivered to customers for the money that is spent.

Since the Framework was introduced, the CRU has published three Irish Water Performance Reports and CRU commentary papers,[46] which set out the CRU's view of Irish Water's performance so far.

The CRU will consult following the publication of this decision on the continued appropriateness of the metrics included in the Performance Assessment Framework for the 2020-2024 period to ensure they still reflect key services areas for customers. The CRU will also set out the targets for each of the metrics in that consultation. The subsequent CRU decision will fully establish the Framework. The CRU will then monitor Irish Water's performance under the Framework from 2020 and publish reports periodically.

[45] Commercial rates are estimated as the product of the Value of the Asset (with a Global Valuation every five years) and the Annual Rate on Valuation (ARV) from each local authority. GNI reference that they have some limited control over the Value of the Asset through participation in determination and right to appeal, but none over local ARVs due to the dissolution/ merger of councils and no right to appeal. As such, a 75-25% sharing factor is set on the Value of the Asset, with a full pass-through on the ARV.
[46] Available at: https://www.cru.ie/document_group/irish-water-performance-assessment/

### 5.5 Monitoring of Customer Handbook

In 2014, the CRU published the Irish Water Customer Handbook,[47] outlining the required levels of customer service Irish Water must include in their Customer Charter, Codes of Practice and Terms & Conditions of supply. The Customer Handbook contains 353 services requirements and the CRU monitors and publishes information periodically on Irish Water's implementation of these requirements.

Part of the Customer Handbook includes a requirement for Irish Water to implement a Customer Charter which includes areas such as providing information to customers affected by supply interruptions, remedy of damage to property during meter installation and responding to customer complaints. The Customer Charter outlines Irish Water's minimum service standard guarantees; if any of these are not met, Irish Water will compensate customers with a €10 payment for each instance.

The CRU has decided to continue to monitor requirements under the Customer Handbook during the RC3 period.

### 5.6 Capital Expenditure Monitoring

In its IRC2 Decision Paper, the CRU set out its proposed high-level approach to monitoring capital investment during IRC2. The CRU then commenced work on a monitoring and reporting regime.

Prior to the development of this regime, the CRU published a report entitled Irish Water's Capital Investment Outputs 2016 (CRU/17/120) in June 2017. This document set out the key outputs and outcomes confirmed by Irish Water as delivered during the period from its establishment to the end of 2016 for the revenue allowed by the CRU.

Following on from this, the CRU published a report entitled Irish Water Capital Investments Monitoring Report January to June 2017 (CRU/18/057). The paper outlined Irish Water's actual and forecast delivery of its Investment Plan on 30 June 2017. The report also highlights some of the key outputs and outcomes delivered by Irish Water in the first six months of 2017. The second report of this kind, Irish Water Capital Investment Plan 2017-2021 Monitoring Report No. 2 was subsequently published on 29 April 2019 (CRU/19/026). That paper set out the key findings in relation to Irish Water's progression of the IRC2 Investment Plan based on the

[47] Available at: https://www.cru.ie/wp-content/uploads/2017/11/CRU17319-Irish-Water-Domestic-Customer-Handbook-14-November-2017.pdf

submission received from Irish Water along with key outputs and outcomes that were delivered in the first year of that Plan.

This monitoring is ongoing and the CRU will continue to publish periodic monitoring reports during RC3 based on the outcomes/outputs submitted by Irish Water as part of its RC3 submission.

## 5.7 Summary of Incentives and Monitoring

- The CRU has decided to continue the rolling opex incentive mechanism where Irish Water retains outperformance for a five-year period. This is intended to decrease costs to customers in the medium term.
- The CRU has decided to continue the three incentives relating to non-domestic billing which were in place during IRC2.
    - The CRU has decided to retain the 5% non-domestic bad debt provision for RC3. This is intended to incentivise Irish Water to collect revenue from non-domestic customers to whom bills are sent.
    - The CRU has decided to continue to allow Irish Water to keep 42% of additional revenue billed if Irish Water can bill more connected properties above the baseline amount. This is intended to incentivise Irish Water to ensure all non-domestic properties receive bills where appropriate.
    - The CRU has decided to continue to allow Irish Water to keep 42% of additional revenue billed if Irish Water can bill customers correctly where customers have been charged less than they should have been charged. This is intended to incentivise Irish Water to ensure all non-domestic properties are billed appropriately.
- The CRU has decided to introduce a new incentive related to leakage reduction. Irish Water is currently implementing a new Leakage Management System and the CRU will engage with Irish Water following implementation, expected later in 2019, to finalise the incentive.
- The CRU has decided to continue to monitor Irish Water's performance through the Irish Water Performance Assessment during the RC3 period but has decided not to put financial incentives in place for these metrics at this time.
- The CRU has decided to continue to monitor Irish Water's compliance with the Customer Handbook but has decided not to put financial incentives in place in relation to the handbook at this time.

- The CRU has decided to continue to monitor Irish Water's delivery of outcomes, outputs, timelines and budgets through the capital expenditure monitoring regime in relation to Irish Water's delivery of capital investments during the RC3 period.

# 6. RC3 Cost of Capital

## 6.1 Introduction

### 6.1.1 Background

In line with established regulatory precedent the CRU allows Irish Water to recover revenues to cover the total economic costs of its operations over a revenue control period. In previous revenue controls, the CRU has determined a Weighted Average Cost of Capital (WACC) for Irish Water using the Capital Asset Pricing Model (CAPM) approach. The WACC-CAPM approach involves determining an allowance based on the weighted average of efficient debt and equity costs (where the weights are based on respective debt and equity amounts or gearing).[48]

It is commonly used by regulators – and well understood by investors – to estimate the cost of equity of a regulated utility. It is also consistent with the approach that the CRU has taken across electricity, gas and water price/revenue controls to date.

However, as highlighted in the RC3 discussion paper (CRU/18/240) and consultation paper (CRU/19/091), changes to Irish Water's funding model since the IRC2 decision led the CRU to consider the risk that Irish Water will face at RC3 and the 'return' element of its allowed revenue, i.e. the level of revenue which Irish Water receives to reflect its cost of capital as calculated using the WACC-CAPM approach. Essentially, what is the risk faced by a largely state-funded utility and does the WACC model appropriately compensate the utility to the benefit of all stakeholders?

### 6.1.2 Context

In 2016 domestic water charges were discontinued and, naturally, Irish Water's funding model changed as a result. The Water Services Act 2017 was enacted, and domestic water services are now funded through Government subvention and Government equity (capital contributions). Under the new model the only debt to be raised by Irish Water can be against the revenue stream from the non-domestic sector. At IRC2, the non-domestic revenues accounted for approximately 20% of Irish Water's allowed revenue. Irish Water does not have an equity and

[48] Debt is borrowed funds (e.g. loan), while equity is funds invested by the shareholders (owners). Both the provider of the loan (lender) and the investor (equity holder) will expect to receive certain returns on the funds they have provided. For example, the interest that the borrower pays on a loan is the return that the lender receives. Similarly, a person that invests in a company expects some reward for this investment. By taking an average of the returns associated with the different types of financing (debt and equity) the CRU effectively determines how much return Irish Water will need for each euro it invests. This average is known as the Weighted Average Cost of Capital or WACC, which is the average of the cost of debt and the cost of equity. The WACC is calculated using a formula.

debt structure in the same way as, for example, the electricity and gas utility companies the CRU regulates do.

As a result of these changes the CRU considered[49] whether it was suitable to apply a WACC to Irish Water's business.

### 6.1.3 CRU decision on overall approach

The CRU extensively set out, in both the RC3 discussion and consultation papers, its rationale for considering different approaches at RC3 and will not do so in detail again in this paper. Following careful consideration, the CRU has decided that it would not be prudent to depart significantly from the approach taken in previous revenue controls at this time. As highlighted in the RC3 discussion paper, there are a wide range of potential regulatory models that the CRU may apply to Irish Water. Each of these would require significant analysis and stakeholder engagement, in order to develop an approach that suitably reflects the funding arrangements, while also providing the correct incentives. The CRU will consider this further after publication of this RC3 decision.

For RC3, the CRU has decided to continue with the WACC-CAPM approach for the reasons set out in Section 6.1.3 of the consultation paper. These reasons can be summarised as follows:

1. The non-domestic revenue source remains unchanged, i.e. non-domestic customer tariffs. Some domestic customers will also be liable for excess use charges during RC3. Maintaining the same approach for RC3 acknowledges the need for economically rational prices for non-domestic tariffs and excess use charges when they commence.

2. It provides a stable regulatory environment which benefits Irish Water as a utility, particularly in the event of any future change in Government policy.

3. A decision is still to be made with regard to the treatment of existing Irish Water commercial debt and any departure from the current approach would not be appropriate in advance of this.

4. Irish Water's funding is somewhat circular in nature with regard to the domestic sector, which considerably mitigates the funding effects of the CRU continuing with the standard WACC approach for RC3.

The CRU retained expert advice from Europe Economics to provide assistance in determining the level of WACC to be applied to Irish Water for RC3. The CRU also considered Irish Water's

[49] As highlighted in the RC3 discussion paper (CRU/18/240) and RC3 consultation paper (CRU/19/091).

cost of capital submission (CRU/19/091o) and its response to the consultation (CRU/19/148p). Following a detailed and careful analysis of the information the CRU has set out below its decision in relation to the level of WACC to be applied over the RC3 period. Further detail on the approach in determining the level of WACC can be found in the Europe Economics' report CRU/19/148z, which accompanies this paper.

The CRU will now further consider alternative approaches to reflect Irish Water's funding model and the level of risk it faces. The CRU will use this time to engage with stakeholders and develop its thinking ahead of the next revenue control, RC4. Any proposals developed by the CRU in this area will require significant engagement with stakeholders. The CRU expects to undertake this work long in advance of RC4 with a stakeholder consultation and decision expected in the future.

## 6.2 Calculating a WACC for RC3

### 6.2.1 WACC-CAPM

Consistent with the methodology detailed in the CRU's Advice to the Minister[50], the CRU is proposing to maintain the current WACC-CAPM approach to determine Irish Water's allowed rate of return. This approach is the standard regulatory approach across Europe and has been used by the CRU to date in its regulation of the water and energy sectors.

The weighted average cost of capital (WACC) is calculated using the following formula:

$$WACC = \left(\frac{E}{(D+E)}\right) * r_E + \left(\frac{D}{(D+E)}\right) * r_D$$

Where $r_E$ is the cost of equity, $r_D$ is the cost of debt and $E$ and $D$ are the total values of equity and debt respectively used to determine the level of gearing in the company, and so giving the relative weights between the costs of equity and debt finance. Within the context of the WACC-CAPM approach, CAPM is generally most useful in estimating the cost of equity. Although the cost of debt may also be expressed in CAPM terms, the cost of debt is usually conceived as being made up of a risk-free component and a company-specific risk premium. Further detail on the WACC-CAPM approach is set out in Appendix A of the Europe Economics final report, which accompanies this paper CRU/19/148z.

[50] Advice to the Minister on the Economic Regulatory Framework for the public water services sector in Ireland (CER/14/076).

### 6.2.2 Possible approaches

As highlighted in the consultation paper, the CRU examined the evidence from two possible approaches to setting the WACC.

The first approach (which is referred to as "IRC2-Approach") is consistent with the approach that the CRU adopted in IRC2. In this approach, it is assumed that the parameters of the cost of equity and cost of debt are not easily observed in financial markets. Effectively, the WACC is inferred (from broad economic and macroeconomic data and from historical experience) rather than observed, and judgements are made to take account of various distortions in the observed data that might arise from factors such as, for e.g., quantitative easing.

The second approach (which is referred to as "Market-Evidence-Approach"), in simple terms, is an approach that is more driven by observable financial market data. For the cost of equity component, this approach is in line with the estimation practice that has been adopted over the past two years by the UK regulators that are members of the UK Regulators Network (UKRN).[51] Under this approach, it is assumed that individual parameters of the CAPM can be more-or-less directly observed in market prices, and the model of the cost of equity is then assembled from these individual components. With regard to the cost of debt this approach also considers the evidence from observed components, i.e. real assets such as utility bond data.

A key advantage of the IRC2-Approach is that it most closely reflects the theoretical ideal and is well understood, having been used by the CRU in its approach to calculating a WACC to date. A key advantage of the financial market data driven approach is that the WACC responds quickly to shifts in financial market data. In the UK, the increased focus on financial versus economic data has been at least partly driven by a concern that consumers were consistently losing out in higher prices when regulators considered a more theoretical approach. However, it is worth noting that in an Irish context, as the market-based approach is inherently more volatile, in the years following the economic crash a financial market data driven approach would have led to customers in Ireland paying higher costs than they have done under the theoretical/IRC2-Approach.

### 6.2.3 Calculating the WACC

In considering its approach to setting the cost of capital the CRU notes that part of the reason that revenue controls exist is in order to review and update methodologies and regulatory determinations, which might otherwise become obsolete through time. More specifically, in the

[51] In this paper the CRU has combined the "UKRN-Approach" for the cost of equity and the "All-In-Approach" for the cost of debt from the Europe Economics' report into a single approach and termed it the Market-Evidence-Approach.

context of setting a cost of capital, the CRU seeks to strike the balance between providing regulatory stability to the utility, while also ensuring that the utility is funded adequately i.e. financeability, and consumers are not overcharged i.e. cost-reflectivity. At RC3, the CRU has continued to deliberate extensively on the weight it should place on observable market data, when calculating a WACC.

This thinking is reflected in the CRU's 2017 Price Control 4 (PC4) decision (CRU/17/260) on the cost of capital for Gas Networks Ireland (GNI). Here, the CRU gave greater consideration to current market evidence in some areas (as opposed to longer term trends) than it had done so in the past. In this decision the CRU conservatively incorporated current market evidence into its determination, noting that it is *"mindful of regulatory precedent and the value of regulatory stability and has sought in its assessment of the WACC to generally minimise the extent and magnitude of changes in regulatory policy within a short time frame*". The CRU stated that it intends to continue to take account of market conditions in future determinations and in particular, to keep under review the current low interest rate environment and consider how this should be reflected in the allowed cost of capital.

As highlighted above, the CRU consulted with stakeholders on the two possible approaches to setting the WACC, the IRC2-Approach and the Market-Evidence-Approach. However, as stated in the consultation paper, the CRU did not propose to calculate a WACC based solely on either approach. Furthermore, the CRU stated that a Market-Evidence-Approach alone, is not suitable in an Irish context, or in any smaller economy that is exposed to global markets to the same degree, as deriving a WACC from this approach alone could lead to volatility in the WACC.

The CRU continues to be of the view that it is not to the benefit of either utilities or customers for the CRU to apply a WACC methodology that significantly incorporates short-term variations in market data. However, market debt yields have been very low for more than five years, and the market evidence is that they are expected to remain low. That cannot reasonably be characterised as short-term volatility and is an observation the CRU could not ignore in this decision on the cost of debt.

As a result, the CRU has determined a WACC for RC3 that is based on the IRC2-Approach while also taking into account current market evidence and regulatory precedent. The CRU has placed greater weighting on market evidence in this determination than it did in PC4. This is consistent with the direction the CRU provided in its 2017 PC4 decision. The CRU has decided that the most appropriate way to use these approaches for RC3 is to draw on the evidence provided by the Market-Evidence-Approach, in the very least as a cross-check, rather than to derive a WACC

by strictly applying one methodology and not considering the other, as to do so would be likely to increase the risk of negative outcomes for customers.[52]

In addition, the CRU has considered its approach in the wider context of how it sets a cost of capital for the gas and electricity networks as well as water. As part of the upcoming PR5 project, which will set a WACC for the electricity transmission and distribution companies, the CRU will once again consider its WACC methodology and aim to make a determination that strikes the correct balance between stability and cost-reflectivity. It is also important to acknowledge that the CRU assesses financeability and carefully considers the unique factors related to different networks when forming a decision on the appropriate cost of capital for each sector.

Furthermore, the CRU acknowledges that placing a greater emphasis on current observable financial market evidence in this revenue control may signal a further intention to maintain this approach at future revenue/price controls. However, there are features that are unique to each regulated utility and in this case we note that Irish Water is a state-owned utility with a funding model that largely protects it from the risk associated with fluctuations in financing costs. Looking forward to its PR5 deliberations, the CRU notes that electricity transmission and distribution are different sectors and the approach taken in this RC3 decision may be modified or may not be as relevant or appropriate in assessing the cost of capital for PR5.

The CRU will shortly publish an information note, which will provide further information and clarity on the CRU's approach to setting the WACC and to highlight areas of the methodology, which the CRU may seek to refine in the future.

[52] For example, underfunding the utility may lead to financeability issues potentially resulting in a reduction of customer services, while overfunding the utility may lead to higher prices for customers and a reduction in the incentive for the utility to carry out its functions in the most efficient manner.

The table below provides a summary of the CRU's decision and the resulting WACC for RC3.

*Table 27: CRU's approach and the resulting WACC*

| | CRU proposal | | *Irish Water proposal* |
|---|---|---|---|
| | Method | Result | |
| Cost of equity (real pre-tax) | Based on IRC2-Approach, cross-checked with Market-Evidence-Approach and regulatory stability. | 5.43% | *6.88%* |
| Gearing | Same approach as IRC2, which considers regulatory precedent and comparator evidence. | 50% | *55%* |
| Cost of debt | Result of IRC2-Approach and Market-Evidence-Approach produces range, with point estimate within range based on consideration of a number of factors. | 1.80% | *2.86%* |
| **WACC (real, pre-tax)** | | **3.61%** | *4.65%* |

The sub-sections below present the CRU's approach to calculating the parameters that make up the WACC. For the full detailed analysis of the evidence see the Europe Economics report on the cost of capital for Irish Water which has been published alongside this paper (CRU/19/148v).

## 6.3 Cost of Equity

The cost of equity is the rate of return that an investor expects to earn when investing in shares in a company. Within the context of the WACC-CAPM approach, CAPM is used to determine the cost of equity, $r_E$, applying the following equation:

$$r_E = r_f + \beta_E * (TMR - r_f) = r_f + \beta_E * MRP$$

Where $r_f$ is the return on a risk-free asset, i.e. the risk-free rate, usually proxied by a measure of the rate on medium to long-term government bonds. $\beta_E$ is the beta, which is the correlation between the risk in company returns and those of the market as a whole, in other words, a firm's exposure to systematic risk, which can be estimated from market data. *MRP* is the market risk premium, the difference between the Total Market Return (TMR) and the risk-free rate, an economy-wide parameter. In practice the Total Equity Market Return is usually regarded as a good proxy for the TMR and accordingly the equity risk premium (ERP)[53] is used as a reasonable proxy for the MRP.

Thus, in the standard CAPM there are three determinants of the expected return on any asset: the return on a riskless asset; the total market return earned by investors as a whole, reflecting systematic risk; and the particular company's exposure to systematic risk.

[53] The equity risk premium (ERP) is the additional expected return investors in equities demand above the risk-free rate.

In terms of the IRC2-Approach and Market-Evidence-Approach54 to calculating the cost of equity, these approaches are best viewed as different models of the cost of equity, rather than as setting bounds of ranges for individual components of the cost of equity. The CRU uses the two approaches overall, in a consistent way, to produce a cost of equity range. The ranges from the two models are compared and form a cost of equity range that is informed by both models.

### 6.3.1 Calculation

**Methodology**

Two approaches to setting the cost of equity are set out in full detail in the CRU's consultation paper (CRU/19/091) and Europe Economics final paper (CRU/19/148v). To summarise, in order to calculate the ERP, the Market-Evidence-Approach subtracts the risk-free rate, which is estimated from a combination of spot yields of 10-year Irish government bonds and the ECB forward curve, from the total market return, which is derived using dividend growth models. While the IRC2-Approach derives the ERP by subtracting the risk-free rate, which is estimated from a correlation between ECB potential growth forecasts and yields on government bonds, from the total market return, which is derived from evidence such as DMS long-term data and regulatory precedent.

Both approaches involve the same way of calculating the beta, i.e. examination of data from a set of relevant comparators, with the greatest weight placed on data from water companies and UK utilities. The beta is then combined with the RFR and ERP to calculate the cost of equity.

**Updates to evidence since consultation**

For the Market-Evidence-Approach this results in a real cost of equity range of 3.13% - 5.31% with a point estimate of 4.22%. This is a reduction when compared to the consultation figures, which had a range of 3.86%-6.63% and a point estimate of 5.02%.[55] This decrease is a result of a significant decrease in the risk-free rate due to changes in Irish government bonds yields and ECB forward curve rates, and a decrease in beta (equity beta reduced from 0.64 to 0.6). There is also some upward pressure due to a slight increase in the TMR.

For the IRC2-Approach this results in a real cost of equity range of 4.08% - 5.45% with a point estimate of 4.75%. There has been a slight reduction at the top of the range when compared to the consultation figures, which was 5.62%. However, the point estimate at 4.75% is unchanged.

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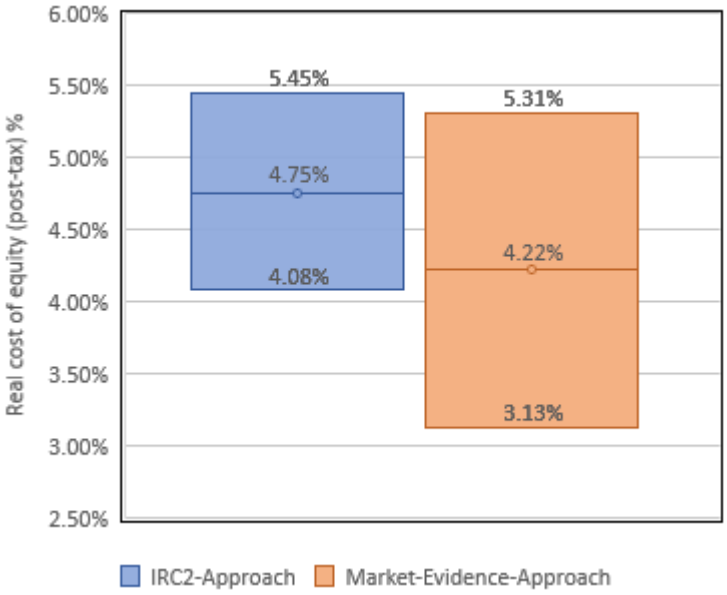
[54] In the context of the cost of equity this approach represents the UKRN-Approach, as presented in the Europe Economics report.
[55] The consultation paper had a data cut-off date of 30 April 2019, while the final decision has incorporated the latest available data resulting in a data cut-off date of 30 September 2019.

Although there has not been a significant change in the overall cost of equity under this approach there have been some changes to the components of the cost of equity, however these changes balance out in the round. See Section 4.3.2 and 4.4 of the Europe Economics paper for further information.

In the figure below the results of the two approaches to calculating the cost of equity have been presented.

*Table 28: Real cost of equity (post-tax)*




**CRU Decision**

From the above it can be seen that the IRC2-Approach range is narrower and lies almost entirely within the Market-Evidence-Approach (MEA) range, with the point estimate of the IRC2-Approach above the point estimate of the MEA. The MEA's wider range is a reflection of the uncertainty associated with it and the significant reduction in the point estimate since the consultation is a reflection of the volatility associated with this approach and the effect that changes in the underlying data can have.

In order to derive an overall cost of equity range the CRU has taken the IRC2-Approach range (4.1% - 5.4%) as this range lies mostly within the Market-Evidence-Approach range, and therefore a cost of equity figure within this range is supported by both approaches. Using the mid-point of that range the CRU has decided on a point estimate of 4.75%, which is the point estimate of the IRC2-Approach.

In the case of the cost of equity the CRU is currently of the view that cross-checking the results produced by the IRC2-Approach with those of the MEA and the regulatory precedent is the most

appropriate approach. As the MEA produces volatile results with a wide range of uncertainty, the CRU is of the view that it is not appropriate to place significant weighting on these results at this time, however it provides a useful cross-check.

Adjusting from post-tax to pre-tax[56] results in a real the real pre-tax cost of equity of 4.69% - 6.17%, with a point estimate of 5.43%.

## 6.4 Cost of Debt

The cost of debt rate is the return a company must provide to investors (lenders) in order to be able to raise finance through debts. Within the context of the WACC-CAPM approach it should be noted that although the cost of debt may also be expressed in CAPM terms, the cost of debt is usually conceived as being made up of a risk-free component and a company-specific risk premium.

### 6.4.1 Calculation

**Methodology**

Two approaches to setting the cost of debt are set out in full detail in the CRU's consultation paper (CRU/19/091) and Europe Economics final paper (CRU/19/148v). To summarise, under the IRC2-Approach, market data is used to determine the "spread" or "premium" of risky corporate bonds over very low risk government bonds of equivalent maturities. The yields produced are then added to an estimate of the risk-free rate (already estimated for the cost of equity calculation). Under the Market-Evidence-Approach, the CRU estimates the cost of debt directly from the bonds of other utilities (in this case ESB). The CRU also examined the evidence provided by an approach that weighted the directly observable cost of debt with historic yields, as part of a thought experiment that recognises embedded debt.

**Updated Evidence since Consultation**

For the decision, the CRU updated its analysis to reflect most recent data, i.e. the data for the decision is updated to a new cut-off date of 30 September 2019 (the consultation data was as at 30 April 2019) For the Market-Evidence-Approach this results in a real cost of debt range of -0.26% - -0.1% with a point estimate of -0.13%. This is a significant reduction when compared to the consultation figures, which had a range of 0.95%-1.15% and a point estimate of 1.05%. This decrease is a result of a significant decrease in the observable yields of Irish utility bonds. The

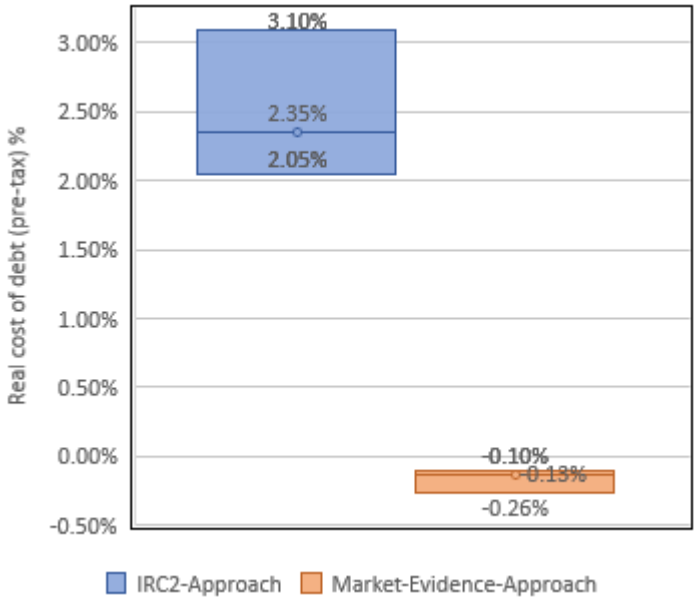
[56] Regulatory precedent in Ireland overwhelmingly favours the use of the statutory tax rate of 12.5% in the calculation of the pre-tax WACC.

embedded debt consideration, which examines combines the MEA with a weighting to reflect historic debt results in a cost of debt of 1.82%.

For the IRC2-Approach, this results in a real cost of equity range of 2.05% - 3.1% with a point estimate of 2.35%. There has been a reduction when compared to the consultation figures, which had a range of 2.29%-2.79% and a point estimate of 2.59%. This decrease is a result of a decreased risk-free rate, while the range has increased in size to a change in the debt premium and further consideration of regulatory precedent.

In the figure below the results of the approaches to calculating the cost of debt have been presented.

*Table 29: Real cost of debt (pre-tax)*




**CRU Decision**

The CRU has derived a range for the cost of debt of -0.1% to 2.4% by considering the evidence provided by both approaches (i.e. the point estimates of the IRC2 and Market-Evidence approaches). It is clear that the two approaches produce markedly different results; their ranges do not overlap as is the case when deriving the cost of equity. This makes selecting an appropriate cost of debt difficult.

In its PC4 decision, the CRU derived a cost of debt range of 1.0% - 2.5%, which considered a range of evidence, similar to the approach taken to derive the range for RC3. In setting the cost of debt for PC4 the CRU considered regulatory precedent and the importance of regulatory stability. In considering both approaches, the CRU conservatively incorporated current market evidence into its determination by selecting the upper end of the range as the cost of debt, i.e.

2.5%. In that decision the CRU stated that it intends to continue to take account of market conditions in future determinations and in particular, to keep under review the current low interest rate environment and consider how this should be reflected in the allowed cost of capital.

Adapting this approach for RC3, the CRU proposes to again make an incremental and conservative change by further taking into account the market evidence and regulatory precedent. The CRU has placed greater weighting on market evidence in coming to its determination on an appropriate cost of debt and has decided to move from the upper end of the range for RC3. In its consultation paper, the CRU proposed a cost of debt of 2%. Given the significant decrease in the observable cost of debt since the consultation, as highlighted by a stark reduction in the Market-Evidence-Approach point estimate from 1.05% to -0.1%, the CRU has adjusted the cost of debt lower to 1.8%. The CRU notes that this revision of 20 (basis points) bps is only a third of the 60 bps drop that 10-year nominal bond yields have seen since 30 April 2019, and thus, in the CRU's view, it is conservative and does not overly rely on short-term market trends.

The reason for the CRU placing greater weight on the Market-Evidence-Approach when setting the cost of debt, as opposed to the cost of equity, is explained by the difference in approaches. The Market-Evidence-Approach to setting the cost of equity involves a modelling approach as the cost of equity cannot be observed ex-ante. In the case of Ireland, the Market-Evidence-Approach results in significant uncertainty. However, the Market-Evidence-Approach to setting the cost of debt is based on current observable evidence. Therefore, the burden of discounting the observable cost of debt (which is likely to be not far from the true cost of debt, even if not precisely it) should be reasonably high.

## 6.5 Gearing

Gearing is defined as the ratio of a company's debt to equity, usually expressed in percentage form as follows:

$$\frac{Debt}{Debt + Equity}$$

Gearing primarily affects the WACC through the relative weighting of debt and equity. Equity capital typically has a higher required return than debt capital, due to the greater risk borne by equity investors. In isolation, higher gearing levels reduce the WACC. However, gearing also affects the WACC in two further ways. First, higher gearing increases the riskiness of equity holders' returns. This increases the calculated equity beta, which increases the cost of equity. This partially offsets the reduction in the WACC discussed above. Second, gearing is one of the

factors considered by credit ratings agencies in their assessment of the creditworthiness of companies. In general, companies with higher credit ratings have lower debt costs. Therefore, an increase in gearing may result in a higher cost of debt if the change leads to a lower credit rating.

### 6.5.1 Calculation

**Methodology**

In forming a view on the appropriate level of gearing levels for Irish Water, evidence from regulatory precedents and gearing values of relevant comparators was examined. In the IRC2 determination the gearing level chosen was 45%. In the recent PC4 determination for GNI the gearing assumption was 55%. In addition to the regulatory precedent, gearing evidence from comparators based on the 2-year trailing average of net-debt to enterprise value of each comparator was examined.

**Updated Evidence since Consultation**

There have been no notable changes to the gearing data since the CRU's consultation publication.

**CRU decision**

This evidence results in a CRU view that the appropriate gearing range is 50%-55%. The lower bound is consistent with the gearing value of water companies, whilst the upper bound is consistent with the average gearing of pure-play water companies. Given the highly notional concept of gearing in the context of Irish Water, and that the previous determined value for Irish Water was 45%, so as to minimize change, gearing of 50% is set for RC3.

## 6.6 Overall WACC

By combining the point estimates for the cost of equity, gearing and cost of debt the CRU has derived a WACC of 3.61%. The table below provides a summary of the Irish Water proposal, the CRU's proposed WACC and the CRU's final decision.

| | Irish Water proposal | CRU proposal | CRU decision |
|---|---|---|---|
| **Cost of equity (real pre-tax)** | **6.88%** | **5.71%** | **5.43%** |
| **Gearing** | **55%** | **50%** | **50%** |
| **Cost of debt** | **2.86%** | **2.00%** | **1.8%** |
| **WACC (real, pre-tax)** | **4.65%** | **3.86%** | **3.61%** |

*Table 30: Summary of WACC*

The figure below highlights where the CRU's final decision of 3.61% compares to the WACCs calculated using both approaches.

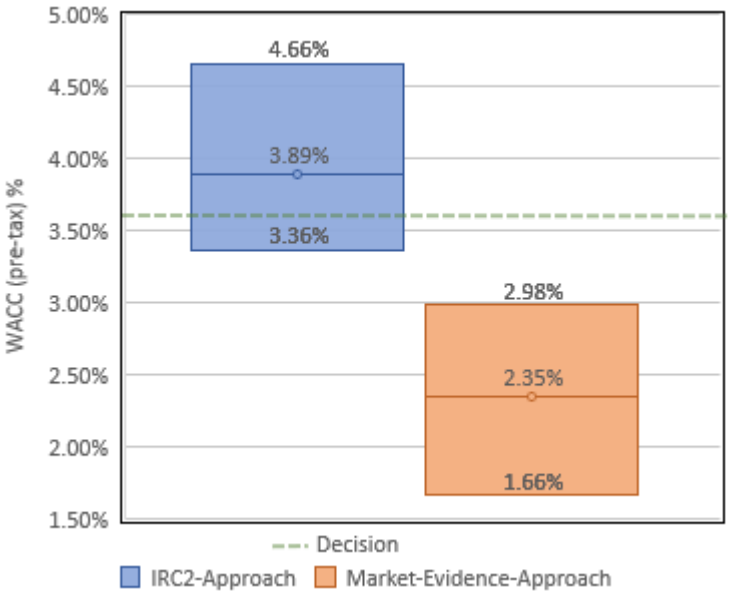



*Table 31: WACC for RC3 and range of evidence*

The CRU consulted on a WACC of 3.86%. Since the consultation the underlying data used to derive the WACC has been updated to reflect a later cut-off date of 30 September 2019. This has reduced the WACC to 3.61%, a not insignificant reduction of 0.26 percentage points. The consultation WACC of 3.86% was based on latest data as at 30 April 2019. The CRU updated its analysis for the decision to derive the values with a later cut-off date of 30 September. Changes to the underlying data in that five-month period have resulted in the lower WACC position than that presented at the consultation phase (now 3.61%).

The biggest drivers of this reduced number have been a sizable fall in beta (i.e. perceived riskiness of an Irish water utility relative to the market) and observable government bond yields (Irish government bonds are now negative).

The CRU recognises that there has been a significant reduction in the WACC between this decision, 3.61%, and the CRU's PC4 decision 4.63%. However, the majority of this decrease is explained by changes in the underlying data and sectors, rather than any methodological decisions made by the CRU. For example, replacing GNI's PC4 beta with that of Irish Water's RC3 beta, while retaining all other elements of the PC4 WACC calculation, results in a reduction from 4.63% to 3.82%.

The CRU continues to be of the view that it is not to the benefit of either utilities or customers for the CRU to apply a WACC methodology that significantly incorporates short-term variations in market data. However, observable market yields have been very low for more than five years, and the market evidence is that they are expected to remain low. That cannot reasonably be characterised as short-term volatility and as such the CRU has incorporated this evidence into the cost of debt.

In summary, the CRU has determined a WACC for RC3 that is based on the IRC2-Approach, which considers established theoretical economic relationships, while also taking into account current market evidence and regulatory precedent. The CRU has placed greater weighting on market evidence in coming to its determination on an appropriate WACC for Irish Water than it did in PC4. This is consistent with the direction the CRU provided in its 2017 decision on the WACC for GNI. The CRU has decided that the most appropriate way to use these approaches is to draw on the evidence provided by the Market-Evidence-Approach, in essence as a cross-check, rather than to derive a WACC by strictly applying one methodology and not considering the other. To do so would be likely to increase the risk of negative outcomes for customers.[57]

The CRU acknowledges that placing a greater emphasis on current observable financial market evidence in this revenue control may signal a further intention to maintain this approach at future revenue/price controls. However, there are features that are unique to each regulated utility and in this case we note that Irish Water is a state-owned utility with a funding model that largely protects it from the risk associated with fluctuations in financing costs. Looking forward to its PR5 deliberations, the CRU notes that electricity transmission and distribution are different sectors and the approach taken in this RC3 decision may be modified or not as relevant or appropriate in assessing the cost of capital for PR5.

[57] For example, underfunding the utility may lead to financeability issues potentially resulting in a reduction of customer services, while overfunding the utility may lead to higher prices for customers and a reduction in the incentive for the utility to carry out its functions in the most efficient manner.

# 7. Review of 2017-2019 Costs

## 7.1 Introduction

In its role to determine value for money for the customer, the CRU has reviewed the expenditure by Irish Water during the 2017 – 2019 period, to see whether it was efficiently incurred, and whether or not any adjustments need to be made in subsequent price controls. In this section, we examine the operating and capital costs incurred by Irish Water during the three years of the IRC2 period.

## 7.2 Review of Operational Expenditure 2017-2019

### 7.2.1 Objective

Irish Water's operational costs for the IRC2 period (1st January 2017 – 31st December 2019) were approved by the CRU as part of its IRC2 decision[58]. As part of the process to put in place the RC3 decision, Irish Water provided information on its performance during the IRC2 period, relative to the level of operational costs approved by the CRU.

The main objective of the historical review (often referred to as a lookback review) is to assess whether Irish Water's expenditure was incurred efficiently while delivering the expected outputs as agreed at the time of the CRU's IRC2 decision.

This section examines the information provided by Irish Water on its performance and outturn costs relative to the CRU's allowed revenue in the IRC2 decision. In the IRC2 period, the CRU set challenging operating cost efficiency targets of 5% per annum (year on year). Irish Water reduced its operating expenditure year on year, over the IRC2 period, in line with the targets set by the CRU in its IRC2 decision.

Irish Water reports an overspend of €6m or 0.7% relative to its IRC2 opex allowance.

[58] IRC2 initially covered the period 1st January 2017 – 31st December 2018 and was subsequently extended by one year as a result of the WSA 2017

### 7.2.2 Review of 2017-2019 Operating Costs

#### *7.2.2.1 Overview*

Table 32 below provides a high-level summary of:

- The operational costs approved by the CRU for the 01 January 2017 to 31 December 2019 period;
- The operating costs incurred by Irish Water during that period; and,
- The variance between the two

Within the table, costs are divided into those over which the CRU considers Irish Water has control ('controllable') and those over which it does not have control ('uncontrollable'). Controllable and uncontrollable costs are described in section 7.2.2.3.

Figure 9 below shows the trend in Irish Water's controllable operational expenditure requests since IRC1 and IRC2, the CRU's allowances for these periods, and Irish Water's outturn.

Table 33 below outlines the operational costs approved by the CRU for the 01 January 2017 to 31 December 2019, including a breakdown of the cost the CRU allowed for recurring operating costs and one-off items.

#### *7.2.2.2 Background and Introduction*

The CRU imposed an efficiency challenge of 5% per cent a year (cumulative efficiency) for the IRC2 period as part of its IRC2 decision (and subsequently 5% in 2019 one-year extension). In setting the level of the efficiency challenge the CRU considered the progress made by Irish Water in reducing its costs during the IRC1 period (1st October 2014 – 31st December 2016) while noting that Irish Water submitted costs that were still high when benchmarked against established utilities in other jurisdictions. The CRU considered that a 5% efficiency challenge was reasonable in the context of what other water utilities have achieved at a comparable stage post introduction of regulation.

The efficiency target for IRC2 was set globally, for all controllable operating costs, meaning that Irish Water could determine how it delivered the efficiencies within the different cost categories while continuing to deliver an appropriate level of service. The CRU monitors Irish Water's customer service levels by ensuring it is compliant with the Customer Handbook, and by requiring it to report on a number of customer service metrics as outlined in the Irish Water Performance Assessment. If Irish Water maintains its customer service levels and stays within its

approved operating expenditure it is considered to have met its overall efficiency target. The CRU did not insist that Irish Water achieve the 5% efficiency challenge in each cost category, rather that Irish Water's total savings amount to 5% each year cumulatively from its 2016 submitted controllable operating costs.

In its IRC2 decision, and subsequently in its 2019 decision (IRC2 one-year extension), the CRU provided Irish Water with a number of one-off allowances, in addition to Irish Water's base (reoccurring) controllable operating expenditure allowances. The CRU expected these one-off allowances to be spent on a number of specific activities to build operational capability over the period, and that these costs would not reoccur in subsequent revenue control periods (further discussed in section 7.2.4 below). The extent to which the CRU considers Irish Water has met its IRC2 efficiency target, depends on Irish Water's delivery of these specific items, in terms of whether the costs associated with these items reoccur in RC3, or were incurred once off.

Information provided by Irish Water suggests that costs associated with these one-off items have been built into Irish Water's baseline operating costs. In this context, Irish Water did not achieve the efficiency targets put on them in IRC2. While Irish Water has kept within its operational expenditure allowance, it has not closed the efficiency gap to that expected by the CRU. This means they will face even greater challenges in RC3.

The different operating cost categories are discussed in further detail below. Table 32 provides a high-level summary of:

- **Column A**: The operating cost allowance approved by the CRU for the 01 January 2017 to 31 December 2019 period (in its IRC2 decision, and subsequent one-year extension);
- **Column B**: The operating costs incurred by Irish Water during that period;
- **Column C**: The CRU's revised IRC2 allowance;
- **Column D:** The difference between CRU's ex post allowance and its original allowance (Column C – Column A) for IRC2. This adjustment is based on a review of the information provided by Irish Water on its performance relative to the IRC2 allowance; and,

- **Column E**: The variation or over/underspend by Irish Water against the revised allowance. [59]

The following points should assist in explaining the below tables (32 & 33):

- The CRU has decided to clawback -€9m from Irish Water's IRC2 allowance due to an underspend on uncontrollable costs.
- Considering the reduction in its IRC2 allowance, Irish Water has incurred an overspend of €15m for the period. This equates to approximately 0.7% of its IRC2 allowance indicating that Irish Water has broadly kept within its allowance set by the CRU at IRC2.
- Irish Water outturn for the IRC2 period is referred to as actuals in this section. However, they are based on actual expenditure up to and including September 2018 and a forecast of expenditure thereafter.
- All monies are in 2017 prices, rounded to the nearest €m.
- Domestic Customer Service costs were removed from the CRU's allowance due to the removal of domestic water charges as per the Water Services Act 2017[60]
- The CRU allowed €19.8m over the course of IRC2 (2017 / 2018) on a one-off basis to 'invest in capabilities' to roll out a uniform service across the country and improve customer service and environmental compliance. This one-off allowance was extended by €9.9m for 2019.
- The CRU granted Irish Water the flexibility to spend a further €26m in controllable operating expenditure allowance should it be required during 2019, given the nature of the one-year extension and the constraints of the new funding model.
- A once-off allowance of €10m for taking in charge of housing estates, administrative costs associated with customer billing, GDPR was provided to Irish Water for 2019.

[59] The CRU allows Irish Water a global opex allowance within which it should manage its expenditure. Irish Water can decide what areas of the business (cost categories) it will drive efficiencies. The CRU will then assess if Irish Water overall opex spend was occurred efficiently.
[60] Domestic Customer Service Costs were estimated at €20m p.a. (the CRU 5% efficiency challenge was applied therefore the CRU allowance was reduced by €19m for 2017 and €18 for 2018)

| Operational Expenditure | A 2017-2019 Allowed (€m, 2017 prices) | B 2017-2019 Outturn (€m, 2017 prices) | C 2017-2019 Allowance ex-post (€m, 2017 prices) | D Variation in Allowance (€m, 2017 prices) | E Over/Under Spend (€m, 2017 prices) |
|---|---|---|---|---|---|
| Operations and Maintenance (Incl. SLA & DBO) | 1,549 | 1,559 | 1,549 | 0 | 10 |
| Target Operating Model (TOM) | 310 | 301 | 310 | 0 | -9 |
| Shared Service Centre | 64 | 72 | 64 | 0 | 8 |
| Group Allocation | 46 | 46 | 46 | 0 | - |
| Irrecoverable VAT and Insurance | 53 | 59 | 53 | 0 | 6 |
| **Total controllable Opex** | **2021** | **2036** | **2021** | **0** | **15** |
| Uncontrollable Opex | 23 | 14 | 14 | -9 | - |
| **Total Opex** | **2045** | **2051** | **2036** | **-9** | **15** |

*Table 32 -e x-post review of IRC2 Operating Cost Allowance (rounded to the nearest €m)*

| Overview CRU Decision on IW's Operating Cost Allowances for IRC2 | | | | |
|---|---|---|---|---|
| Operational Expenditure Allowance | 2017 | 2018 | 2019 | IRC2 Total |
| CRU Allowance (IW base/reoccurring Opex) | 675 | 646 | 634[61] | 1,955 |
| One-Off Allowance 'Investing in Capabilities'' | 10 | 10 | 10 | 30 |
| One Off-Allowance (Taking in charge of housing estates, administrative costs associated with customer billing, GDPR) | 0 | 0 | 10 | 10 |
| Additional Funding | 0 | 0 | 26 | 26 |
| Uncontrollable Opex | 7 | 11 | 5 | 23 |
| Total | **692** | **667** | **685** | **2,045** |

*Table 33 - Overview of CRU's IRC2 Operating Cost Allowance in including breakout of (rounded to the nearest €m)*

[61] This figure includes an additional allowance to address compliance deficits. In its 2019 decision the CRU accepted that this cost would reoccur, however, the CRU would expect that it would reduce over time as Irish Water realises efficiencies.

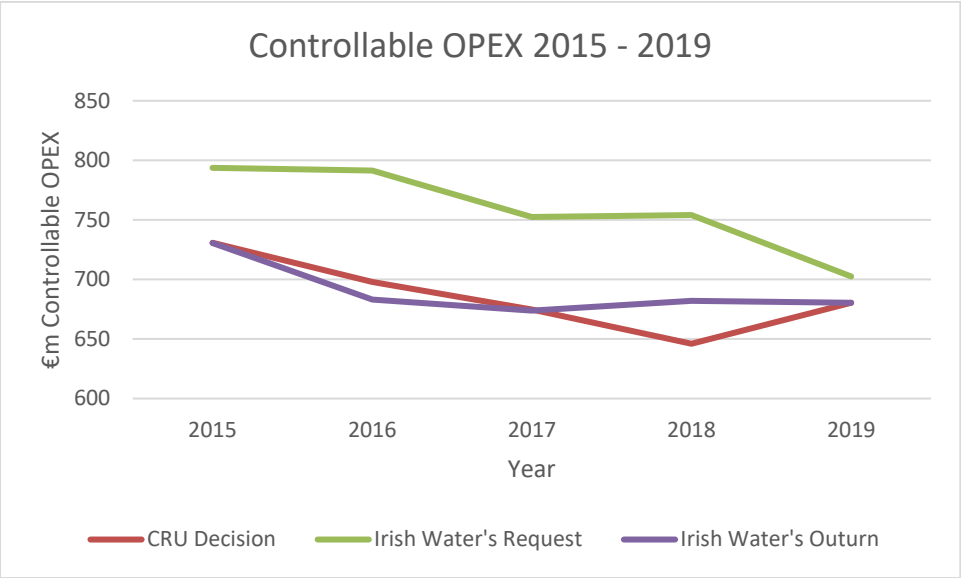



*Figure 9 Level of Irish Water's Controllable Operating Expenditure Request, CRU Allowances and Irish Water outturns (up to the end of IRC2)*

#### *7.2.2.3 Controllable and Uncontrollable Costs*

Irish Water's operating costs are the day-to-day costs it incurs running the business. These costs are split into two categories: controllable and uncontrollable:

- Controllable operating costs are those over which the CRU considers the utility has control, such as staff costs, consumable materials, etc.
- Uncontrollable operating costs are not directly controlled by the Irish Water, such as levies and rates.

This is an important differentiation as once the CRU accepts that a cost is uncontrollable it generally will allow an estimate of the cost for the period but will correct the allowance for the actual cost when completing the ex-post review. This ensures that if these costs are higher than expected the Irish Water's revenue is adjusted upwards to ensure it recovers these costs. On the other hand, if these costs are lower than expected Irish Water's revenue is adjusted downwards to ensure it only receives enough revenue to cover these costs. This approach is consistent with the approach taken by the CRU for the regulated gas and electricity network utilities.

### 7.2.3 Controllable Costs – Irish Water's Submission

In this section we examine the level of controllable costs incurred by Irish Water during IRC2. Since the efficiency challenge was put on the overall costs, rather than individual cost categories, it is appropriate to examine the overall costs, particularly since cost categories can be substitutes for each other.

**Operations and Maintenance (incl. SLAs and DBOs) (Allowed €1,548.6m; Outturn €1,558.7m)**

Irish Water's Operations and Maintenance category is the largest of Irish Water's operating costs categories, accounting for 71% of its overall IRC2 operating costs. It relates to activities carried out in the provision of water and wastewater services, including treatment, storage and distribution of drinking water and the treatment and disposal of wastewater. These activities are delivered in partnership with the local authorities through Service Level Agreements (SLAs) and Annual Service Plans (ASPs). The category also includes Design, Build and Operate (DBO) costs which are paid to external contractors for the operation of treatment plants on behalf of Irish Water.

**Targeting Operating Model (Allowed €310.3m; Outturn €300.9m)**

The Target Operating Model (TOM) refers to the business capabilities and processes within Irish Water. It describes the organisation structure, processes and systems that Irish Water need to carry out its business activities. The key cost drivers within the Irish Water TOM structure are Customer Operations, Operations and Maintenance, Finance and Facilities. TOM costs are comprised of Labour cost (e.g. payroll, training, recruitment etc.) and non-Labour costs (e.g. customer operations, billing, etc.).

The activities within the TOM category accommodate the SLA partnership between Irish Water and the 31 Local Authorities to deliver water services. It enables regional and national operations to be co-ordinated between Irish Water through the SLAs to deliver water services in an efficient manner.

Irish Water reports an underspend of €9.4m (3%) on the implementation of its TOM. This includes savings on Labour of €5.5m and in non-Labour of €3.9m. Irish Water state that the underspend is due to the timing of recruitment which has been phased to align with its transition to a single public utility. Hence, the lower TOM costs are off-set by higher SLA costs, with the net difference being approximately €1m.

**Group Centre & Shared Services Centre (Allowed €109.7m; Outturn €118.0m)**

Irish Water, as subsidiary of the Ervia group, shares several functions with its sister utility company Gas Networks Ireland. These functions are referred to as Shared Services and Group Centre, the costs of which are spilt on a 65:35 basis, reflective of the activity level of each utility and the relative size of each network (Irish Water 65%; Gas Networks Ireland 35%). Irish Water reports an overspend in Shared Services and Group Centre of €8.3m.

Shared Services costs relate to support across the Ervia group in the areas of finance, procurement, facilities, HR, IT and transactional services. In its RC3 submission, Irish Water explains that an increase in activity level within Shared Services over the IRC2 period has impacted costs. For example, the IRC2 submission outlines that Shared Services IT supports c3,000 users of Asset Management applications, however the number of users has now increased to 5,700.

Group Centre costs refer to those related to managing governance, strategic direction and risk. Irish Water state that the Group centre is critical to supporting Irish Water in business projects such as the implementation of the single public utility. Irish Water note a small increase in Group Services costs (0.6%).

**Irrecoverable VAT & Insurance (Allowed €52.6m; Outturn €58.7m)**

All Irish Water's costs are inclusive of VAT however, Irish Water is exempt from VAT, meaning it cannot recover VAT from Revenue. As Irish Water cannot recover VAT in the same manner as other companies it has included it as a separate cost, to be collected through the revenue control process. This is referred to as 'Irrecoverable VAT'. Irrecoverable VAT does not include expenditure on shared services within the Ervia Group. These items are costed exclusive of VAT as these entities have VAT recoverability.

During IRC2 Irish Water moved from a centralised combined Irish Water / Local Authority insurance model to a Self-Insured Retention (SIR) model managed through Ervia. The SIR model is in line with the existing approach adopted by Gas Networks Ireland and other water utilities in the UK. Irish Water states that it has experienced increased insurance costs over the IRC2 period due to statutory inspections programmes.

**Other Factors**

Irish Water, in its submission to the CRU, identified a number of areas where it experienced additional costs during the IRC2 period ("*Essential Cost Growth in IRC2*"). These additional costs are accounted for in Irish Water's outturn figure submitted to the CRU for the IRC2 period of €2,051m and relate to compliance, growth (i.e. an increase in population served as well as an increase in the number of treatment plants operated), and externally driven costs such as

changes in government policy. In the section above the CRU considered Irish Water's performance over the IRC2 period by the different operating cost categories.

In its RC3 submission Irish Water states that it is still a challenge to meet European and national environmental compliance requirements. As a result, Irish Water explains that it faced additional compliance costs of €29m during the IRC2 period, compared to what it estimated at the start of the IRC2 period. Irish Water identifies 'delta opex' as the key driver of "*Essential Cost Growth in IRC2*" over the IRC2 period. 'Delta opex' is explained as additional operating costs driven by increasing capital investment. In other words, as new water treatment plants and wastewater treatment plants become operational, Irish Water also identifies its national Lead in Drinking Water Mitigation Programme as a driver of "*Essential Cost Growth in IRC2*" over IRC2.

Irish Water states that it faced increased costs because of changes in legislation and government policy of €7m over IRC2 relating to 'Taking in Charge' of residential estates and Group Schemes. Irish Water note that these changes have resulted in an increase of Irish Water's asset base by c1,400kms over the IRC2 period, or approximately 2% of its total water mains. Irish Water also note GDPR and Excessive Use charging as increased costs resulting from changes in legislation / government policy.

Irish Water also states that several 'external cost' drivers lead to an increase in its operating costs of €20m over the IRC2 period. Irish Water identifies costs associated with an increase in economic and population growth in Ireland; an increase in energy pass through costs (such as the PSO levy); and increased SLA costs resulting from the National Wage Agreements as the key drivers.

Increases in Irish Water's TOM permanent headcount and shared services are identified as 'essential cost growth' in Irish Water's RC3 submission. Over the IRC2 period Irish Water states that it increased its TOM permanent headcount at a cost of €15m in line with the business needs. For example, Irish Water notes its Connection and Developer Service as an example an area where additional supervision and engineering support was required over the IRC2 period to ensure customer demand was met. Leakage, Waste Water Source Control and Discharge Licensing[62] and Environmental Regulation are also noted as key areas of recruitment over the IRC2 period.

[62] This is a function within Irish Water developing and implementing a strategy on management, governance, and licensing of commercial customer discharge into the wastewater network.

### 7.2.4 Controllable Costs - CRU Decision

Irish Water broadly met its IRC2 allowance for SLAs, marginally overspending by 1% (€10.1m). Irish Water achieved efficiencies in payroll and energy, however these efficiencies are largely offset by increased costs for goods and services. Good and services costs include store issues, chemicals, plant hire, and contractors used in the operating and maintenance of its water and wastewater systems. The CRU considers these costs to be normal business risks that Irish Water should manage.

Irish Water has outperformed in its TOM, achieving savings of €9.4m by managing its recruitment in line with business needs and reducing reliance of temporary and external resources. However, Irish Water also identified TOM as an area where it is experiencing additional costs (as discussed in the previous section above).

Irish Water reports an overspend on insurance costs by €5.8m a result of implementing required statutory inspection programmes. The CRU notes that Irish Water states that it ensures value for money on its insurance by using brokers.

With regard to Shared Services, the CRU acknowledges that Shared Services are supporting a greater number of activities and volume of users, however, the CRU views these additional activities as within control of Irish Water's management. Additionally, these activities have been designed to reduce costs elsewhere in Irish Water, for example increasing the use of IT should improve labour cost efficiency.

The CRU has not identified reasons to allow for variations in expenditure in these cost categories noted above and, therefore, the CRU has decided not to make an ex-post adjustment to the operating cost allowance provided for IRC2. The CRU expects that Irish Water should manage such risks within its overall expenditure allowance and therefore did not make any ex-post adjustment to the original allowance. The CRU's decision is in line with the CRU's IRC2 decision to allow Irish Water a global allowance, whereby Irish Water can determine how it delivers efficiencies within the different cost categories while continuing to deliver an adequate level of service.

***CRU Decision - Other Factors***

In assessing Irish Water's statements regarding the impact of meeting growth and compliance (other factors) requirements on its operating costs during the IRC2 period, the CRU notes that even in the context of the factors listed, Irish Water was able to meet changes in environmental and regulatory compliance, as well as operate more assets, while broadly meeting its allowance. The CRU therefore decided to make no cost variation to Irish Water's allowance in relation to

these other factors. In its IRC2 decision and subsequent one-year extension the CRU was clear that the cost of meeting upward cost pressures related to growth should be absorbed by Irish Water within its current operational expenditure levels.

The CRU notes that Irish Water broadly met its IRC2 operational expenditure allowances. However, as noted in section 4.3 above, within Irish Water's operating expenditure allowances, some expenditure was recurring, and some was provided by CRU on a one-off basis. For Irish Water to achieve any real efficiencies, it would need to be able to operate on an enduring basis, absent any one-off allowances. This is the basis on which the CRU accepted Irish Water's statement that it had met its efficiency challenges and was the basis for the operating expenditure allowance proposed by the CRU in the consultation.

As part of its review the CRU considered each element of Irish Water's *"Essential Cost Growth in IRC2*" request, as outlined above. With regard to costs outlined by Irish Water relating to "delta opex" and lead mitigation, the CRU does not consider that there is a case for a cost variation as these costs would have been anticipated by Irish Water when it developed its capital investment plan for the IRC2 period.

The CRU generally accepts that there is a case for cost variation where the variation results from changes in legislation or government policy. This is because there may be changes to Irish Water's obligations as a result of changes in legislation or government policy which were not anticipated at IRC2 review. However, Irish Water's states in its RC3 submission that these costs relate to 'Taking in charge', excess usage charging and GDPR. The CRU considers that these costs were known at the time of its IRC2 decision (2019 one-year extension) and were already funded to the amount of €10m, therefore the CRU has not made any cost variation.

The CRU also does not consider there is a case for a cost variation relating to the increase in Irish Water's TOM permanent headcount as Irish Water outperformed on TOM costs, including on labour.

With regard to Irish Water's additional 'external costs' relating to economic growth, energy, and national wage agreements, the CRU does not consider that there is a case for a cost variation. The CRU views these costs as normal business risks (i.e. it was known at IRC2 that Irish Water would face costs from economic growth and wage rate increases).

The CRU also allowed Irish Water an additional expenditure allowance €34.9m in its IRC2 decision (2019 one-year extension) to address additional growth and compliance requirements, address any essential additional expenditure gaps and continue investing in capabilities, in addition to €26m to allow flexibility to spend above its 2019 allowance if required. This was also

factored into the CRU's decision on Irish Water's operational expenditure allowance for the RC3 period, as discussed in earlier sections.

For these reasons, the CRU considers that Irish Water was adequately funded for the IRC2 period and has decided that no cost variation relating to Irish Water's *'Essential Growth in IRC2*" request was required.

#### *7.2.5 Uncontrollable Expenditure (Allowed €23m; Outturn €14.4m)*

**Summary**

As part of the process to put in place a decision for Irish Water's first revenue control (IRC1) the CRU allocated 'Licences and Levies' and 'Commercial rates' as costs outside of Irish Water's control (therefore categorised as uncontrollable). As discussed in section 7.2.2.3 above, the CRU generally treats uncontrollable costs as pass through costs. This approach was again taken by the CRU for IRC2 and is consistent with the approach taken by the CRU for regulated gas and electricity networks.

Licences and levies include the CRU levy and EPA licence fees for which Irish Water has limited control. Outturn for Licences and levies for the IRC2 period was €8.9m lower than allowed for at the CRU's decision.

Commercial rates are the fees that Irish Water is required to pay to the local authorities. Irish Water was not required to pay commercial rates during the IRC2 period.

**CRU Decision**

In line with CRU's IRC2 decision to treat Licences and Levies and Commercial rates as uncontrollable costs, the CRU has decided to adjust the IRC2 operating cost allowance by €-9m. This adjustment[1] feeds into revenue allowance set by the CRU for Irish Water for the RC3 period. This is discussed in further detail in section 8.

### 7.2.6 Conclusion – CRU Decision

**CRU Decision**

The CRU notes that Irish Water broadly met its IRC2 operational expenditure allowances. However, within Irish Water's IRC2 operating expenditure allowances, some expenditure was recurring, and some was provided by CRU on a one-off basis. For Irish Water to achieve any real efficiencies, it would need to be able to operate on an enduring basis, absent any one-off allowances. This is the basis on which the CRU accepted Irish Water's statement that it had met its efficiency challenges and was the basis for the operating expenditure allowance proposed by the CRU in the consultation.

Irish Water has broadly met its allowance for IRC2 while managing to increase its compliance levels and delivering service improvements to benefit its customers. The CRU acknowledges that this has been challenging for Irish Water, considering its growing asset base.

The CRU has decided to adjust the IRC2 allowance regarding uncontrollable costs. Irish Water's uncontrollable costs (licences, levies and commercial rates) were €8.9m less than originally forecast and therefore the CRU has decided to reduce the IRC2 allowance by this amount.

In relation to other cost overspends and deferrals mentioned above, the CRU has decided not to amend the IRC2 allowance.

It should be noted that the figures submitted by Irish Water for IRC2 are based on actual data for the period to September 2018 and forecast data thereafter. The CRU plans to review the outturn costs for the 1 October 2018 to 31 December 2019 period at a later date.

### 7.2.7 Innovation Fund

**Summary**

As part of its IRC1 decision the CRU approved an allowance of €4m over the IRC1 period to fund innovation. The purpose of this allowance (innovation fund) is to allow Irish Water to promote new technologies and improved ways of delivering water and wastewater service for customers within an incentive base regime where cost efficiency is the focus. This allowance is in line with initiatives by other regulators to promote innovation in networks. For Irish Water to draw down its innovation fund allowance it must first receive approval from the CRU for individual innovation projects.

Irish Water did not fully spend the €4m allowance during the IRC1 period. Subsequently in its IRC2 decision, the CRU allowed the remainder of the allowance to be spent at any point during the IRC2 period.

The CRU understands Irish Water intends to use the full allowance of €4m for innovative projects that fall under the scope of this allowance. The CRU also notes that some of this allowance was not spent during the IRC2 period.

Irish Water has requested that any innovation project approved by the CRU to date, or by the end of the IRC2 period be completed during the RC3 period. Irish Water recently applied to the CRU for approval of an innovation project which the CRU understands will extend beyond the end of the IRC2 period.

In addition to the allowance outlined above, as part of its RC3 submission, Irish Water sought an extra €4m to fund CRU approved innovation projects over the RC3 period.

**CRU Decision**

As Irish Water did not fully use the €4m allowance during the IRC2 period, the CRU has decided to allow the remainder of the allowance to move to the RC3 period. This should be spent on innovation projects approved by the CRU during the IRC2 period (including on innovation projects that will extend beyond IRC2 into the RC3 period). The CRU is proceeding on the basis that Irish Water will provide enough evidence to allow the CRU to asses that the allowance will be spent on innovation projects. If Irish Water does not provide enough evidence to warrant the expenditure, the CRU proposes to adjust the allowance at a later date.

The CRU has decided to allow Irish Water an additional €4m to fund innovation projects approved by the CRU within the RC3 period (€0.8m per year). This will allow Irish Water to continue to research and develop improved ways of delivering water and wastewater services to

customers. Similar to the allowance at IRC1 (which rolled into IRC2) this allowance is a once off allowance on a draw down basis only. The CRU received two responses to its consultation in regarding Irish Water's Innovation Fund. The CRU has addressed these comments in its RC3 Consultation Response Paper (CRU/19/148a)

## 7.3 Review of Capital Expenditure 2017-2019

### 7.3.1 Introduction and Summary

This section examines Irish Water's capital expenditure and delivery for the IRC2 period (2017-2019) compared with the expenditure allowed by the CRU and the outputs and outcomes committed to by Irish Water for that allowance. The allowances, along with the outputs and outcomes Irish Water committed to deliver during this period, are set out in the Irish Water Second Revenue Control 2017-2018 Decision Paper (CER/16/342) and the Irish Water Revenue Control 2019 Revenue Control 2 (2017/2018) One-Year Extension Decision Paper (CRU/18/211).

As part of the RC3 process, Irish Water provided the CRU with an updated position regarding its capital expenditure incurred during IRC2 period and the outputs and outcomes delivered during that period. Irish Water later informed the CRU that its outturn capital expenditure for the IRC2 period included customer contributions which should have been deducted to allow a like-for-like comparison with its IRC2 allowance. Having engaged with Irish Water during the consultation period, the CRU can now clarify that Irish Water reported a total capital expenditure in 2017-2019 of €2,012m, when customer contributions have been deducted, compared to the CRU's allowance of €2,026m resulting in an overall underspend of €14m.

The table below sets out the CRU allowance and the outturn as submitted by Irish Water as part of their RC3 submission.

| | 2017-2018 Allowed (€m | 2019 Allowed[63] €m | Total IRC2 Allowance €m | 2017-2019 Outturn €m | Variation in Allowance €m |
|---|---|---|---|---|---|
| Projects | 707 | 501 | **1,208** | 1,037 | -171 |
| Capital Maintenance | 123 | 97 | **220** | 127 | -93 |
| National Programmes | 217 | 185 | **402** | 784 | 382 |
| Expected efficiency for 2019 | N/A | N/A | N/A | -47 | -47 |
| Customer Contributions to be deducted | N/A | N/A | N/A | -89 | -89 |
| **Total Network Capex** | **1,047** | **783** | **1,832** | **1,813** | **-19** |
| **Non-network Capital Expenditure** | **104** | **89** | **194** | **198** | **-4** |
| **Total Capital Expenditure** | **1,151** | **872** | **2,026** | **2,012** | **14** |

*Table 34 - CRU's Allowed Capex 2017-2019 vs. Irish Water Outturn (rounded)*

During the course of the CRU's engagement with Irish Water during this process, Irish Water notified the CRU that it would be unable to spend its full €43m allowance for WIOF in respect of 2019 due to delays in implementing that programme. Irish Water stated that only €3m would be spent on WIOF in 2019. The remaining €40m would then be required during the RC3 period. This means that Irish Water's updated NNC outturn for the 2017-2019 period is in fact €158m resulting in an underspend of approximately €36m (comprised of an underspend on WIOF and an overspend in other NNC categories) during IRC2, as set out in the table below.

[63] Network capex allowed as per the requested figure for 2019 in Irish Water's 2017-2021 CIP

| | Total IRC2 NNC Allowance €m | 2017-2019 NNC Outturn €m | Amended 2017-2019 Outturn €m | Variation in NNC Allowance €m |
|---|---|---|---|---|
| Updated Non-network Capital Expenditure | **194** | **198** | **158** | **-36** |

*Table 35 - Updated NNC for IRC2 period (rounded)*

The table below sets out the details of Irish Water's over- and underspends by category:

| Category | Overspend or Underspend | €m | Comment |
|---|---|---|---|
| Network capex | Underspend | 19 | When customer contributions are deducted from Irish Water's outturn figures, Irish Water have underspent by €19m during the IRC2 period. |
| Non-network capex | Underspend | 36 | Underspend primarily due to an underspend of €40m in WIOF during 2019 which will be required during the RC3 period and a further €1m underspend on WIOF from earlier in the period. The CRU has determined from Irish Water's outturn that there is also an overspend of €5m in the category of NNC. |

*Table 36 Irish Water's Over and Underspends during IRC2 by category (rounded)*

As will be explained in detail below, following on from the consultation paper, the CRU has decided to recognise Irish Water's network capex outturn of €1,813m. In respect of the NNC, the CRU has decided to recognise the total IRC2 allowance of €154m (€194m less the €40m which Irish Water have stated that they will not be able to spend on WIOF during 2019 but will require during RC3). In respect of the €5m overspend in the non-network capex category, the CRU has decided not to adjust the CRU's IRC2 non-network capex allowance for this overspend as Irish Water has not demonstrated to the CRU that this additional expenditure was justified and that it delivered outputs which were beyond what was expected for the period. The CRU has, however, decided to adjust the allowance (or clawback) €41m of the IRC2 WIOF allowance as Irish Water has advised the CRU that this will not be spent due to the delays in WIOF implementation during

the IRC2 period. However, €40m of this, which it was expected would be spent during 2019, will now be required during the RC3 period and the CRU has allowed for this, as set out in section 3.7 above. The remaining €1m was from earlier in the IRC2 period.

An overview of the CRU's IRC2 decision regarding capital expenditure and a review of Irish Water's updated position as of end March 2018 (in respect of network capex) and September 2018 (in respect of non-network capex), is provided below in section 7.3.2. A summary of the CRU's views and proposals is provided in section 7.4.

## 7.3.2 Review of 2017-2019 Capital Expenditure Cost Categories

### 7.3.2.1 Background

This section sets out the CRU's review of Irish Water's capital expenditure and delivery, for both network and non-network programmes, during the IRC2 period. The section also sets out the CRU's decisions for adjustments to the IRC2 allowances, where required.

In its IRC2 decision papers, the CRU set out the range of outputs and outcomes that Irish Water was planning to deliver and determined an overall capex programme of € 2,026m for the three-year period (2017-2019) needed to deliver those outputs and outcomes. The CRU imposed an efficiency challenge of 10.2% (€132m) for both the network and non-network costs in 2017-2018. For 2019, the CRU applied an efficiency challenge of €8m in respect of non-network capex only. Excluded from these efficiency challenges was committed capital expenditure (for both network and non-network capex), the network extension programme and capital maintenance along with the WIOF programme. Irish Water has reported a spend of €2,012m over the IRC2 period.

### 7.3.2.2 Network Capital Expenditure

For IRC2, the CRU allowed a total of €1,832m to Irish Water for network capital expenditure. Irish Water are forecasting an outturn of €1,813m, reflecting an underspend of €19m (1.04%) on network capex over the IRC2 period. The CRU, in this review, examined whether Irish Water had incurred this capital expenditure efficiently and whether it delivered the outputs committed to at the time of the IRC2 decision and as set out in Irish Water' s Capital Investment Plan 2017-2021.

In 2017, Irish Water substantively reconfigured its Capital Investment Plan (CIP) to accommodate major rescheduling due to changes in national investment priorities and slower progress than expected in major projects. This resulted in Irish Water spending substantially less on the quality programme (water and wastewater projects), notably on the wastewater side to

improve environmental performance, and directed a far greater level of expenditure towards maintaining its networks (namely, national programmes or “other programmes”), as shown in Figure 10 below. Irish Water also undertook a fundamental review of the cost of its IRC2 Capital Investment Plan (CIP), following evidence that its 2016 plan understated costs and scope, as is discussed further below.

While the CRU had been aware that Irish Water had reconfigured its CIP during 2017, the CRU had taken the view that it was best to assess Irish Water’s expenditure and outputs at the end of the revenue control period. This has been carried out in this paper and is set out in detail below.

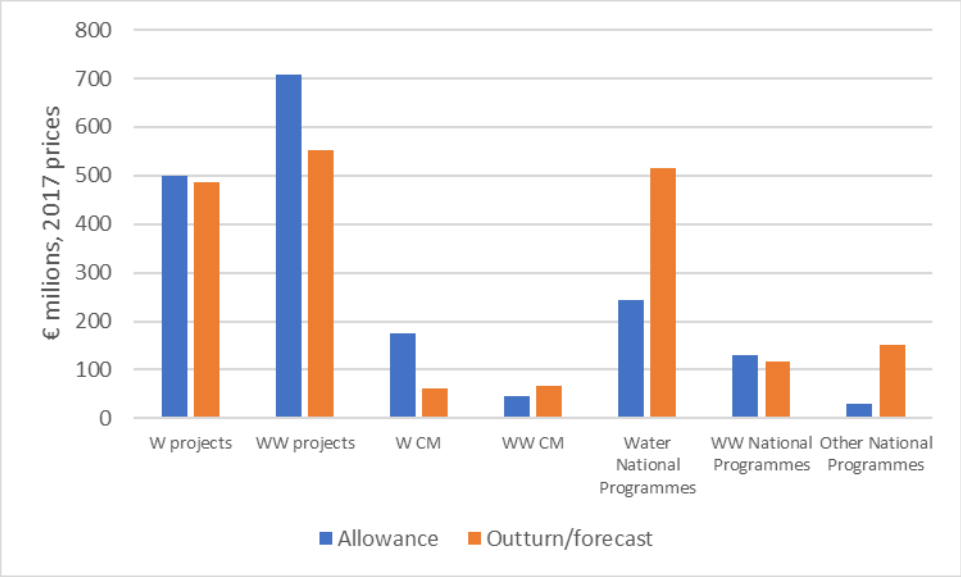



*Figure 10 Irish Water's allowance versus outturn for IRC2 period*

#### 7.3.2.3 CRU Review of Irish Water’s Outturn Costs & Delivery of the 2017-2019 Revenue Allowance

As a consequence of the substantive changes to the plan during 2017, the projects and programmes that Irish Water has delivered, or intends to deliver by the end of IRC2, have changed materially and the reporting of outputs/outcomes is not comparable with its earlier CIP, which was submitted as part of the IRC2 decision. These changes limit the ability of the CRU to undertake a comprehensive review of whether Irish Water met its commitments as outlined in IRC2, as the CRU would usually do.

However, the CRU, along with its advisors, has developed the following approach to assess Irish Water’ s performance in terms of how efficiently it delivered on its commitments, in terms of both

cost and delivery, over the IRC2 period. The first approach looks at comparing costs by looking at the unit cost of outputs, while the second approach seeks to determine Irish Water's delivery of outcomes.

### a. Unit Cost of Outputs

Two analyses were undertaken in order to assess Irish Water's outturn costs compared with its IRC2 forecasts for a sub-set of its capital projects.

These analyses use a sub-set of Irish Water's capital projects, to compare Irish Water's outturn costs with Irish Water's IRC2 forecasts.

**Analysis 1**

Under the first approach, 201 projects totalling €1.2bn of the IRC2 cost allowances were compared against cost estimates that Irish Water has submitted as part of its RC3 submission for the same projects. These RC3 submitted costs are used as a proxy for IRC2 outturn costs for the 201 projects, where the same projects for RC3, which deliver broadly the same outputs as intended at IRC2.

As set out in the table below, the forecast allowance at IRC2 for these 201 projects was €1,169m while Irish Water's RC3 forecast spend is €1,716m, an increase of €546.82m, or 47%. In particular, a substantive cost overrun was identified on projects at Gate 2 project status (approval to prepare design and cost estimate), which Irish Water explain, include a large number of projects inherited from Local Authorities (LAs).

The table below shows a comparison of IRC2 and RC3 costs for projects that appear to deliver broadly the same outputs. This analysis shows unit costs are 47% higher.

| Project status at IRC2 2016 submission | Number of projects in group | Estimated cost at IRC2 €m | Estimated cost at RC3 €m | Increase/ (Decrease) on IRC2 estimated costs €m | Increase/ (Decrease) % |
|---|---|---|---|---|---|
| Gate 0: Agree 6 year Business Plan | 58 | 237 | 339 | 102 | +43% |
| Gate 1: Approval to start concept design | 14 | 82 | 43 | (39) | (48%) |
| Gate 2: Approval to prepare deign and cost estimate | 108 | 654 | 1,124 | 470 | +72% |
| Gate 3: Investment and construction approval | 21 | 196 | 210 | 14 | +7% |
| Total | 201 | €1,169m | €1,716m | €547m | +47% |

*Table 37 - A comparison of IRC2 and RC3 Costs for Projects that Appear to Deliver Broadly Same Outputs Shows Unit costs 47 Per cent higher*

**Analysis 2**

Under the second approach, the IRC2 allowances for a set of 63 (€0.3bn) projects were compared with RC3 cost estimates (again, as a proxy for IRC2 outturns) where the projects (which were different) appear to deliver broadly similar outputs. This analysis shows that costs are around 25% higher than anticipated.

Taken together, the above analyses demonstrate that Irish Water's unit costs are substantively higher than its original IRC2 submission.

A further analysis was carried out which examines Irish Water's outputs and outcomes during the IRC2 period (see below).

**Irish Water's Assessment**

The CRU shared the results of its analyses with Irish Water. Irish Water did not dispute the findings of the analysis and confirmed that their analyses broadly agrees with the above. The Table below is extracted from Irish Water's analysis which demonstrates that the actual costs incurred during IRC2 are around 40% higher than the estimates at the time of the IRC2 submission, based on a comparison of the IRC2 and RC3 projects which were used in Analysis 1 above.

| Gate Status at IRC2 | No. of Projects | IRC2 (€m) | IRC2 H1 (€m) | RC3 (€m) | Variance IRC2 to RC3 |
|---|---|---|---|---|---|
| 0 | 58 | 237 | 319 | 339 | 43% |
| 1 | 14 | 82 | 62 | 43 | -48% |
| 2 | 108 | 654 | 1064 | 1124 | 72% |
| 3 | 21 | 196 | 207 | 210 | 7% |
| **Total** | **201** | **1169** | **1652** | **1716** | 47% |

*Table 38 - Irish Water's own analysis indicates that IRC2 outturn costs around 40 per cent higher than IRC2 business plan submission*

As noted earlier, during 2017, Irish Water reconfigured its CIP. The CRU was aware that Irish Water had undertaken this reconfiguration of the CIP during the IRC2 period. The CRU has now compared the programme which Irish Water has delivered (and will deliver by the end of 2019) against the programme which, in agreement with the CRU, Irish Water planned to deliver during the IRC2 period, which covered 2017 to 2019.

Irish Water explained that its 2016 IRC2 investment plan, which the CRU had approved, contained over 360 individual projects, at various stages of development, along with over 150 programmes. Approximately 50% of the projects were at the early stages and therefore the forecasted costs were uncertain. Irish Water also undertook a full review of the costing, including the Project Costing Tool (PCT) and estimating process, and the profiling of delivery of the Investment Plan 2017-2021.

This review by Irish Water concluded that costs had been consistently underestimated for the following reasons:

- lack of consistency in the cost base;
- lack of clarity around scope, and changing requirements as a result of national investment priorities; and
- the absence of standardised design and procurement approaches implemented by Irish Water.

Irish Water stated that, in particular, the review identified underestimation of costs for projects at gate 2, which were not subject to Irish Water's 2015 Project Costing Tool (PCT) but inherited from the Local Authorities. As the table above shows, Irish Water's analysis demonstrates that these projects, which were approximately half of the projects included in the IRC2 business plan submission, were underestimated by 72%. By contrast, projects at gate 3, which were costed

based on Irish Water's Water Investment Approval Committee (WIAC)[64] for its IRC2 submission, were found to have been under-estimated by just 7%.

Irish Water is of the view that the IRC2 outturn cost comparison should be undertaken between its RC3 lookback submission and the reconfigured CIP numbers (H1 2017) rather than the August 2016 CIP. Irish Water has also stated that it has taken a number of actions since the CIP review to reduce estimation risks, namely, setting up a dedicated team to manage the PCT and cost database, and ensuring all projects are costed using the PCT and Irish Water Cost Base.

While the CRU welcomes the steps taken above in this regard, at the time of the IRC2 decision, the CRU determined that the duration of the CIP submitted would be for the period 2017-2021. The CRU decided upon the allowances in the context of Irish Water delivering the agreed outputs and outcomes for the agreed allowances. Therefore, the CRU must compare Irish Water's outturn and expected outturn with the 2017-2021 CIP.

The CRU, based on the above analysis, has determined that, where like for like outputs were identified, the costs were higher than expected for the IRC2 period. Because of the change in the mix of projects and programmes, it was not possible for the CRU to do this analysis in aggregate as the changes meant that it was not possible to compare the programme which Irish Water carried out with that which was approved at IRC2, and therefore, in order to determine if the costs incurred were efficient, the CRU must now determine if Irish Water achieved its expected outcomes and outputs.

### b. Irish Water's IRC2 High-level Outcomes

As part of its business plan submission for IRC2, Irish Water identified a range of high-level outcomes that it expected to deliver during the IRC2 period. As part of its RC3 submission to the CRU, Irish Water has presented a summary of the outcomes achieved or expected to be achieved during the IRC2 period.[65]. During engagement with the CRU during this process, Irish Water has provided additional information on the actual performance for 2017 and 2018 and in some cases, forecasts have been updated in November 2018.

The table below presents the outcome targets that were included in the CRU IRC2 decision and for the extension year of 2019 along with Irish Water's actual (for 2018) and expected

[64] WIAC refers to Irish Water's internal governance process for ensuring that projects and programmes of expenditure are being tracked and are delivering the required outputs.
[65] Note for network capex that the figures up to March 2018 are actual and from April 2018 to December 2019 are forecast.

performance (for 2019), which it has reported to the CRU, against these targets. Given the short two-year review period, no targets were set at IRC2 for 2017.

| IRC2 & 2019 planned and actual reported outcomes at year end | | Performance as % of target | |
|---|---|---|---|
| **Indicator** | **Unit** | **2018** | **2019** |
| | **Note ref # >>>** | | |
| Number of people on Boil Water notices | No. | 100% | 100% |
| Number of WTP's on RAL | No. | 111% | 108% |
| Compliance with the parameters for Lead in drinking water | % | | 100% |
| Environmental Assessments | No. WTW EA | 60% | 62% |
| Plumbosolvency control plans | No. WTW CP | 192% | 198% |
| Replace backyard lead shared service | No. replaced | 82% | 86% |
| Replace individual lead service connection pipes | | | |
| | No. replaced | 334% | 121% |
| Leakage | Ml/d saved | 162% | 91% |
| Rationalisation of WTP's | No. | 392% | 106% |
| WWTW's compliance with UWWTD | p.e. | 90% | 96% |
| Overloaded WWTW's >2000 | No. | 67% | 100% |
| Overloaded WWTW's <2000 | No. | 87% | 123% |
| Agglomerations with no treatment or preliminary treatment only | No. | 52% | 107% |
| WWTW's compliance with emission limit values | No. | 127% | 146% |
| Sewer flooding | Projects in progress | | 183% |
| | Projects completed | | - |
| Energy efficiency improvement | % cumulative | | |
| | GWhr/yr saved | 112% | 112% |
| **Headroom Water a)** 60% of plants meeting headroom targets of: 20% in large urban areas, 15% in Regional Gateway Towns, 10% at all other plants | % | 0%[66] | 0%[67] |
| **Headroom Water b)** headroom in GDA and mid-Eastern Region to be greater than >15% | % | 0%[68] | 0%[69] |

[66] Irish Water have not reported on this metric.
[67] Irish Water have not reported on this metric.
[68] Irish Water have not reported on this metric.
[69] Irish Water have not reported on this metric.

| IRC2 & 2019 planned and actual reported outcomes at year end | | Performance as % of target | |
|---|---|---|---|
| **Indicator** | **Unit** | **2018** | **2019** |
| | **Note ref # >>>** | | |
| **Headroom Water c)** Reduce % of plants with headroom of <15% from 44% to 30% | % | 0%[70] | 0%[71] |
| Headroom wastewater, as Headroom water definition a). | % | 0%[72] | 0%[73] |
| Network capacity - Nr of supply zones with updated hydraulic models | No. | 100% | 450% |
| Network capacity - Nr of agglomeration covered by DAP | No. | 29% | 83% |

*Table 39- Irish Water's performance against IRC2 outcome targets as reported to the CRU*

#### 7.3.2.4 The CRU's Assessment of Irish Water's Performance

The CRU is of the view that Irish Water's performance in meeting its commitments to the outcome targets has been mixed, with overperformance and underperformance against targets in both 2018 and 2019. It should, however, be noted that the 2019 targets were not explicitly set by the CRU. Nonetheless, the CRU assumes that the targets Irish Water set for 2019 were no worse than the 2018 targets i.e. that in setting its 2019 targets, Irish Water only sought to improve upon its progress from the previous years.

Using an unweighted average score for the set of water and wastewater outcomes separately, on balance, the CRU has concluded that Irish Water has broadly met its targets.

However, a simple approach masks quite different outcomes in different areas. Irish Water delivered a large number of updated water supply zone hydraulic models relative to the target number. Although an important operational target, the outcome is of less direct relevance to customer service levels. In contrast, Irish Water did not deliver on several of its key operational targets, such as achieving headroom in its water treatment plants, which does have a direct impact on the level of security of supply for water services, a key customer service metric.

[70] Irish Water have not reported on this metric.
[71] Irish Water have not reported on this metric.
[72] Irish Water have not reported on this metric.
[73] Irish Water have not reported on this metric.

Irish Water's performance on a more qualitative basis has also been considered. Four outcomes have been identified which are amongst the highest priority for customers or environmental performance. These are:

- reducing boil water notices;
- the number of works on EPA remedial action list;
- the number of projects to address sewer flooding in progress; and
- improved compliance with the urban wastewater treatment directive (UWWTD).

For these four, Irish Water has met the targets except marginal underperformance for the improved compliance with UWWTD.

In terms of indicators that are important to public health and drinking water quality, Irish Water also expects to achieve key indicators in terms of lead compliance in drinking water, replacement of individual lead service pipes, and plumbosolvency control plans, with only marginal underperformance on replacement of shared lead services. Irish Water also expects to somewhat underperform against its leakage target levels, another key objective given the importance of improving headroom/reliability of supply in drought scenarios. It is worth noting that Irish Water reports to the CRU on first-fix leakage reduction levels only.

On the wastewater side, Irish Water expects to achieve key environmental outcomes in terms of addressing overloaded works, addressing agglomerations with no treatment or preliminary treatment only, and improving WWTW compliance with emissions in 2019. However, it did not realise some of these key measures in 2018, e.g. addressing overloaded works and provision of first time treatment.

In terms of outcomes that have less of a direct impact on customer service levels or environmental performance, Irish Water expects to substantively overachieve on the development of hydraulic models. It has not met the target for plants with environmental assessments but has met the outcome for rationalisation of water treatment plants. The latter is an important objective from an operational efficiency perspective, but less so in terms of the direct impact on customer service levels.

Irish Water has not reported on its performance in respect of water and wastewater supply headroom outcomes, which is a substantive outcome given both the importance of ensuring a reliable supply and improving environmental performance at works. As Irish Water has not provided the information, it has been represented as underperformance. Irish Water stated that the methodology for reporting has not yet been agreed among stakeholders and will only be agreed following the consultation on the National Water Resources Plan (NWRP).

The CRU found that Irish Water's performance was better in 2019 than in 2018. However, the target setting for 2019 may not have been as challenging as for 2018. By contrast, the roll-over year provided Irish Water an opportunity to re-state its outcomes for 2019 taking into account its performance against the set of outcomes up to that point in time.

On a qualitative basis, it is the CRU's view that Irish Water has met the substantive outcomes with two material caveats: it has not reported performance against additional capacity at water and wastewater treatment plants, and it did not realise required performance against some key environmental objectives in 2018.

It should be noted, however, that the IRC2 outcomes do not cover all aspects of Irish Water's Capital Investment Plan, as there were substantive elements of the IRC2 plan for which there were no reliable benchmarks. For example, there are no performance measures for a range of asset health metrics (also referred to as "serviceability"), such as water mains burst or sewer mains collapses, which may be used going-forward to assess Irish Water's stewardship of its underground networks. This was not undertaken at IRC2 as Irish Water's understanding of its assets at that time was not as great as it should be now, and therefore it was not possible to provide baselines in respect of these metrics.

This data is now being collected through CRU's Performance Assessment Framework, although it will require a few more years data to assess Irish Water's performance, given the need to have a number of years observations to smooth for the volatility in many of these measures.

#### 7.3.2.5 Overall Conclusions and Decision

The above analyses show that Irish Water's costs for specific outputs, where measurable, were between 25% and 47% higher than expected during the IRC2 period. The CRU acknowledges the rationale provided by Irish Water as to why the costs are higher, and therefore are not concluding on the efficiency of Irish Water based on this analysis.

The CRU examined whether or not Irish Water delivered on their IRC2 commitments, i.e., for the allowed revenue in IRC2, did Irish Water deliver on the planned outputs and outcomes. As the mix of projects and programmes was re-configured in 2017, the CRU has not assessed Irish Water's delivery of outputs; instead, the CRU focussed on the outcomes that were delivered over the IRC2 period. As described above, the CRU concluded that for the allowed revenue in IRC2, Irish Water broadly delivered on the specified outcomes.

In the Consultation Paper, the CRU set out that it was of the view that Irish Water's planning had improved. While that was the case at this time, given Irish Water's substantial changes to the

Capital Investment Plan (CIP) for RC3 during this revenue control process, the CRU now has serious concerns regarding Irish Water's planning and cost estimating process. The CRU is very concerned by this development, however, has put in place a plan, as set out above, to determine if Irish Water's updated plan has been costed correctly in line with demonstrable evidence and can deliver proportionate outputs and outcomes.

The table below sets out Irish Water's network capex allowance for the IRC2 period, Irish Water's outturn and the variance.

| | IRC2 Allowance €m | Irish Water Outturn €m | Variance €m |
|---|---|---|---|
| Network Capex | 1,832 | 1,813 | -19 |

*Table 40 - Irish Water's IRC2 Network Capex Allowance versus Outturn and Variance*

As outlined above, the CRU is proposing, to recognise Irish Water's network capex outturn of €1,813m for the IRC2 period and not to allow Irish Water to retain the underspend of €19m. This is because Irish Water has not justified to the CRU why it should be allowed to retain this €19m.

#### 7.3.2.6 Non-network Capital Expenditure

The category of Non-network capex refers to expenditure required for Irish Water's critical business assets in the following areas:

- Fleet & Facilities;
- IT;
- Business Change; and
- Water Industry Operating Framework (WIOF).

This section reviews Irish Water's expenditure in the non-network capex category during the IRC2 period to assess Irish Water's spend and delivery for the period.

***Overview***

The CRU approved a total non-network capital expenditure allowance over the IRC2 period of €194m. Irish Water has reported an underspend of €36m during the IRC2 period for this

category.[74] The underspend is primarily made up of a €40m underspend during 2019 as a result of delays in the implementation of the WIOF programme and Irish Water has informed the CRU that it will require this €40m for the implementation of WIOF during the RC3 period. This is discussed further below.

The table below sets out Irish Water's IRC2 allowance compared with its outturn and the variance as a result.

| Non-Network Capital | 2017-2019 Allowed (€m nominal) | 2017-2019 Outturn/Forecast (€m nominal) | Variation in Allowance (€m nominal) |
|---|---|---|---|
| **Fleet & Facilities** | 44 | 46 | +2 |
| **IT** | 59 | 65 | +5 |
| **Business Change** | 18 | 10 | -2 |
| **WIOF** | 73 | 38 | -41 |
| **Non-network Total** | **194** | **158** | **-36** |

*Table 41 - Non-network Capital Expenditure CRU Allowance vs. Irish Water Outturn (rounded)*

***Approach to Review***

In order to assess Irish Water's performance, the CRU and its advisors, selected a sample of projects for review for each of the major elements of the programme of expenditure and delivery.

For IT, eleven projects were reviewed for delivery efficiency. Only one project was assessed to have some element of uncontrolled overspend, however, it was concluded that all others performed well or satisfactorily. Irish Water forecast the IT portfolio to exceed the CRU IRC2 allowance of €59m by €5m (approx. 9%) resulting in a total expenditure of €65m.

Regarding the Business Change portfolio, Irish Water forecasts an underspend of €2m. The findings from the projects reviewed within this portfolio are mixed with projects being suspended, scope changes resulting in cost increases and decreases.

For Fleet & Facilities, Irish Water forecasts a marginal overspend in IRC2 of €2m (4%), despite the many scope changes in the projects. The overspend is principally attributed to the Fleet Operations programme being intentionally expanded in 2018 due to the significant opex savings it yields.

[74] Note that Irish Water's reported outturn is actual for January 2017 to September 2018 and forecast thereafter up to 31 December 2019. Irish Water forecast that its spend for 2019 will equal their allowance for 2019 other than for WIOF, as explained in this section.

The most significant variance from the planned programme arises from a forecast underspend on WIOF during 2019 of €40m, due to a slower than anticipated programme delivery. The residual expenditure is deferred to the RC3 period.

Other than the underspend on the WIOF programme due to delays, there is evidence of good project and cost control, of significant but necessary reconsideration of scope.

The table below summarises the CRU IRC2 allowance, Irish Water's IRC2 outturn and the variance.

| | IRC2 Allowance €m | Adjusted IRC2 Allowance €m | Variance €m |
|---|---|---|---|
| Non-network Capex | 194 | 153 | -41 |

*Table 42 - Irish Water's IRC2 Network Capex Allowance versus Outturn and Variance*

The CRU has decided to allow Irish Water its allowance of €194m for the IRC2 period less the €41m underspend in respect of WIOF which was not spent during the IRC2 period due to delays in implementing the project. The CRU is not proposing to allow the overspend of €5m as the CRU has not demonstrated to the CRU that it has delivered additional outputs for this expenditure.

#### 7.3.2.7 General Remarks on Capital Expenditure

As noted above, during the RC3 process, the CRU learned that due to delays in implementing WIOF, €40m of the €43m allowance for 2019 would not be spent during 2019, but that this allowance would be required during the RC3 period.

The CRU stated in its Revenue Control 2019 Decision Paper (CRU/18/211) that:

*"The CRU acknowledges that WIOF has not delivered at the pace anticipated to date and accepts that the funding requested for 2019 will only be spent if considerable strides are made in the project by that point. Essentially, the CRU understands that the funding is contingent on the WIOF project delivering in 2019."*

The CRU is therefore proposing to disallow Irish Water to recover this expenditure given that it was provided for the purpose of implementing WIOF during 2019, and in addition to this, the CRU has not received information on any alternative outputs which this expenditure delivered during 2019.

#### 7.3.2.8 Conclusion

*Network Capex*

For network capex, as set out previously, the CRU has decided to recognise the network outturn on the basis that Irish Water expects to broadly deliver the agreed set of priority outcomes for consumers by the end of the revenue control period in 2019, albeit these outcomes only partially capture the activities that Irish Water was funded to deliver at IRC2. The CRU has decided that Irish Water should not be allowed to retain any underspend as it has not provided information to the CRU setting out why it would need to retain this funding. The approach would also in effect largely recognise that although the costs for projects and programmes carried out during IRC2 are significantly higher than forecast at the start of IRC2, the actual costs incurred are reasonable, given Irish Water's re-costing of their projects and programmes that took place during the IRC2 period. The material increases in expected costs for the portfolio of inherited projects was due to the fact that the original estimates included in the IRC2 business plan submission had not been subject to Irish Water's own costing approach. However, as outlined above, the CRU became aware in July that Irish Water's reported outturn included customer contributions in respect of new connections which they state should be deducted for the purpose of comparing Irish Water's outturn to the CRU's allowance and Irish Water therefore state that they underspent on network capex during IRC2. The CRU is satisfied, that when customer contributions are deducted, Irish Water underspent by €19m on network capex. The CRU has therefore decided to recognise Irish Water's outturn of €1,813m for the IRC2 period.

*Non-network Capex*

For non-network capex, the CRU has decided to recognise the expenditure as per its IRC2 allowance, with the exception of WIOF where the CRU has decided to claw-back (i.e. adjust for) the underspend on WIOF of around €41 million where the expenditure/outputs have been delayed. This means that Irish Water has overspent the non-network capex by around €5m. (See Table below.) The CRU has decided to disallow this overspend as Irish Water has not provided evidence to the CRU justifying this expenditure in terms of additional outputs.

Overall, this results in an adjustment of -€19m to the network allowance in respect of the underspend and an adjustment of €-41m to reflect the delay to WIOF, and a restated allowance of €1,966m. This means that the CRU is proposing that Irish Water actual/forecast expenditure is around €60m less than the allowance, as shown in Table 43 below.

| Category | IRC2 Allowance €m | Irish Water IRC2 Outturn €m | CRU's Decision for IRC2 €m | Overspend €m | Underspend €m |
|---|---|---|---|---|---|
| Network Capex | 1,832 | 1,813[75] | 1,813 | N/A | -19 |
| Non-network Capex | 194 | 198 | 153 | +5 | -41 |
| **Total** | **2,026** | **2,011** | **1,966** | **+5** | **-60** |

*Table 43 - Irish Water's IRC2 Allowance, Outturn and Proposal*

## 7.4 Summary of Review of 2017-2019 Expenditure

### 7.4.1 Summary of Key Proposals

#### 7.4.1.1 Operational Expenditure (Opex)

- The CRU proposes not to adjust to allow for the €15m overspend in controllable opex.
- The CRU is proposing to clawback the underspend in uncontrollable opex of €9m relating to regulatory levies.

#### 7.4.1.2 Capital Expenditure (Capex)

- The CRU has decided to recognise the network capex outturn as at IRC2 of €1,813m.
- The CRU proposes to adjust the IRC2 non-network capex allowance to €153m.

[75] When customer contributions have been deducted.

# 8. Calculation of Revenue Requirement

## 8.1 Overview

This section details how the proposed allowed revenue figure for Irish Water is calculated. It outlines:

- Irish Water's regulated asset base including the composition, depreciation and asset lives applied to the RAB;
- A summary of the adjustments made to the outturn revenue; and,
- The calculation of the overall proposed revenue for Irish Water for the RC3 period.

Each of the above are discussed in turn below.

## 8.2 Irish Water Regulated Asset Base

### 8.2.1 Introduction

The revenue that is recovered from Irish Water customers and from Government subvention during each revenue control period can be divided into three separate categories:

1. Revenue to cover Irish Water's operational costs during that period;[76]
2. A return on capital invested in Irish Water's assets; and,
3. Revenue to cover depreciation of Irish Water's assets.

The Regulated Asset Base (RAB) plays a key role in the determination of the amount of depreciation that Irish Water receives (item 3 above) and is the base to which the rate-of-return is applied when determining the return on capital for Irish Water (item 2 above).

This section provides information on a number of interrelated issues that determine Irish Water's RAB. Specifically, this section provides information on:

- The type of assets within Irish Water's RAB;
- The methodology used to value the assets within Irish Water's RAB;
- The length of asset lives applied to the assets within Irish Water's RAB;
- The depreciation methodology applied to Irish Water's RAB; and

[76] There may also be an adjustment related to the previous revenue control.

- The regulatory treatment of additions to Irish Water's RAB.

## 8.3 Composition of the RAB

Please see the CRU's revenue model for detailed composition of Irish Water's regulated asset base at 01 January 2020. Information on the value of the assets is provided within the asset base itself.

Irish Water's capital expenditure is depreciated using asset life categories based on the expected economic life of the assets to be depreciated. Please refer to section 8.5 of this paper for a detailed discussion of the asset lives used for the RAB.

| | 2020 €m | 2021 €m | 2022 €m | 2023 €m | 2024 €m |
|---|---|---|---|---|---|
| **Operating Asset Value** | 3,470.4 | 4,322.8 | 5,093.3 | 6,048.3 | 7,000.8 |
| **Capex** | 883.6 | 798.1 | 985.5 | 988.3 | 800.9 |
| **Depreciation** | (107.6) | (127.5) | (149.1) | (173.1) | (194.3) |
| **Closing Asset Value** | 4,246.4 | 4,993.4 | 5,929.7 | 6,863.5 | 7,607.3 |

*Table 44 - Irish Water RAB 2020 - 2024 (2017, prices)*

## 8.4 Valuation of the RAB

### 8.4.1 Background and decision

The preceding section provides information on where to find detail on the valuation of the RAB. However, the approach to valuing the assets within the RAB is also an important decision within the revenue control process. The core issue regarding the valuation of Irish Water's RAB is whether the RAB should reflect the value of the assets now (replacement value) or when they were built (acquisition cost). A number of approaches were highlighted in the consultation paper, such as acquisition cost and replacement cost.

The CRU decided that Irish Water's RAB would be valued using a replacement cost approach[77] for IRC1. The use of this approach continued during IRC2 and the CRU has decided to continue this approach in RC3.

[77] : Assets are valued at what it would cost to replace existing assets. There are two approaches to replacement cost: indexing the acquisition cost of the assets; and revaluing the asset based using a modern equivalent asset (MEA) approach.

While it is recognised that there are advantages and disadvantages associated with each methodology[78], the replacement cost approach was taken as it is more likely to result in the correct level of network investment. The CRU has decided to continue its current approach for valuation of the RAB into the next review period. On the basis of regulatory certainty and maintaining regulatory precedent the CRU has decided that the methodology for valuing the RAB, which has been established during previous periods, will continue.

There are a number of variations of replacement cost that could be used. The version used by the CRU uses the acquisition cost, indexed with inflation, as a proxy for the replacement cost.

## 8.5 Asset Lives applied to the RAB

### 8.5.1 Introduction

The estimated useful asset lives applied to assets on the RAB will affect the rate of depreciation on assets in each control period (and indeed in each year). This in turn will impact on the overall allowed revenue which Irish Water is entitled to receive in each year. For example, an asset with a historic cost of €100m and an asset life of 10 years would be depreciated on a straight-line basis equally over the 10 years, resulting in an annual revenue to Irish Water of €10m.[79]

Typically, capital expenditure is depreciated using asset life categories based on the expected economic life of the assets to be depreciated.

### 8.5.2 Background and Irish Water proposal

It was decided in the previous revenue controls for Irish Water that the use of average lives in line with expected economic lives informed by current international practice would be appropriate due to insufficient data on Irish Water's asset portfolio. The CRU considered this method a reasonable representation of the working life of assets, with typical asset life assumptions based on Scottish and Northern Irish water sector experience.

As part of the first interim revenue control, the CRU allocated pre-October 2014 expenditure into categories which reflected the expected economic lives of the amounts spent and set an opening RAB. The CRU did not allocate specific water/wastewater infrastructure assets (e.g. pipelines, meters) to specific depreciation rates or asset lives. Instead, the CRU allocated the total capital expenditure to different categories of asset lives using percentages based on what has been evident in other jurisdictions.

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[78] The advantages and disadvantages of each are detailed in Table 7.2 of the IRC2 decision paper (CER/16/342).

[79] Simplified example which does not include inflation effects or the rate of return to reflect the cost of capital.

In the RC3 discussion paper (CRU/18/240) the CRU stated that it would engage with Irish Water and consider alternative approaches to setting asset lives. The CRU stated that it may allocate specific asset types with a useful economic life (e.g. meters, pipelines), consistent with how asset lives are set in the electricity and gas sectors. This is because Irish Water now has greater knowledge on the make-up of its asset base and the economic life of its assets.

As a result, Irish Water reviewed the asset life/depreciation policy in place and proposed alternative useful economic lives that better reflect the historic and future investment profile.

Irish Water proposed to broadly retain the existing depreciation arrangements for capital costs incurred over the previous review periods with some minor amendments. However, it proposes, to adopt alternative asset categories for expenditure from the beginning of RC3 onwards. As Irish Water noted in its submission, there is no uniform approach in comparable sectors, but it has taken an approach which applies the same broad principle, i.e. to align asset lives with useful economic lives. See the CRU's consultation paper for full detail on Irish Water's proposals.

### 8.5.4 CRU Decision

Owing to Irish Water's increasing maturity as a utility and greater understanding of its asset base and expected capital expenditure, Irish Water has proposed to adjust the assumed asset lives, number of asset categories, and allocated expenditure for RC3. Irish Water considers that its approach will more closely align cost recovery with the expected operational lifetime of the asset as is standard practice amongst regulated utilities.

The CRU considers that this approach is prudent as it ensures that charges to consumers more closely reflect the economic costs of service provision, which promotes intergenerational equity, i.e. fairness between what customers of today pay for and what future customers pay for. As a result, the CRU has decided to implement Irish Water's proposal. The overall effect is an extension of asset lives relative to the current arrangements resulting in a lower relative depreciation charge per annum, and therefore allowed revenues will be lower under RC3 than they would be under the previous approach.[80] However, there is no impact on the value of revenues recovered over time from these changes as the CRU's financial models discount for the value of money over time at the WACC to produce a revenue figure in present values.

[80] Irish Water have estimated a 14% reduction per annum in the sum of the rate of the return and depreciation.

## 8.6 Depreciation Method

### 8.6.1 Background and decision

Economic depreciation profiles the original capital cost of a project over its useful life. There are a number of possible methods through which asset bases may be depreciated; some relevant examples are straight-line, sum-of-years-digits and declining balance depreciation.

It was decided for the previous revenue controls for Irish Water that depreciation would be calculated on a straight-line basis to depreciate the assets over their expected useful economic life. This is consistent with the CRU's approach to calculating allowed depreciation for the energy networks in Ireland. The following benefits were noted:

- Straight-line fully depreciates the assets over a period of time. The declining balance method does not, as it is calculated as a portion of the declining value of the asset.
- Due to the nature of the design life of water and wastewater assets and the load profile of the use of the assets, the straight-line method was considered to be a reasonable representation of depreciation.

For RC3, the CRU has decided to continue applying the straight-line method of depreciation used to date. This is consistent with the approach taken by the CRU at previous water revenue controls and in electricity and gas price reviews and maintains regulatory stability. However, regulatory stability aside, the rationale that led to this approach being chosen in the first instance would still provide relevant arguments for choosing straight-line depreciation for the forthcoming period.

## 8.7 Additions to Irish Water's RAB

This section sets out the CRU's proposal to continue the current regulatory approach to treatment of additions to Irish Water's RAB for Interest During Construction (IDC); and, Capital contributions and grants.

### 8.7.1 Interest During Construction (IDC)

For IRC1 and IRC2, assets were added to the RAB as costs were incurred, not on the date of commissioning. Irish Water received a return on the assets from the middle of the year in which the costs were incurred, rather than when the asset was commissioned. For this reason, the CRU did not allow IDC to be added to the RAB. Depreciation was also provided as expenditure on assets as incurred. This means that expenditure on assets still under construction during any given year will be included in the calculation of that year's annual depreciation charge.

The CRU is proposing to continue this approach for the RC3 period (2020 -2024)

### 8.7.2 Capital Contributions and Grants

Any capital contributions or grants should be subtracted from capital expenditure in the relevant year. The CRU is proposing to continue a policy of subtracting capital contributions or grants from capital expenditure during RC3.

## 8.8 Adjustments related to IRC1 & IRC2

### 8.8.1 Introduction

The CRU regulates utilities through a form of revenue cap regulation which allows adjustments relating to one revenue control period to feed through into subsequent periods. This adjustment mechanism is generally referred to as a k-factor mechanism.

This section provides information on how the k-factor adjustment works. It also provides specific information on the adjustments put forward by Irish Water for the IRC1[81] and IRC2 periods and the CRU's decision on each of these adjustments.

The k-factor adjustments relating to the IRC1 and IRC2 period comprises corrections relating to:

- Irish Water's expenditure, which is further subdivided into operating expenditure and capital expenditure.
- The level of revenue that it was due to recover.

### 8.8.2 General Information Regarding k-factor Adjustments

The 'k-factor' methodology is applied to over or under recoveries of revenues and permissible variations in costs (e.g. uncontrollable opex) from the pre-determined level of allowed revenues.

The k-factor is an adjustment used to allow for the fact that while the CRU approves a level of revenue to allow Irish Water to recover its costs over a regulatory period, this level depends on assumptions about what happens over the course of that period but may not necessarily reflect

[81] For IRC2, the IRC1 K-factor was based on a combination of Irish Water's actual outturn up to October 2015 and forecast outturn thereafter. As part of its RC3 submission Irish Water provided the CRU with actual outturn up to the end of 2016 and therefore the IRC1 K factor is now being adjusted on that basis.

events as they occur. The adjustment essentially corrects for these events by applying a correction to the revenue to be collected in subsequent periods.

When putting in place a revenue control, the CRU reviews the utility's performance against the targets or allowances set for the previous control and makes any necessary adjustments to the utility's revenue. In this section the CRU has documented the key principles that feed into the reviews of past performance on opex and capex. In general, the review accommodates the following factors which may potentially lead to changes in the allowances for the period:

- Costs explicitly treated as uncontrollable. For IRC2, the CRU decided that levies / licences were uncontrollable costs.
- Cost items that were explicitly not allowed for in full, or at all, in setting revenues at IRC2.
- Variations in costs relating to the application or change to specified legal requirements or changes in government policy, e.g. for Irish Water, changes to government policy regarding billing; changes to legislation to the extent it applies to Irish Water; changes to discharge consents and abstraction licences.
- Reclassification of opex or capex expenditures which may require restatement of allowances
- Recognition for the costs associated with additional outputs not funded at review where the outputs are in the customer interest (referred to as "logging-up").
- A deduction for the costs associated with additional outputs funded at review but no longer required (referred to as "logging-down").
- Failure of a company to deliver an output, for which was funding provided at IRC2 (or referred to as "short falling").

### 8.8.3 IRC1 K-factor – Closing Position

As part of its IRC2 decision the CRU carried out an IRC1 k-factor based on a combination of Irish Water's actual operational / capital expenditure and revenues up to October 2015 and forecast outturn for the remainder of the regulatory period (31st December 2016). As part of its RC3 submission Irish Water provided the CRU with outturn operational / capital expenditure and revenues up to the end of 2016.

This section examines Irish Water's proposed k-factor adjustment to the IRC1 period and the CRU's decision.

In its IRC2 decision the CRU approved the following adjustments for IRC1:

- claw back €-114m (2017 prices, PV[82] 1 January 2020) relating to IRC1 opex, IRC1 capex and the IRC1 opening RAB; and,
- allow a provision of €189m (2017 prices, PV 1 January 2020) relating to revenue billed or collected by Irish Water. The CRU decided to depreciate this under recovery of revenues over a 5-year period[83].

Irish Water provided the CRU with an updated position based on actual revenues (rather than a combination of actuals / forecast) over the IRC1 period (1st October 2014 – 31st December 2016). Irish Water reported an under recovery of revenues of €298m (after indexing to PV 1 January 2017).

Irish Water state that the suspension of domestic billing (as per the Water Services Act 2017) had a material impact on its ability to collect domestic revenues. The CRU accepts Irish Water's request to include domestic bad debt allowance of €82m in its overall IRC1 revenue calculations.

Irish Water also reported an updated position regarding variations in costs for the IRC1 period (IRC1 opex, IRC1 capex and opening RAB). Irish Water reports an overall position of €127m (PV, 2017). Following its review, the CRU accepts Irish Water's IRC1 closing position.

The CRU has decided to index any cost variation adjustments to present value (PV 2020) using the IRC1 WACC as the discount factor. The CRU has indexed any revenue variations to (PV 2020) at Euribor rate +2%.

The overall net adjustments for the IRC1 period are calculated in the CRU's revenue model as the difference between the CRU's IRC2 decision on an IRC1 k-factor (based on actuals and forecast) and Irish Water's IRC1 closing position (as per its RC3 submission).

**CRU Decision**

The overall net adjustment for IRC1 is:

- Cost variation (opex, capex and opening RAB) of €-17.1m (2017 prices, PV 2020) back to customers.
- Revenue variation €108.4m (2017 prices, PV 2020) back to Irish Water.

[82] PV = present value, representing the time value of money
[83] This is referred to as a side RAB in the CRU's revenue model (CRU/19/091f)

For further details please refer to the CRU's RC3 revenue model (CRU/19/148b) published alongside this paper.

### 8.8.4 IRC2 K-factor – Cost adjustment

**Operating Costs**

The CRU provided Irish Water with an allowance of €2,045m to cover its operating costs over IRC2 (2017-2019).

As set out earlier in section 7.2, following a review of Irish Water's actual expenditure the CRU has decided to clawback Irish Water's operating cost allowance for IRC2 by €-9m.

Section 8.10 outlines how the CRU feeds these adjustments through into the calculation of the revenue requirement for the RC3 period.

**IRC2 Capex Additions**

The CRU determined an allowance of €2,026m for capital expenditure over IRC2 (2017-2018) & (2019).

As set out earlier in section 7.3, following a review of Irish Water's actual capital expenditure the CRU has decided to clawback Irish Water's capex allowance by €-5.4m[84] for 2017-2018 IRC2 (2017 / 2018) and by €-41m in 2019.

Section 8.10 outlines how the CRU feeds these adjustments through into the calculation of the revenue requirement for the RC3 period.

**Conclusion on cost adjustment (2017 - 2018) & (2019)**

The CRU recalculated the revenue requirement for the IRC2 period based on changes in IRC2 opex, capex and the IRC2 opening RAB.[85] Based on these calculations, which are outlined in the CRU model published alongside this decision paper, the revenue requirement is €46m (2017

[84] Where a k factor is minus it means money deducted from Irish Water's revenue for the following revenue control period

[85] for the purpose of the k factor adjustment IRC2 was split into two periods (2017 -2018) and (2019 one-year extension).

prices, PV January 2017) less than the revenue which had been set for the IRC2 period (2017 – 2018).

For the IRC2 (2019 one-year extension) the revenue requirement is €20m (2017 prices, PV January 2019) less than the revenue which had been set for the one-year period.

The CRU has discounted both these values to 01 January 2020 (2017 prices) using the IRC2 WACC at the discount factor. This brings the total adjustments to €-54.7m (2017 -2018) and €-21.2m (2017 prices, PV at 01 January 2020) of revenue due back to customers.

### 8.8.5 IRC2 K-factor - Revenue adjustment

In this section, the CRU outlines its approach to adjusting Irish Water's revenues for variations relating to revenue received from non-domestic customers, and subvention.

**Non-Domestic Revenue & Bad Debt (2017-2018)**

Irish Water over recovered revenue from its Non-Domestic customers by €50m relative to its forecast revenue for the IRC2 period (€420m relative to the €370m expectation).

In its IRC2 decision the CRU allowed a non-domestic debt allowance of 5% per annum. The CRU also set a financial incentive for Irish Water to reduce its non-domestic bad debt. The incentive allows Irish Water a maximum penalty (or reward) of up to €4m per annum where Irish Water achieves bad debt levels under or over the CRU allowance of 5%. Using this methodology Irish Water calculated its bad debt request of €34.7m.

Irish Water's bad debt incentive is discussed in more detail in the incentives and monitoring of this paper section 5.

**Subvention**

Irish Water receives government subvention to fund domestic water and wastewater services. Irish Water under recovered by €8m in government subvention (€1,466m relative to the €1,474m expectation).

Irish Water has adjusted its allowed revenues to account for the removal of customer service cost relating to domestic billing of €37m.

**CRU Decision on revenue adjustment (2017 – 2018)**

Considering the above, Irish Water over recovered €46.5m in revenues over IRC2 (this is revenue to be given back to customers). The CRU has decided to clawback this amount from Irish Water by means of a k-adjustment (which feeds into Irish Water's RC3 allowance as a deduction). Please see CRU's RC3 revenue model (CRU/19/148b) for further details.

The CRU has decided to index all k-factor amounts to PV 1 January 2020 terms for consistency with the RC3 revenue requirement, utilising a Euribor based methodology for discounting purposes which is discussed in section 8.10.1 below.

## 8.9 Conclusion on Adjustment relating to IRC1 & IRC2

The IRC2 figures are based on a combination of actual data up to end March 2018 (for network capex) and September 2018 (for opex and non-network capex) and revised forecast outturns from thereafter to 31 December 2019. The CRU will review the outturn data from 01 April and 01 October 2018 to 31 December 2019 during 2020.

**CRU Decision**

***The CRU's decision on RC3 K-factor adjustments relating to IRC1 and IRC2 are detailed below. Where revenue is due back to customers from previous periods this has been deducted from Irish Water's RC3 allowed revenue. Where revenue is owed back to Irish Water from previous periods, this has been added to Irish Water's RC3 revenue allowance.***

For IRC1:

- Cost variation (opex, capex and opening RAB) of €-17.1m (2017 prices, PV 2020) of revenue due back to customers.
- Revenue variation €108.4m (2017 prices, PV 2020) back to Irish Water.

For IRC2 (2017 – 2018):

- Cost variation the total adjustments to €-54.7m and (2017 prices, PV at 01 January 2020) of revenue due back to customers.
- Revenue variation €-46.5m (2017 prices, PV at 01 January 2020) of revenue due back to customers.

For IRC2 (2019 one-year extension):

- Cost variation €-21.1m (2017 prices, PV at 01 January 2020) of revenue due back to customers.

## 8.10 Allowed Revenue

This section outlines how the CRU's approach to incentive-based regulation leads to an annual revenue figure for recovery through Government subvention and charges to customers.

This approach involves taking the allowances proposed by the CRU for capex, opex, WACC and the RC3 K-factor and calculating the allowed revenue in real prices. The allowed revenue is then profiled for recovery over the RC3 period.

The calculation of the annual revenue in real prices is discussed below in Sections 8.10.1. Updates to this figure are discussed in Section 8.10.2.

### 8.10.1 Incentive Regulation & Setting Allowed Revenue

**Introduction**

The CRU uses an incentive-based approach to revenue controls based on the RPI-X form of regulation.

The CRU's approach involves building efficiencies into the opex and capex allowances, calculating the allowed revenue and profiling the resulting figure over the revenue control period. This results in an annual allowed revenue figures (in real prices) which the utility can collect through either Government subvention or charges to customers.

The calculation which leads to the annual revenue for RC3 (in real prices) is outlined below. The annual revenue figure is then updated as outlined in Section 8.10.2

**Calculation of RC3 Revenue**

This section outlines how the allowed revenue for the RC3 period is calculated (in real prices). The calculation itself is carried out within the excel model which is published alongside this consultation paper. For full details please refer to that excel model (CRU/19/148b).

The allowed revenue calculation is structured as follows:

- The calculation commences with the opening RAB (i.e. at 01 October 2014).
- Allowed capex is then added and depreciation subtracted from the RAB for each year up to 2024. The allowed capex for the RC3 is outlined in Section 4.7.
- Allowed opex for RC3 is added. The allowed opex is outlined in Section 4.6.
- Any additional adjustments relating to the IRC1 / IRC2 decision are added i.e. through the operation of a k-factor adjustment. The k-factor is outlined in section 8 above.
- The next stage of the calculation is to determine the present value (PV) of the total revenue required by Irish Water (to cover the above figures), using the WACC as the basis for discounting (the WACC is outlined in Section 6). This includes the PV of the

requirement relating to RC3 opex, the IRC1 / IRC2 k-factor adjustment, RC3 capex and the change in the RAB over RC3;

- The amounts calculated the point above are added to give the total PV revenue for the RC3 period.

**Profiling of RC3 Revenue for Recovery**

The CRU has decided to profile Irish Water's total allowed revenue evenly over the five years. The revenue will be recovered by Irish Water through a combination of charges to customers and Government subvention.

The indicative figure for Government subvention in the revenue model (CRU/19/148b) was calculated as the difference between the total revenue requirement (line 21) and the revenue that Irish Water forecasts it will collect from its non-domestic customers, and excessive use charges.

**Conclusions on RC3 Revenue**

The CRU proposes to set the revenue requirement for RC3 at €4,744.7m (in 2017 prices, PV at the start of RC3 i.e. 01 January 2020). This is equivalent to the €5,191.1m outlined in line 21 of Table 45 below.

For 2020, Irish Water's revenue is €965.9m (2017, real terms) which equates to €1007.03m in nominal terms.

The below table is an extract from the RC3 revenue model and shows Irish Water's total revenue requirement for RC3. For further detail on the calculations, please refer to the CRU's RC3 revenue model (CRU/19/148b) which is published alongside this decision paper.

| Opening and closing RAB | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 2020 | 2021 | 2022 | 2023 | 2024 | |
| Line No. | | | | | | | | |
| 1 | Im 2017 prices | Opening RAB | 3,328.7 | 4,073.0 | 4,704.9 | 5,477.5 | 6,215.8 | |
| 2 | Im 2017 prices | Closing RAB | 4,073.0 | 4,704.9 | 5,477.5 | 6,215.8 | 6,754.3 | |
| **Revenue required to reimburse opex and adjustments related to IRC1 & IRC2** | | | | | | | | |
| | | | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| 3 | Im 2017 prices | Opex | 731.3 | 731.4 | 715.8 | 694.5 | 671.5 | |
| 4 | Im 2017 prices | Present Value (PV) of opex | 718.5 | 693.5 | 655.1 | 613.4 | 572.4 | |
| 5 | Im 2017 prices | Present Value (PV) of cost K-Factor adjustment related to IRC1 | (17.1) | | | | | |
| 6 | Im 2017 prices | Present Value (PV) of revenue K-Factor adjustment related to IRC1 | 108.4 | | | | | |
| 7 | Im 2017 prices | Present Value (PV) of cost K-Factor adjustment related to IRC2 (2017 - 2018) | (54.7) | | | | | |
| 8 | Im 2017 prices | Present Value (PV) of revenue K-Factor adjustment related to IRC2 (2017 - 2018) | (46.5) | | | | | |
| 9 | Im 2017 prices | Present Value (PV) of cost K-Factor adjustment related to IRC2 (2019 extension) | (21.2) | | | | | |
| 10 | Im 2017 prices | Present Value (PV) of opex plus adjustment related to IRC1 & IRC2 | 687.3 | 693.5 | 655.1 | 613.4 | 572.4 | 3,221.7 |
| **Revenue required to reimburse capex incurred in RC3** | | | | | | | | |
| | | | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| 11 | Im 2017 prices | Capex incurred in RC3 | 847.5 | 751.9 | 910.3 | 895.0 | 711.1 | |
| 12 | Im 2017 prices | Present Value (PV) | 832.6 | 713.0 | 833.1 | 790.5 | 606.2 | 3,775.4 |
| **Revenue required to reimburse the change in the RAB over RC3** | | | | | | | | |
| | | | | | | Side RAB | | |
| 13 | Im 2017 prices | Opening RAB balance | 3,328.7 | | | 75.7 | | |
| 14 | Im 2017 prices | PV of closing RAB balance | 5,656.8 | | | 0 | | |
| 15 | Im 2017 prices | Difference | (2,328.1) | | | 75.7 | | |
| **Total required revenue for the period (PV)** | | | | | | | | |
| 16 | Im 2017 prices | Revenue to reimburse opex & clawbacks / deferrals | 3,221.7 | | | | | |
| 17 | Im 2017 prices | Revenue to reimburse capex | 3,775.4 | | | | | |
| 18 | Im 2017 prices | Revenue to reimburse change in RAB | (2,328.1) | | | | | |
| 19 | Im 2017 prices | Revenue to reimburse change in side RAB | 75.7 | | | | | |
| 20 | Im 2017 prices | Total revenue required for the period (PV) | 4,744.7 | | | | | |
| **Expected real revenue for the period** | | | | | | | | |
| | | | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| 21 | Im 2017 prices | Total real revenue required for the period | 965.9 | 1,000.8 | 1,036.9 | 1,074.4 | 1,113.1 | 5,191.1 |

*Table 45 - Extract from the RC3 revenue model showing Irish Water's total revenue requirement for RC3*

### 8.10.2 High-level Outline of Revenue Update Mechanism

Section 8.10.1 above outlines how the revenue is calculated in real prices. The CRU proposes to update the annual revenue related to each year to allow for relevant factors, which are outlined below.

#### Inflation

The CRU has decided to continue using an approach whereby the utility's allowed revenue is initially set in real prices and then converted to nominal prices using an inflation index.

The CRU has decided to continue to use the Irish Harmonised Index of Consumer Prices (Irish HICP) as the inflation index.

This is consistent with the inflation index used in recent CRU decisions for network utilities (both water and energy).

### Uncertain Costs

Uncertain costs are defined as those that could not reasonably be foreseen by Irish Water at the start of the revenue control. The CRU has decided that any future request by Irish Water for such costs are dealt with on a case-by case basis.

### Interest Applied to Adjustments

In its IRC2 decision, consistent with the CRU's treatment of over/under-recoveries in the gas sector the CRU decided that:

- Revenue under-recoveries and over-recoveries of up to 103% of allowed revenue attract an interest rate of Euribor +2%;
- Revenue over-recoveries over 103% of allowed revenue attract an interest rate of Euribor +4%.

The reason that the CRU takes this approach is to encourage the utility to accurately forecast its revenue for the period. However, as discussed in section 5.2.2 above, the CRU has set an incentive for Irish Water to identify and correctly bill any non-domestic customers not currently being billed for their service. For this reason, the CRU is not proposing the apply an interest rate of Euribor +4% for revenue over-recoveries over 103% of allowed revenue.

The CRU has decided that revenue under-recoveries and over-recoveries above the allowed revenue attract an interest rate of Euribor +2%.

In calculating the interest rate to be applied for each year, the average was taken of the 12-month maturity daily Euribor rates. For both 2017 and 2018 the Euribor rate used was the average of the daily rate for the full 12-month period (January–December). For 2019, a 5-month average was used (January-May) which may be corrected on outturn.

# 9. Conclusion

This paper outlines the CRU's proposals in relation to expenditure allowance (and related revenue allowance that Irish Water can recover) over the 2020-2024 period.

The CRU has decided to allow expenditure of €7,907m for the five-year period. This represents a reduction of €1,316m (or 14.6%) relative to Irish Water's request, as outlined below in Table 46 below.

| *Expenditure Allowance* | Irish Water Request €m | CRU Proposal €m | Saving €m |
|---|---|---|---|
| Total Expenditure Allowance 2020-2024 | 8,976 | 7,660 | 1,316 |

*Table 46 - Expenditure Allowance, Irish Water Request vs. CRU Proposal*

The detailed decisions behind these expenditure allowances are detailed in the sections above.

The paper also provides decisions in relation to the monitoring of Irish Water's performance during the 2020-2024 period and financial and reputational incentives.

As a result of this review, the CRU has decided to allow Irish Water to recover a total revenue of €5,191.1m (real 2017 prices) (€4,744.7m, 2017 prices, PV 2020).

## 9.1 Next Steps

The CRU will notify the DHPLG of its decision regarding allowed revenue for Irish Water in 2020. This will inform the DHPLG for its Departmental Vote ahead of the 2020 budgetary process. Irish Water is required to revert to the CRU by the 17 January 2020 with regard to the external review on its capital expenditure.