

Uisce Éireann Revenue Control 4 (2025-2029)

Network Capital Expenditure Lookback
2020-2024

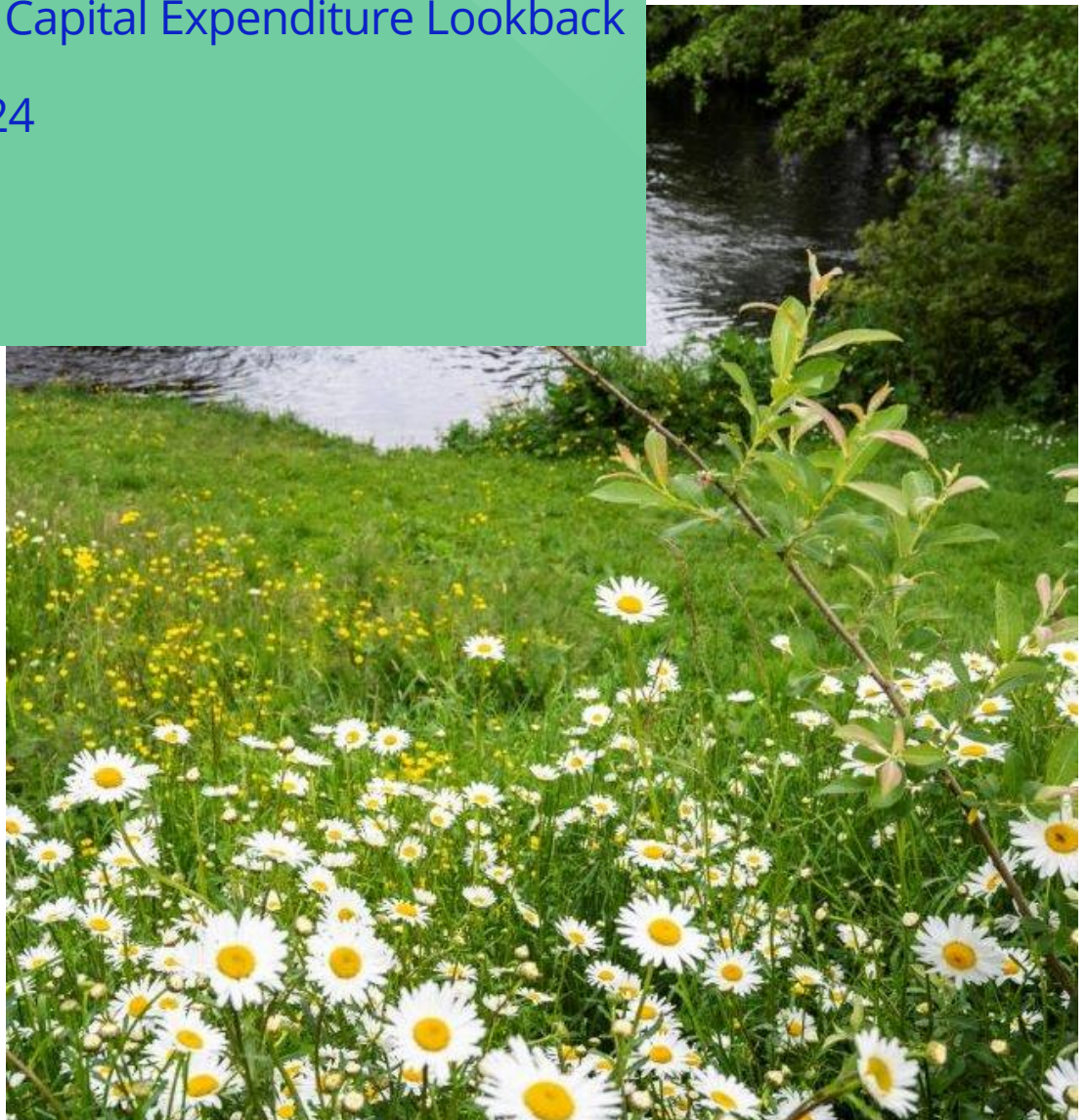


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1 Executive Summary

Uisce Éireann (UÉ) is a commercial semi-state company delivering water and wastewater services for Ireland. Our primary function is to provide clean drinking water to customers and to treat and return wastewater safely to the environment, thereby playing a central role in enabling social and economic growth, protecting the environment and the health and safety of our customers and the public.

In August 2020, the Commission for Regulation of Utilities (CRU) Revenue Control 3 (RC3) decision determined that UÉ should be allowed €4,523m¹ to deliver its RC3 Capital Investment Plan (CIP) against a defined set of 24 Outputs and Outcomes over the period 2020-2024.

RC3 was the first long term revenue control in the water services sector since the establishment of UÉ in 2014, which marked an important milestone.

This document provides a 'Lookback' review of network capital expenditure (network capex) for the RC3 period and forms part of UÉ's submission to the CRU for RC4.

UÉ will meet 20 out of 24 RC3 Output and Outcome targets

UÉ projects that it will deliver network capital investment of €4,593m in RC3. Taking new connections revenues and grants into account, net investment will be €3,943m. UÉ utilised this investment to deliver significant benefits in terms of reliability, availability and improved performance of both water and wastewater assets for the benefit of customers, communities, the environment and in support of social and economic growth.

UÉ is forecasting that it will achieve 20 of the 24 RC3 Outputs and Outcomes targets set by the CRU for RC3. This includes 10 targets where UÉ expects to exceed or significantly exceed the RC3 target. Of the remaining four targets, three relate to Wastewater and while UÉ does not expect that these will be fully met by the end of 2024, it does expect that significant further progress will be made in 2025. In relation to the final target of 'Leakage Reduction', the forecast for the end of 2024 is currently under review.

Key RC3 investment highlights include:

- Construction of 29 new treatment plants (water and wastewater);
- The upgrade of 95 existing treatment plants (water and wastewater);

¹ 2017 monies

- The upgrade of 333 reservoirs;
- Construction of 500 kilometres of new watermains;
- The rehabilitation of 948 kilometres of existing watermains;
- Construction of 245 kilometres of new sewers;
- The rehabilitation of 234 kilometres of existing sewers;
- The removal of 57 water supplies from the Remedial Action List;
- A reduction in over one million properties at risk of microbiological non-compliance;
- Replacement of over 36,000 lead services;
- A reduction in over 172,000 properties at risk of THM non-compliance;
- Additional water supply capacity of 53 megalitres per day;
- Removal of 75 wastewater agglomerations from the Priority Action List.

UÉ successfully delivered this RC3 capital investment plan during a time of unprecedented global events

UÉ successfully delivered this capital investment during a time of unprecedented global events including COVID-19, significant increases in the inflationary environment and supply chain disruptions.

The CRU acknowledged the impact of global events on the capital investment plan in their consultation and subsequent decision paper CRU/2022977. The CRU concluded that UÉ was facing real external inflationary factors which were material and beyond the full extent of management control and which, absent an adjustment to the RC3 allowance, would lead to undesirable consequences from a policy perspective for water and wastewater customers. To offset the inflationary impacts being faced, the CRU's decision removed the ringfencing restrictions which applied to funding designated for major projects. The available funds were then reallocated to ensure delivery of the capital investment plan.

UÉ worked closely with its supply chain partners to limit the impact of global events on its projects and programmes

UÉ's supply chain also faced extraordinary pressures during RC3 as a result of global events. UÉ therefore worked closely with its supply chain partners to limit the impact of these events and to maintain momentum in investment delivery. A key focus was placed on providing confidence in UÉ's funding, which is critical to maintaining a stable and reliable water services industry.

A capital investment change control process enabled re-prioritisation to adapt to changing circumstances

Over a five year Revenue Control cycle, various challenges and occurrences can impact the delivery of capital investment. In July 2021, the CRU wrote to UÉ acknowledging that, at times and by exception, UÉ will need to re-prioritise the CIP due to circumstances arising that could not have been foreseen and that are beyond the control of UÉ. Subsequently a formal change control process was established. This includes the requirement for an annual Investment Plan Change Control report to inform stakeholders on the progress being made to deliver on the RC3 commitments against key drivers of change.

The key drivers of change in these change control reports are classified into External Factors and Internal Factors. External Factors include macro-economic factors, funding adjustments, and demands in relation to statutory and planning requirements. Key Internal Factors include the impact of the Target Operating Model of UÉ Transformation, unforeseen complexities (in project design and/or delivery) emerging needs and changing priorities, and feasibility challenges.

UÉ expects to achieve the capital efficiencies target set by the CRU

In its RC3 decision, the CRU set a capital efficiency challenge of €285m. Capital efficiency occurs when an investment is delivered at less cost as a result of an intervention by UÉ. Within RC3, capital investment efficiencies have been identified and reported against the following four key areas:

- Innovation;
- Standardisation;
- Procurement; and
- Value engineering.

UÉ is currently on track to meet the CRU's efficiency target.

UÉ made improvements to ensure that it adopts best practice processes and capability

At the outset of RC3, and as part of an independent review, Scottish Water International (SWI) made a series of recommendations aimed at improving UÉ's investment delivery processes, systems and capability. UÉ has since made significant progress in implementing these recommendations across areas such

as the identification of investment needs, through to the delivery of capital projects and the handover of the asset back into operational use. This was a key review and process improvement piece of work undertaken during RC3.

[UÉ has also taken important steps towards delivering on its sustainability agenda](#)

During RC3, UÉ identified programmes to target the replacement and improvement of existing large energy inefficient assets and use of renewable energy. To date, UÉ has made significant progress on the journey to become an energy efficient, low carbon, sustainable water utility. UÉ's RC3 Investment Plan is focussed on reducing energy consumption by 22 GWh over the RC3 period and it is projected that this target will be met by the end of 2024.

[The strides made in RC3 must continue in future investment cycles](#)

As set out in this capex lookback review, RC3 was a period marked by disruptive global events, yet UÉ has made clear progress in ramping up investment to meet key service, compliance and growth needs. Significant additional capital investment must continue to be delivered in future Revenue Control cycles in order to fully address the historic under investment in Ireland's water and wastewater infrastructure. Details of UÉ's proposals for the next cycle of 2025 to 2029 are set out separately in the RC4 Capital Investment Plan.

2 Introduction

UÉ's third Revenue Control cycle (RC3) runs from 2020 to 2024. The CRU, under its RC3.5 decision published in August 2020, determined that UÉ should be allowed a network capital expenditure allowance of €4,523m² in order to deliver its RC3 CIP, post an efficiency adjustment of €285m.

The CIP sets out the capital projects and programmes that UÉ planned to progress during RC3, including the associated costs and timelines. It also set out the outputs and outcomes that were expected to be delivered for this investment. The plan allows UÉ to maintain, upgrade and build new treatment plants, pipes, sewers and other network infrastructure in order to improve the quality of water and wastewater treatment, to provide better service to homes and businesses, to facilitate social and economic growth, and protect the environment.

The table below shows forecast outturn investment against CRU allowance for the RC3 period 2020 to 2024, which is categorised in line with the themes as set out in the Government's Water Services Policy Statement (WSPS) 2018-2025. The WSPS identified policy objectives set across the three thematic areas of:

- Quality;
- Conservation; and
- Future Proofing.

Each WSPS Theme is further categorised by strategic objectives that were set out in the Water Services Strategic Plan (WSSP) in 2015, namely:

- Ensure a Safe and Reliable Water Supply;
- Provide Effective Management of Wastewater;
- Protect and Enhance the Environment;
- Support Social and Economic Growth; and,
- Invest in our Future.

WSPS Theme	WSSP Objective	RC3 Allowance	RC3 Outturn/forecast	Difference
		€m	€m	€m
Quality	Ensuring a Safe and Reliable Water Supply	650	836	-186

² In 2017 monies.

	Provide Effective Management of Wastewater	1,548	1,273	275
Conservation	Ensuring a Safe and Reliable Water Supply	420	814	-394
	Protect and Enhance the Environment	47	48	-1
Future Proofing	Support Social and Economic Growth	592	621	-29
	Provide Effective Management of Wastewater (Greater Dublin Drainage Project)	410	35	375
	Ensure a Safe and Reliable Water Supply	176	136	40
	Water Supply Project - Eastern and Midlands Region	294	48	246
	Invest in our Future	386	782	-396
Total		4,523	4,593	-70
Adjustments (<i>New connections & grants</i>)		-328	-650	-322
Total for RC3		4,195	3,943	252

Table 2.1: Network Capex 2020-2024 CRU Allowed vs UÉ Outturn in €m (rounded) 2017 monies

The table below shows a summary of UÉ's performance on outputs and outcomes over the RC3 period based on the following:

- The target for the RC3 2020-2024 period;
- The forecast for the RC3 period 2020-2024; and
- The Forecast as a percentage of the RC3 target.

UÉ is forecasting to achieve 20 of 24 outputs and outcomes by the end of RC3. Of the remaining four targets, three relate to Wastewater and while UÉ does not expect that these will be fully met by end of 2024, it does expect that significant further progress will be made during 2025. In relation to the final target of Leakage Reduction, the forecast for the end of 2024 is currently under review.

UÉ strives to continually improve its processes to ensure that all outputs and outcomes from programmes and projects are captured and reported to stakeholders. During 2023, UÉ conducted a review of our processes in relation to how outputs and outcomes were recorded. This enabled a more comprehensive understanding of the value and impact of UÉ's activities over the course of RC3, particularly in terms of the benefits delivered to customers.

Outputs	Unit	RC3 2024 Target	RC3 Delivered to Date	RC3 2024 Forecast	% of RC3
No. of new Treatment Plants (water and wastewater)	No.	29	25	29	100%
No. of Existing Treatment Plants Upgraded	No.	89	74	95	107%
Water Treatment Plant Capacity (i.e. total capacity from new/existing plants which have added capacity during RC3)	ML/Day	625	1,226	1,403	224%
Wastewater Treatment Plant Capacity (Total Population equivalent)	PE	3,070,158	2,829,572	3,059,090	100%
No. of Reservoirs Upgraded	No.	132	278	333	252%
New Watermains (km)	km	496	419	500	101%
Rehabilitated or lined mains (km)	km	731	826	948	185%
Meters installed	No.	50,815	58,085	76,173	150%
New Sewers (km)	km	241	202	245	101%
Rehabilitated Sewer (km)	km	342	192	234	69%
Outcomes					
No. of Water Treatment Plants with Orthophosphate Dosing	No.	27	22	27	100%
No. of Water Supplies removed from the EPA's RAL	No.	48	48	57	119%
Reduction in the number of properties with risk of Microbiological non-compliance	No.	563,093	909,867	1,164,003	207%
Reduction in the number of properties with risk of THM non-compliance	No.	133,465	165,256	171,487	128%
Number of Lead Services replaced	No.	13,231	28,789	36,872	279%
Leakage Reduction (ML/Day)	ML/Day	177.5 ³	<i>under review</i>		
Additional Water Supply Capacity (ML/Day)	ML/Day	46	38	53	115%
Number of agglomerations removed from EPA's Priority Urban Area Action List	No.	75	57	75	100%
Wastewater treatment works compliant with Urban Waste Water Treatment Directives	PE	314,656	314,556	314,656	100%
No of Wastewater Treatment Plants overload serving > 2000 population	No.	1	1	1	100%
No of Wastewater Treatment Plants overload serving < 2000 population	No.	1	1	1	100%
No of Agglomerations in the ECJ Urban Wastewater Treatment Directives	No.	13	6	8	62%
Additional Wastewater Treatment Capacity (Population Equivalent)	PE	770,751	632,803	654,725	85%
Number of Wastewater Treatment Plants compliant - EPA discharge increase ELVs	No.	8	8	8	100%

Table 2.2: RC3 Outputs and Outcomes Targets vs Forecast

³ CRU/2022977 decision paper re-allocated ring-fenced allowances to Capital Maintenance for delivery of a further 1.5ML/D leakage in addition to RC3 target of 176ML/D

This paper sets out UÉ's Capital Expenditure for the RC3 period and is structured as follows:

Section 3 sets out the Context and Background;

Section 4 sets out the expenditure for the overall RC3 period versus the CRU allowance;

Section 5 sets out how UÉ has performed in the RC3 period in order to address the WSPS theme of Quality;

Section 6 sets out how UÉ has performed in the RC3 period in order to address the WSPS theme of Conservation;

Section 7 sets out how UÉ has performed in the RC3 period in order to address the WSPS theme of Future Proofing;

Section 8 sets out how UÉ has performed in the RC3 period in addressing Capital efficiencies; and

Section 9 concludes and summarises the major points of our submission.

3 Context & Background

3.1 Water Services Policy Statement (WSPS)

The funding model for UÉ is set in the context of the EU Water Framework Directive (WFD), and under the Water Services Act 2017 UÉ is required to submit a Strategic Funding Plan (SFP) to the Minister for Housing, Local Government and Heritage (“Minister”) within three months of the publication of the WSPS. In advance of submission of RC3, the Government published the first WSPS in May 2018 which covered the period 2018-2025. The overall intention of this WSPS was to give clear direction to strategic planning and decision making in relation to water and wastewater services in Ireland. It set out the range of policy objectives as part of the key thematic areas of quality, conservation, and future proofing:

- Quality – Improving compliance with public health and environmental standards;
- Conservation – Prioritising resource management, abstraction control, source protection, tackling leakage and encouraging behavioural change; and,
- Future Proofing – Ensuring water services investment decisions are aligned with the strategic aims of national planning and climate change policies.

3.2 Water Services Strategic Plan (WSSP)

The Water Services Strategic Plan which was published in 2015 sets out key objectives for UÉ in relation to the provision of water services for the next 25 years and the means by which UÉ will achieve them. It provides a longer-term strategic direction to the preparation of capital investment plans. The RC3 CIP is in line with strategic objectives as set out in the current WSSP.

The themes and policy objectives in the WSPS are seen as complementary to key strategic objectives that were set out in the Water Services Strategic Plan in 2015, which include:

- Ensure a Safe and Reliable Water Supply;
- Provide Effective Management of Wastewater;
- Protect and Enhance the Environment;
- Support Social and Economic Growth; and,
- Invest in our Future.

The themes and high-level priority objectives in the WSPS and how they align to the strategic objectives in the WSSP are set out in Appendix 3.

3.3 Strategic Funding Plan & Capital Investment Plan

Strategic Funding Plan and Capital Investment Plan

The first Strategic Funding Plan (SFP) which was approved on the 7 November 2018 by the Minister framed the funding requirement for RC3. RC3 was the first revenue control under the new funding model, introduced by the Water Services Act 2017.

For RC3, UÉ submitted the initial Capital Investment Plan to the CRU in Q4 2018. Following a review of UÉ's capital investment estimation processes in April 2020, UÉ submitted a request for additional capital expenditure for RC3. This submission provided information and forecast capital costs on the outputs and outcomes planned to be delivered over RC3. Subsequently, the CRU conducted a full review of UÉ's capital expenditure request and in August 2020, published the final RC3.5 determination for the allowed revenue for the period 2020 to 2024.

Scottish Water International (SWI) Recommendations

As part of the RC3.5 decision, UÉ engaged Scottish Water International (SWI) to undertake an external review of UÉ's investment and delivery capabilities in early 2020. With all recommendations of the SWI Review to be implemented by the end of 2022, UÉ reported to the CRU on progress each quarter until completion. The UÉ areas identified for enhancement included improvements to project management and lifecycles, risk management, cost estimation and value management, approval processes, and change management. An internal cross functional change project named 'Project Clarity' was the vehicle used to prepare and deliver the implementation plan to satisfy these recommendations.

In January 2023, UÉ submitted the final progress report to the CRU, outlining that UÉ had successfully implemented all achievable recommendations identified in the SWI Review. In March 2023, the CRU procured technical consultant support, through HR Wallingford and ChandlerKBS, to conduct a review to verify UÉ's implementation of the SWI Review recommendations. This confirmed UÉ's progress and also proposed further recommendations aimed at improving UÉ's processes and systems. Subsequently, the CRU determined the requirement for a 'Post-HRW Review Implementation Plan', which would outline the UÉ plan to close out any outstanding SWI recommendations as well as the new CRU recommendations, with a draft roadmap to be submitted to the CRU in Q1 2024 and a progress report by the end of Q4 2024.

3.4 Investment Prioritisation Approach

Since 2014, UÉ has increased its knowledge and understanding of asset risk and performance, through asset data capture and the application of standard approaches to analysis across the asset base. This improved approach is used to assess each investment option based on its cost, risk reduction or benefits, and UÉ contribution to specific targets and objectives.

This Service Measure Framework (SMF) allows for an appropriate combination of interventions to be identified based on legislative, business, operational and financial constraints. It also supports UÉ to:

- a) Deliver on the WSPS priorities;
- b) Deliver on the WSSP objectives, in the most efficient manner; and
- c) Monitor and report to stakeholders on the progress made against achieving these targets and objectives.

For the RC3 period, the SMF was used to link the strategic objectives set out in the WSSP and the themes in the WSPS to the performance of our water and wastewater assets.

UÉ's ten-step approach to investment planning for RC3 is set out in Appendix 4.

3.5 Drivers of Change

As outlined in our RC3 capital investment plan submission, successful delivery is subject to challenges and occurrences that may impact the proposed investment over the period.

UÉ's cash funding from the Exchequer is subject to annual variability and UÉ's investment portfolio is therefore kept under constant review to ensure it continues to be optimised. The feature of the annual exchequer process requires the utility to maintain relative in-year cash neutrality in respect of government provided funds and as a result short term variability in available funding will have long term implications on the capital investment plan. During the first year of RC3, UÉ was required to review the portfolio of projects due to a change to the year-on-year profiling of the SFP, with an initial reduction versus allowance as part of the exchequer budgetary process in 2020 and an increasing spend profile in later years. The impact of the initial reduction in funding versus allowance was dealt with by pausing early stage projects principally in the Waste Water area to prioritise public health related projects within the Water area and as a result

would have elongated the time to complete the paused projects. Separately, two Government stimulus packages were provided to UÉ in H2 2020 which required UÉ to prioritise capital investment deliverable within the latter half of the year to meet the constraints of the annual exchequer process referred to above. This funding was allocated to 'shovel-ready works' and supported job creation in the economy during the pandemic. While successfully managed by UÉ, such changes in funding availability required adaptability in portfolio planning.

In any large scale investment programme, multiple other change drivers must also be managed. In July 2021, the CRU wrote to UÉ acknowledging that, at times and by exception, UÉ will need to re-prioritise the CIP due to circumstances arising that could not have been foreseen and that are beyond the control of UÉ. Subsequently, a formal change control process was established whereby UÉ submits an annual change control report to the CRU. This details adjustments to the CIP made by UÉ in response to material shifts, and provides transparency to stakeholders on the impacts.

Over RC3, the key drivers of change can be classified into:

- External Factors:
 - Macro-Economic Environment – including COVID-19, inflation and Brexit;
 - Changes in available funding; and
 - Amendments to timelines and/or requirements due to Planning and Statutory Approval processes.

- Internal Factors:
 - Unforeseen Complexities (in project design and/or delivery);
 - Emerging Needs and Changing Priorities;
 - Feasibility Challenges; and
 - UÉT Transformation and Supply Chain impacts.

Further details on the External and Internal Factors are set out in our annual capital monitoring report submissions to the CRU.

4 RC3 Allowance

4.1 Allowance versus Expenditure

The CRU RC3.5 decision paper determined that UÉ should be allowed a network capital expenditure allowance of €4,523m, post an efficiency adjustment of €285m. The table below shows forecast outturn investment against this CRU allowance by WSPS theme and WSSP strategic objectives.

WSPS Theme	WSSP Strategic Objective	RC3 Allowance	RC3 Outturn/forecast	Difference
		€m	€m	€m
Quality	Ensuring a Safe and Reliable Water Supply	650	836	-186
	Provide Effective Management of Wastewater	1,548	1,273	275
Conservation	Ensuring a Safe and Reliable Water Supply	420	814	-394
	Protect and Enhance the Environment	47	48	-1
Future Proofing	Support Social and Economic Growth	592	621	-29
	Provide Effective Management of Wastewater (Greater Dublin Drainage Project)	410	35	375
	Ensure a Safe and Reliable Water Supply	176	136	40
	Ensure a Safe and Reliable Water Supply (Water Supply Project - Eastern and Midlands Region)	294	48	246
	Invest in our Future	386	782	-396
	Total for RC3 (gross)	4,523	4,593	-70
	Adjustments (<i>New connections & grants</i>)	-328	-650	322
	Total for RC3 (net)	4,195	3,943	252

Table 4.1: Network Capex 2020-2024 CRU Allowed vs UÉ Outturn in €m (rounded) 2017 monies

The CRU RC3 allowance of €4,523m is gross of new connections revenue and grants. The estimated new connections revenue for RC3 of €328m was based on a set of economic assumptions at the time of the RC3 CIP submission. The UÉ outturn/forecast for new connections and grants⁴ revenue is €650m. Over the RC3

⁴ Grants accounted for €8m provided from the European Local ENergy Assistance (ELENA) initiative, Shared Waters Enhancement & Lough Legacy (SWELL) project and the Source-to-tap project

period there was significant growth in the overall economic outlook nationally. In addition, the government's initiative to drive housing development such as the Housing for All programme has led to a difference in the set of economic assumptions resulting in higher than anticipated new connections revenue.

Real Price Effects, i.e., inflation above HICP, was a key driver of change in RC3. UÉ managed this impact through engaging with the CRU to reallocate available ringfenced funding across the wider portfolio. This is described further in Section 4.2. The other main movements and drivers in respect of each WSSP Strategic Objective are set out below:

Quality: Ensuring a Safe and Reliable Water Supply

UÉ is forecasting an outturn variance of €186m above the CRU allowance of €650m. The RC3 investment has been higher than expected due to additional investment in the Water Services Above Ground (WSAG) programmes that address key outcomes and outputs. As a result of this investment, UÉ will exceed the target for the following metrics:

- Number of properties removed from the EPA's Remedial Action List (RAL);
- Drinking water Microbiological non-compliance;
- Drinking water THM non-compliance; and
- Drinking Water Quality (Chemical) Risk (lead services).

Investment in this area also includes rationalisation of plants and improved plant processes such as disinfection and Coagulation, Flocculation and Clarification (CFC).

Quality: Provide Effective Management of Wastewater

UÉ is forecasting an outturn variance of €275m below the CRU allowance of €1,548m. Investment has been lower than expected due to slower than anticipated progress on some projects due to the complex nature of constructing new and upgraded wastewater infrastructure. Issues around planning permission, statutory consents, land & wayleaves and additional scope have led to delays in the delivery of projects.

However, UÉ is on target to remove 75 schemes on the Priority Action List (PAL) as planned and continues to make consistent progress on delivering PAL outcomes. UÉ also projects significant progress on ECJ cases despite their complexities (see Section 5.2) with eight cases having works completed in RC3 and strong progress being made on several others.

Conservation: Ensuring a Safe and Reliable Water Supply

UÉ is forecasting an outturn variance of €394m above the CRU allowance of €420m in water conservation projects. Investment in this area focuses on below ground water services including water mains rehabilitation, meter replacement and leakage detection and repair.

Conservation: Protect and enhance the environment

Investment in this area is focused on the National Water Resources Plan, Sludge Hubs, Sustainable Energy Programme and the Energy Efficiency Programme. UÉ is forecasting an outturn variance of €1m above the CRU allowance of €47m. This is due to slightly higher than anticipated spend on the National Water Resources Plan and the Sustainable Energy Programme.

Future Proofing: Support Social and Economic Growth

UÉ is forecasting an outturn variance of €29m above the CRU allowance of €592m. This is due to additional investment in new connections for Water and Wastewater and growth & development Programmes for Water and Wastewater. During RC3 UÉ took a proactive approach to support Government initiatives in areas such as the Local Infrastructure Housing Activation Fund (LIHAF), Major Urban Housing Delivery (MUHD) sites, and Housing for All.

Additional investment was also made in prioritised projects in RC3, including Cork City Eastern Strategic Link, Cork City Water Supply Scheme - Shanakiel Rising Main Upgrade and Inniscarra to Clonakilty Water Main in Cork, and Barna Pump Station Upgrade in Galway.

Future Proofing: Provide Effective Management of Wastewater (Greater Dublin Drainage Project)

The RC3 investment in the Greater Dublin Drainage Project is much lower than expected due to delays related to the planning process. UÉ submitted an updated Environmental Impact Assessment Report (EIAR), a new Natura Impact Statement (NIS) and supporting documents in a remittal to An Bord Pleanála (ABP) in Q4 2023. In March 2024, An Bord Pleanála responded to UÉ's submission advising the submission material is deemed to be significant and that a further round of public consultation will be required. UÉ are engaging with An Bord Pleanála on the remaining steps in the planning process and expected timeframe for the consultation. As a result, UÉ is forecasting an outturn variance of €375m below the CRU allowance of €410m.

Future Proofing: Ensure a Safe and Reliable Water Supply

UÉ is forecasting an outturn variance of €40m below the CRU requested allowance of €176m. This is mainly due a lower than expected investment in the GDA Groundwater Augmentation Programme due to findings of Feasibility Study Reports which showed that there is not water in sufficient quantities for further investment. Pressure management required increased investment to maintain the network to reduce leakage, especially at night (when pressure management is mostly used).

Future Proofing: Water Supply Project - Eastern and Midlands Region

The RC3 investment for the Water Supply Project - Eastern and Midlands Region is much lower than expected at the start of RC3 due to slower progress than anticipated. Taking account of key project dependencies, the project team is now working towards a planning and CPO submission in Q4 2024. As a result, UÉ is forecasting an outturn variance of €246m below the CRU allowance of €294m.

Future Proofing: Invest in our Future

UÉ is forecasting an outturn variance of €396m above the CRU allowance of €386m. RC3 investment has been higher than expected, primarily due to additional investment required in Capital Maintenance Programmes across the full asset base - water and wastewater, above and below ground assets. Capital Maintenance is the replacement or refurbishment of existing assets with the objective of maintaining service delivery for our customers, avoiding operational cost increases and maintaining asset performance.

4.2 Update to the release of Ring-fenced funding

As outlined previously, RC3 was a period of extraordinary global events including COVID-19, Brexit, and the war in Ukraine, all of which disrupted supply chains and created clear inflationary impacts above HICP.

In July 2022, UÉ submitted a request to the CRU for the release of RC3 ringfenced Major Projects funding to address the unexpected inflationary impacts being experienced across the RC3 investment portfolio and to protect the RC3 outputs and outcomes. The submission outlined the proposed use of the available ringfenced funds based on the June 2022 cost data and run-rates. The table below shows the proposed use of ring-fenced funds as of June 2022 and current revised calculations to end of RC3.

	Ringfenced Allowance	Major Projects	HICP	Real Price Effects	Virement	Remainder
Proposed Use <i>(2017 Monies)</i>	704	83	65	357	89	110
Forecast/Outturn <i>(2017 Monies)</i>	704	83	113	441	94	(27)

Table 4.1: Proposed use of ring-fenced funds (June 2022) vs current revised calculations in €m (rounded) 2017 monies

Major Projects

The CRU's RC3.5 decision allocated funds totalling €704m for two projects (specifically €294m for the Water Supply Project – East and Midlands and €410m for the Greater Dublin Drainage). These projects were classified as 'Major Projects' by the CRU and the funding was ringfenced for the duration of RC3. Both projects progressed during RC3, however, at much slower rates than expected with a projected outturn of €83m.

HICP Change

Given that UÉ's capex funding from Government operates to a nominal cap that was based on the original RC3 decision HICP rates, any subsequent variance impacts real funding.

UÉ's July 2022 submission to the CRU provided an estimation of €65m for the variance between the original allowed HICP forecast and the actual rates for 2020 and 2021 and June 2022 forecasts for 2022, 2023 and 2024. The table below updates the estimation for HICP for 2024 and calculates that the increase in HICP from the RC3.5 decision has resulted in a €113m loss in real funding.

	2020	2021	2022	2023	2024	Total
RC3 Total Allowance - A <i>(2017 Monies)</i>	760	844	1,015	1,033	871	4,523
RC3 Nominal Funding Cap <i>Using HICP from CRU decision</i>	792	896	1,099	1,141	981	4,909
RC3 Funding in 2017 monies - B <i>Using HICP from 2024</i>	783	865	982	971	809	4,410
Delta in funding B-A	23	21	-33	-62	-62	-113

Table 4.3: Delta in RC3 Capital Allowance vs updates the estimation for HICP for 2024

Uisce Éireann Hybrid Index - Real Price Effects

UÉ has developed a Hybrid Inflation Index, which combines various individual indices to appropriately reflect the pressures on UÉ's capex cost base. It highlights the significant real price effects on the investment portfolio.

The Hybrid Index as outlined in July 2022 suggested that UÉ would suffer a reduction in real funding of €357m over the RC3 period, with additional funding therefore required to offset these inflationary pressures and maintain consumer benefits. The current updated Hybrid Index now shows an increased impact of €441m. The table below outlines the impact of the Hybrid Index on the outturn costs, which are the real impacts on delivery in the current economic environment.

WSPS Theme	WSSP Strategic Objective	RC3 Outturn (HICP)	RC3 Outturn (UÉ Hybrid index)	RC3 Outturn (UÉ RP)
Quality	Ensuring a Safe and Reliable Water Supply	836	758	78
	Provide Effective Management of Wastewater	1,273	1,151	122
Conservation	Ensuring a Safe and Reliable Water Supply	814	735	79
	Protect and Enhance the Environment	48	43	5
Future Proofing	Support Social and Economic Growth	621	559	62
	Provide Effective Management of Wastewater (Greater Dublin Drainage Project)	35	32	3
	Ensure a Safe and Reliable Water Supply	136	124	13
	Ensure a Safe and Reliable Water Supply (Water Supply Project - Eastern and Midlands Region)	48	44	5
	Invest in our Future	782	706	76
Total for RC3		4,593	4,152	441

Table 4.4: Impact of RPE on RC3 Capital Allowance Outturn

The Hybrid Index has provided valuable insights into inflation rates, demonstrating the disparity between HICP and actual inflation experienced by UÉ. UÉ managed this loss of real funding in the RC3 period through the reallocation of the available ringfenced funding. The CRU’s support for this measure was crucial to protecting RC3 outputs and outcomes.

Virement

Given the constraints of the government’s estimates process, there are times when the operational budget allocated at the start of a given year falls short of the minimum amount required for the operation the assets. In such a scenario, a virement of funding from capex to opex is required to meet the shortfall. During RC3, UÉ’s opex costs suffered from escalating inflation and a virement of €94m

was necessary. This reduces the amount of funding available to the capital investment portfolio.

Additional Rehabilitated Mains

At the time of the CRU decision (CRU202297) to release ringfenced funding, it was envisaged that there would be €110m of remaining funding left which would be used to deliver 220km of rehabilitated water mains. However, it is now clear that the updated calculations for HICP, Real Price Effects and Virement resulted in no remaining funds to deliver any additional outputs. It should be noted that while additional rehabilitated mains were delivered over and above the CRU targets, this was funded through a reallocation of funding across the overall investment portfolio.

5 Addressing the Quality Theme

This section outlines how UÉ has performed in the RC3 period to address the WSPS theme of Quality.

5.1 Quality – Ensuring a Safe and Reliable Water Supply

This section outlines how UÉ has performed against the WSSP strategic objective of providing safe and reliable water supplies that are essential to public health, as well as facilitating social and economic growth.

Drinking Water Quality (Microbiological) Risk

Output/Outcome	RC3 Target	RC3 Forecast
Reduction in the number of properties at risk	563,093	1,164,003

Over the RC3 period, UÉ has made significant progress in addressing the number of properties with the risk of microbiological non-compliance. For the RC3 period, UÉ is ahead of target, addressing microbiological risk for 1,164,003 properties, in exceedance of the target of 563,093 properties.

The increase in the number of new and upgraded water treatment plants (see Section 7.1) has contributed to a significant reduction in the number of properties at risk of Microbiological non-compliance.

Drinking Water Quality (Chemical) Risk

Output/Outcome	RC3 Target	RC3 Forecast
THM – Reduction in the number of properties at risk	133,465	171,487

Over the RC3 period, UÉ expects to deliver 29 new and upgraded treatment plants (see Section 7.1), which has a significant positive impact on properties with risk of trihalomethane (THM) non-compliance. For the RC3 period, UÉ is projecting to address the THM risk for 171,487 properties, in exceedance of the target of 133,465 properties.

This is based on UÉ's barrier approach to compliance with the Drinking Water Regulations (S.I. No. 122 of 2014) for chemical (THM and Lead) risk:

- Barrier 6 – appropriate treatment for the removal of THM precursors and/or THM removal; and

- Barrier 8 – orthophosphate (lead) dosing at the WTP or local reservoir sites to prevent lead occurrence in water from lead pipework and/or public side lead service replacement.

Drinking Water Quality (Chemical) Risk

Output/Outcome	RC3 Target	RC3 Forecast
Number of Lead Services Replaced	13,231	36,872

UÉ has made significant progress in replacing lead services over the RC3 period. By the end of 2023, 28,789 were replaced. UÉ will continue to focus on replacing as many lead services as possible and expects to replace a further c. 8,000 by the end of RC3. This significantly exceeds the RC3 target of 13,231 replacements.

In order to complete backyard services, which includes replacement of lead services, UÉ must obtain signed consents from homeowners to allow it and contractor staff to carry out works on private properties. These have proven more difficult to obtain than expected. As a result, UÉ has focused the lead replacement programme on public side lead services.

Drinking Water Quality (Chemical) Risk

Output/Outcome	RC3 Target	RC3 Forecast
Number of Water Treatment Plants with Orthophosphate Dosing	27	27

In terms of Orthophosphate dosing, UÉ is on track to deliver 27 treatment plants in RC3. This is in line with the original RC3 target. These works overcame significant challenges arising from unanticipated complexities, including process deficiencies identified during on-site investigations.

Water Supplies removed from the RAL

Output/Outcome	RC3 Target	RC3 Forecast
Number of Water Supplies removed from the EPA's RAL	48	57

The Remedial Action List (RAL) is a register of public water supplies that are in need of corrective action. When UÉ has shown that the underlying issue has been addressed, a supply can be removed from the list.

The Environmental Protection Agency (EPA) updates the RAL twice per year and supplies can be added to the list for the following reasons:

- The water supply fails to meet the drinking water standards for E. coli, enterococci, trihalomethanes, pesticides, aluminium or turbidity;
- The water supply has inadequate treatment for Cryptosporidium or inadequate disinfection;
- The HSE identifies a water supply where improvements are required; or
- An EPA audit identifies a lack of operational control at the water treatment plant.

In terms of Water Quality, UÉ had an RC3 target to remove 48 water supplies from the EPA's RAL. The condition of the existing asset base has resulted in some emerging needs during the investment plan period due to plant failures which have required urgent interventions. As a result, UÉ has increased the number of plants removed from the RAL during RC3 by an additional nine plants, giving an overall forecast of 57.

The intricate nature of the challenges associated with the supplies which are on the RAL requires UÉ to undertake comprehensive assessment and mitigation processes to ensure that they are appropriately addressed and to maximise the removal of any residual risk. It is often necessary to carry out detailed assessment of these supplies to determine the underlying cause of the water quality risks. The related projects associated with these actions can therefore often span a timeframe of two to seven years.

As a result of the existing asset condition, UÉ continues to experience quality issues on existing deficient water treatment plants that will require prioritised interventions. This has resulted in the addition of further water supplies to the RAL and these will be the focus of investment in the RC4 period.

Source Protection and Risk Assessment

In addition to the above targets, Source Protection Plans were progressed over RC3 as part of the Drinking Water Safety Plan approach. This included the following activities:

Catchment Activities: UÉ is working with public bodies and other stakeholders towards a common goal of the protection of drinking water sources. We actively undertake assessments of activities such as forestry licences, peatland rehabilitation, planning applications and exploration drilling that may impact our drinking water sources and propose mitigation measures where required.

Pesticides - National Pesticide and Drinking Water Action Group & Catchment Focus Groups: In 2021, UÉ published its pesticides strategy⁵ to reduce the risk of pesticide contamination in drinking water in order to safeguard human health and the aquatic environment. We continually collaborate with stakeholders on the National Pesticide and Drinking Water Action Group (NPDWAG), who share the common goal of reducing the risk of pesticide contamination to public drinking water sources. For priority catchments with persistent pesticide exceedances, sub-groups known as Catchment Focus Groups (CFG) are formed to try to tackle the issues locally through awareness raising, advice and training. There are currently CFGs in operation in Cavan (Belturbet), Greenmount, Newport, Clonroche, Lough Forbes and River Deel / River Feale. There has been a significant reduction in the number of samples exceeding the pesticide drinking water limit when compared to the baseline, with the overall improvement attributed to the collaborative actions of the NPDWAG and CFGs. Additionally, the Belturbet, Longford and Newport supplies were removed from the EPA's Remedial Action List in 2023 as a result of these improvements.

Source to Tap project⁶ – This project ran from 2018-2022 gaining learnings and insights over five years in relation to adopting a sustainable, cost-effective, catchment management approach, designed to protect source drinking water catchments. The project objective was to improve Drinking Water protection through peatland restoration, forestry management, agricultural land use improvements and education.

Erne Larah - The Erne-Larah Water Source Protection Project in the Upper Erne Catchment in County Cavan was established to determine what (if any) measures can be adopted to reduce the risk of pesticides entering our drinking water sources. The overall aims are to both provide evidence that managing water catchments is an effective way to protect water sources from pesticides and to test water source protection measures, which can be rolled out on a wider scale as part of national policy. The Project is commencing well with 35 farmers formally signed up. Implementation of measures are farm specific and identified in the Water and Environment Management Plan (WEMP), and contractors have commenced works in relation to WEMP measures. This project is due to complete in 2025.

Drinking Water Safety Plans Source Risk Assessments: (DWSP SRAs) – To end of 2023, source risk assessment methodologies have been completed for chemicals, pesticides, nutrients and geological conditions (covering 21 source hazards), and related standards, approved by the Water Technical &

⁵ <https://www.water.ie/projects/strategic-plans/interim-pesticide-strategy/IW-AMT-STR-010-Exernal.pdf>

⁶ [Water Professionals & Land Managers - Source to Tap](#)

Environmental Forum (WTEF). Work is underway on developing source risk methodologies for the remaining hazards. Raw water monitoring needs have been identified, and 127 Source and Sanitary Surveys (SSS) were reviewed with work commencing to ensure that the SSS continues to encompass all source hazards.

5.2 Quality – Providing Effective Management of Wastewater

This section outlines how UÉ has performed over the RC3 period against our WSSP strategic objective of providing effective management of wastewater. The effective collection and treatment of wastewater prior to discharge back to the environment is essential to protect human health and the quality of the local environment. The capacity of wastewater treatment infrastructure must also be adequate to provide for population and economic growth.

Agglomerations removed from EPA's Priority Urban Area Action List

Output/Outcome	RC3 Target	RC3 Forecast
Number of agglomerations removed from EPA's Priority Urban Area Action List	75	75

UÉ has a target to remove 75 agglomerations from the Environmental Protection Agency's (EPA) Priority Urban Area Action List (PAL) in RC3 and is on track to achieve this target. The PAL identifies the priority urban areas where treatment must improve to resolve wastewater national priorities. There are deficiencies in many public sewers and wastewater treatment plants, due to a legacy of under investment. Wastewater from some areas discharges into the environment without adequate treatment. The EPA recognises that it will not be possible to fix all of these problems in the short term, and therefore UÉ must ensure that the resources that are available are directed to where they are most needed. The PAL is updated as agglomerations are added or removed.

UÉ investment in treatment infrastructure at priority areas, as highlighted by the EPA, continued to bring improvements over RC3. Examples of agglomerations that have been removed from the PAL during RC3 include Duncannon, Arthurstown and Ballyhack in Wexford, Ballintra in Donegal, Clarecastle in Clare and Kilcar in Donegal.

Agglomerations in the ECJ Urban Wastewater Treatment Directive

Output/Outcome	RC3 Target	RC3 Forecast
Number of agglomerations in the ECJ Urban Wastewater Treatment Directive	13	8

The Urban Wastewater Treatment Directive (UWWTD) sets requirements for the collection, treatment and discharge of wastewater from large urban areas. In 2019 the Court of Justice of the European Union (ECJ) found that Ireland was not in compliance with the Directive in respect of 28 agglomerations.

Ireland reports to the European Commission on progress, with an update on compliance status. Following the completion of necessary works, wastewater treatment plants need to demonstrate 12 months of compliant effluent data to validate compliance with the UWWTD. Once works are completed and effluent compliance demonstrated, the agglomeration remains on the Infringement case list until such time as this is updated by the European Commission.

During RC3, works will have been completed in eight cases, with six of these expected to reach full compliance by end of 2024. Due to planning issues and the impact and uncertainty created by COVID-19 in the early years of RC3, seven cases will not be in full compliance.

The status of each agglomeration is set out in the table overleaf. The capital work in Rathcormac was completed in 2020, and process adjustments were undertaken in 2021. However, in both 2022 and 2023, one effluent sample was in breach of the UWWTD standards. A detailed assessment of the incoming flows, including targeted monitoring, is on-going which will inform further corrective actions to be taken. The other agglomerations are a high priority and are expected to be delivered based on the timelines set out below. UÉ expects to complete works in one agglomeration before the end of 2024 (with compliance in 2025). Plans for three of the agglomerations are progressing and are expected to be complete before the end of 2025 (with compliance in 2026). The final two agglomerations, Cork City and Midleton are currently entering design phase, however, works to achieve compliance will extend into RC4 and beyond as the scale and size of the interventions required are well beyond what was originally envisaged.

Agglomeration Name	Year works completed/ Forecast	Year Compliance Demonstrated /Forecast
1. Youghal	2018	2019

2. Tralee	2019	2019
3. Roscrea	Works Complete pre 2018	Pre 2018
4. Ringaskiddy / Crosshaven / Carrigaline	2016	2022
5. Portarlinton	Works Complete pre 2018	Pre 2018
6. Nenagh	Works Complete pre 2018	Pre 2018
7. Navan	Works Complete pre 2018	Pre 2018
8. Longford	Works Complete pre 2018	Pre 2018
9. Killybegs	2018	2019
10. Killarney	Works Complete pre 2018	Pre 2018
11. Dundalk	2018	2019
12. Castlebridge	Works Complete pre 2018	Pre 2018
13. Enniscorthy	2019	2020
14. Passage Monkstown	2019	2022
15. Tubbercurry	2019	2020
16. Ballybofey/Stranolar	2020	2021
17. Rathcormac	2024	2025
18. Cobh	2021	2022
19. Shannon Town	2021	2022
20. Mallow	2023	2024
21. Ringsend	2023	2024
22. Roscommon	2023	2024
23. Fermoy	2024	2025
24. Arklow	2025	2026
25. Athlone	2025	2026
26. Enfield	2025	2026
27. Midleton	2029	2030
28. Cork City	Post 2029	Post 2029

Table 5.1: Agglomerations in the ECJ Urban Wastewater Directive

IRC2 Legacy Metrics

A number of wastewater metrics predate RC3. These Interim Revenue Control 2 (IRC2) Legacy metrics were set by the EPA. In order to streamline reporting with the PAL, UÉ proposes to close these IRC2 Legacy Metrics. These are set out in the table below, noting which specific IRC2 works have completed and are closed, or where works are ongoing and monitored through the PAL.

Interim Revenue Control 2 Legacy Targets		
Wastewater treatment works compliant with Urban Wastewater Treatment Directives	PE	Status
Cork City WWTP	312,640	Specific IRC2 intervention complete
Manorhamilton WWTP	2,016	Specific IRC2 intervention complete
No of Wastewater Treatment Plants overload serving > 2000 population	No.	
Fermoy WW Network	1	Specific IRC2 intervention complete Fermoy on PAL as remaining works expected to complete in 2024.
No of Wastewater Treatment Plants overload serving < 2000 population	No.	
Courtmacsherry / Timoleague Sewerage Scheme	1	Specific IRC2 intervention complete. Further non-compliance has returned Courtmacsherry / Timoleague to the PAL which is being addressed by process optimisation
Number of Wastewater Treatment Plants compliant - EPA discharge increase ELVs	No.	
Cork Lower Harbour - WWTP & Pumping Station DBO	4	Specific IRC2 intervention complete
Courtmacsherry / Timoleague Sewerage Scheme	1	Specific IRC2 intervention complete Further non-compliance has returned Courtmacsherry / Timoleague to the PAL which is being addressed by process optimisation
Dundalk & Drogheda Wastewater Treatment Plants & Wastewater Treatment Plant Upgrades	2	Specific IRC2 intervention complete
Killala Sewerage Scheme Network & WWTP	1	Specific IRC2 intervention complete

Table 5.2: Interim Revenue Control 2 Legacy Targets

Additional progress areas

UÉ has also progressed other areas to improve wastewater quality which did not have a specific RC3 target. These include:

Agglomerations with no treatment or preliminary treatment only

Over the RC3 period, UÉ has made steady progress on reducing the number of agglomerations with no treatment or preliminary treatment only. Works were completed on 19 wastewater agglomerations by end 2023 and an additional four are expected to be completed in 2024, including Omeath, Co Louth and Kilrush, Co Clare.

Agglomerations in River Basis Management Plan

UÉ has made steady progress against the priorities set out in the River Basin Management Plan (RBMP) including 47 wastewater projects, such as Kilmore Quay in Wexford, Innishannon in Cork and Foxford in Mayo.

Appendix 1 of the RBMP⁷ lists the urban areas where capital works to upgrade water treatment plants were proposed in order to:

1. Achieve compliance with the Urban Wastewater Treatment Directive.
2. Support the protection of protected areas (shellfish and bathing waters).
3. Support the protection of high-status waters.
4. Support the prevention of deterioration and support targeted water quality improvements.

Wastewater Discharge Authorisation Compliance

Wastewater treatment projects have been advanced by UÉ over the RC3 period to continue to address non-compliance with Wastewater Discharge Authorisations (WWDAs), and in particular those with wastewater discharge licences. There are several parameters for WWDA compliance including Biochemical Oxygen Demand (BOD), Ortho-phosphate limits, Suspended Solids and Ammonia limits.

Major upgrades and programmes were progressed to address one or more of these parameters. These consisted of large-scale projects involving wastewater treatment plants or network upgrades.

Above ground projects completed or due to complete in RC3 include Castletownbere WWTP, Co Cork; Tullow WWTP, Co Carlow; Kilcar WWTP, Co Donegal; and Burtonport WWTP Co Donegal. Below ground projects include Mallow, Co Cork; Roscommon Town; Rosses Point, Co Sligo; and Athlone Main Drainage, Co Westmeath.

⁷ <https://www.gov.ie/en/publication/429a79-river-basin-management-plan-2018-2021/>

Targeted interventions were also progressed through the following programmes in the RC3 period:

- Infiltration Reduction Programme;
- Inlet Works Storm & Sludge Programme (IWSS);
- Network Survey & Monitoring (to inform future works);
- Phosphorus Removal 2020-2024 Programme;
- Secondary Treatment Optimisation 2020-2024 Programme; (improved Ammonia/BOD);
- Storm Water Overflow (SWO) Surveying and Monitoring Programme (to inform future works);
- Wastewater Disinfection Programme (2020-2024);
- WWPS National Upgrade Programme; and
- WWPS Telemetry Programme (to inform future works).

Wastewater Collection Systems

UÉ has made progress in upgrading the national sewer network to achieve environmental compliance objectives, relieve sewer flooding impacting the public, and provide capacity for growth. Given the scale of investment needed across the country, critical areas were prioritised. Large scale infrastructure projects targeted at achieving UWWTD compliance at agglomerations through upgrading of wastewater networks were progressed over the RC3 period.

Drainage Area Plans (DAP)

The following agglomerations are part of the DAP Programme, which is also described under the Future Proofing theme as it informs on the requirements for facilitating future growth:

- Cork City;
- Fermoy;
- Midleton.

The DAP Programme and Storm Water Overflow (SWO) Survey & Monitoring Programmes enables underperforming WW network assets to be identified and the level of risk to be quantified for existing and future scenarios. The DAP Programme models enable the identification of the long list of potential interventions at the strategic assessment stage to manage risks, to achieve compliance with the requirements of the wastewater discharge authorisation and also to consider impacts of future growth and climate change.

Due to the overall scale of investment required nationally, the investment in interventions on wastewater collection systems was focused on priority areas where environmental benefits can be maximised in an effective manner. This work programme also includes upgrades to wastewater collection systems to improve asset performance and manage known sewer flooding risks impacting property and infrastructure.

To date during RC3, 29 DAPs have been completed, with another two due for completion in 2024.

Strategic Network Projects

Our cities and large urban centres rely on strategic elements of the collection system to transfer wastewater within the catchment. This transfer is either to the existing WWTPs, or in some cases, away from WWTPs that are near capacity to alternative WWTPs. The development of long term plans, upgrading of existing strategic networks, advancement of interventions to increase capacity, and provision of new strategic network in our cities and large urban centres have been progressed over the RC3 period.

The following projects have been advanced over RC3 and are currently at different stages of delivery:

- Leixlip Transfer Pipeline;
- Dundalk East WW Network Upgrade;
- Ringsend WW Network
 - 9B Sewer Reinforcement;
 - Dodder Valley Sewer Reinforcement;
 - North Fringe & North Dublin Diversion Sewer Reinforcement;
 - West Pier WW Network Upgrade;
 - Sutton Pumping Station Upgrade;
 - Grand Canal Tunnel Sewer Outfall;
- Maynooth Transfer Pipeline; and
- Malahide WW Network Upgrade

6 Addressing the Conservation Theme

6.1 Conservation – Ensuring a Safe and Reliable Water Supply

This section outlines how UÉ has performed over the RC3 period against our WSSP strategic objective of Ensuring a Safe and Reliable Water Supply.

Leakage Reduction

Output/Outcome	RC3 Target	RC3 Forecast
Leakage Reduction	176 ⁸	-

UÉ's RC3 target for net leakage reduction is 176 million litres per day (MLD), which is split into 161 MLD on the public side and 15 MLD on the customer supply pipe. As of the end of 2022, UÉ reported a reduction of 90 MLD in public side leakage from the start of the RC3 period. However, the operational impact of the Uisce Éireann Transformation programme, combined with an ongoing review of the data underpinning UÉ's leakage calculations (following receipt of CSO 2022 data) means that UÉ is currently unable to report on leakage reduction figures post 2022. UÉ expects to be in a position to advise the CRU on progress versus the RC3 Leakage target by the end of Q3 2024.

UÉ is currently engaging with the CRU on a technical review and calculation of Customer Supply Pipe Leakage which will provide a 2019 baseline figure as well as subsequent progress against the 15MLD RC3 target.

National Water Resources Plan (NWRP)

Over the RC3 period, UÉ developed the NWRP to identify how UÉ can plan to provide a safe, sustainable, secure and reliable water supply for all our customers now and into the future whilst safeguarding the environment. Development of the NWRP was divided into two distinct phases:

Phase 1 - NWRP Framework Plan:

The Framework Plan sets out the methodology UÉ uses to identify needs across its 539 existing water supplies in a uniform way, and to review options in order to develop a "Preferred Approach" for addressing "Need" in each supply or group of

⁸ CRU/2022977 decision paper re-allocated ring-fenced allowances to Capital Maintenance for delivery of a further 1.5ML/D leakage in addition to RC3 target of 176ML/D

supplies. The Framework Plan⁹ was adopted in May 2021 following development of the Strategic Environmental Assessment (SEA), Appropriate Assessment (AA) and extensive public consultation.

Phase 2 – The Regional Water Resources Plans:

Phase 2 involves the development of four Regional Water Resources Plans (“RWRP”) (Eastern and Midlands region, South West region, North West region and South East region) which adopt the methodology in the Framework Plan. Each Regional Plan summarises the Needs within the water supplies in the applicable region and develops a Preferred Approach to resolve these Needs. Each of the four draft RWRPs and associated environmental reports had their own public consultation phases over the course of 2021, 2022 and 2023 and have since been adopted by UÉ.

The four RWRPs and the Phase one NWRP-Framework Plan constitute UÉ’s first National Water Resource Plan for the public water supply in the Republic of Ireland. UÉ will continue to review and update the NWRP. As emerging data and information becomes available it will be incorporated into the NWRP through the feedback and monitoring process as set out in the Framework Plan.

6.2 Conservation - Protecting and Enhancing the Environment

This section outlines how UÉ has performed over the RC3 period against our WSSP strategic objective of Protecting and Enhancing the Environment.

Sustainability and Climate Change

Sustainability and climate change are key considerations for our water resources to ensure a resilient water service. Climate change will have a significant impact on water services in Ireland. Reduced rainfall combined with extra demand from a growing population and economy will put increased pressure on our water supplies. Our wastewater network and treatment plants will also be tested as we experience more significant storm events, rising sea levels and more intense rainfall leading to increasing likelihood of flooding. This affects how UÉ operates its business. UÉ is implementing measures to adapt to future climate change and develop a resilient water and wastewater service. Examples of the climate change adaptation measures we have implemented to date are:

- Our DAP programme assessment and solution development considers the impact of climate change;

⁹ <https://www.water.ie/projects/strategic-plans/national-water-resources/>

- We have included a programme for protection of property from local flooding issues which are occurring more frequently due to climate change;
- We are implementing programmes to monitor frequency of storm water overflows to fully understand discharges from our sewer system to the environment and to implement preventative measures;
- NWRP calls out the impact of climate change on providing a sustainable water supply within environmental constraints which will be taken forward into our investment planning approach; and
- All future asset upgrades will be designed and constructed in line with UÉ's sustainability policy requirements.

These climate adaptation measures are accounted for in their primary work programmes. For example, DAPs are accounted for under Future Proofing as they are primarily contributing to planning for growth and resilience of wastewater networks. Similarly, the NWRP measures will be implemented as part of Quality and Future Proofing work programmes.

We are also currently developing and implementing a strategy to meet our climate change policy commitments aligned with the National Adaptation Framework – Planning for a Climate Resilient Ireland.

The main impacts of climate change for UÉ are likely to be increased rainfall and storm intensity resulting in:

- Pluvial, fluvial and coastal flooding damaging our assets and impacting on raw water quality;
- Sewer flooding and increased combined sewer overflow spills leading to flooding of properties and causing negative environmental impacts in receiving waters; and
- Threat to security of water supply and wastewater collection arising from flooding impacting on our operations.

In addition, periods of reduced rainfall and drought could also result in:

- Lower river flows reducing the availability of water for abstraction and dilution capacity available for wastewater treatment;
- Reduced capacity to supply treated water and increased demand for water;
- Changes in water quality classification;
- Impacts on water and wastewater treatment costs; and

- Increases in water temperature affecting treatability and assimilative capacity of waters.

Adaptation priorities for UÉ are:

- Assessment of the immediate risks arising from flooding and other weather-related incidents, such as drought, on our assets and operations and implementation of appropriate measures to reduce this risk in a structured manner;
- Development of an understanding of how climate change will impact on water availability, treatment processes, water and wastewater networks to inform the identification and implementation of measures to improve the resilience of services; and
- Development of Climate Vulnerability Assessment and Management standard to ensure future capital investment projects are climate change proofed.

Drinking Water Sludge Treatment

Over the RC3 period UÉ has developed a nationwide standard approach to the management of drinking water treatment sludge as part of the NWRP. This provides an enduring, coherent plan to manage residuals from the water treatment process in an economical, environmentally acceptable and sustainable manner.

The primary source of drinking water treatment sludge production is through the CFC process. Upgrading of drinking water sludge treatment projects has been advanced over the RC3 investment period. These will continue to deliver environmental improvements in parallel with other investments. These programmes will target the prevention of pollution in sensitive receiving waters, removing sites from the RAL and reducing site pollution.

Energy Efficiency

UÉ, as one of largest public sector energy consumers in the country, is improving the energy efficiency of water services. The majority of our energy is used for pumping, water and wastewater processes, and aeration in wastewater treatment.

Under our current Sustainable Energy Strategy, we are improving our energy efficiency, reducing our reliance on fossil fuels and counteracting the rise in our

base energy demand due to infrastructure upgrades and population growth. Energy efficiency improvement is a key mitigation measure of our climate change policy to help ensure climate resilience. Our sustainable energy strategy takes a proactive, business wide approach incorporating concept design, new projects, retrofits and upskilling our people. Our strategy approach covers energy efficient design, innovation, energy retrofits, renewable energy, lighting and heating, energy audits and planning, process optimisation, and staff awareness and training.

For RC3, UÉ identified programmes to target the replacement and improvement of existing large energy inefficient assets and use of renewable energy. Key areas of focus are reducing consumption of electricity (UÉ's main energy source), thermal (heating) and fuels for transport. To date, UÉ has made significant progress on the journey to become an energy efficient, low carbon, sustainable water utility. UÉ's RC3 Investment Plan is focussed on reducing energy consumption by 22 GWh over the RC3 period and it is projected that this target will be met by the end of 2024.

UÉ expects to publish its new Sustainable Energy Strategy in Q2 2024. The strategy is aligned to the UN sustainable development goals and the National Climate action Plan, taking a proactive approach to sustainability across our water and wastewater assets.

[Sustainable energy programme](#)

UÉ's is progressing with programmes to deliver on our RC3 targets and beyond, and wider SEAI targets. Key projects include:

- Ongoing implementation of Energy Efficiency Design (EED) into the design stage for all our new and existing assets;
- Continuation of our energy efficient retrofit programme targeted at improving performance and energy efficiency and reducing carbon emissions;
- We are progressing our Energy Management Community of Practice to implement ISO5001, the International Standard for Energy Management Systems, integrating energy management into our business-as-usual activities; and,
- Following on from the success of our pilot Solar Photovoltaic (PV) Projects at Nenagh and Newcastle West, we have workshopped over 600 sites with

our Local Authority (LA) partners. We continue to conduct detailed assessments for solar PV on 230 sites for progression to statutory planning and subsequent development of a renewables installation programme. These projects provide clean, sustainable electricity to the plants, while also reducing energy consumption, costs and carbon emissions associated with water services.

7 Addressing the Future Proofing Theme

7.1 Future Proofing Outcome & Output Metrics

The following key outputs that are largely attributable under the WSPS theme of Future Proofing were progressed over the RC3 period.

Number of new Treatment Plants (water and wastewater)

Output/Outcome	RC3 Target	RC3 Forecast
Number of new Treatment Plants (water and wastewater)	29	29

UÉ is forecasting to meet the target of 29 new water and wastewater treatment plants in RC3, with 25 treatment plants completed to end of 2023.

UÉ is on target to deliver seven new Water Treatment Plants (WTP) in RC3. This includes the Lee Road WTP which was completed in 2022. This WTP has a capacity of 40MLD supplying drinking water to over 80,000 customers in Cork City. This investment also enabled the supply to be removed from the EPA's Remedial Action List. UÉ also expects to deliver 22 new Wastewater Treatment Plants (WWTP) in RC3. Examples include Duncannon, Co Wexford, Coachford, Dripsey, Innishannon and Castletownbere in Co Cork.

For some treatment plants, UÉ's initial estimates for RC3 included upgrades. However, following detailed review, the final solutions required completely new treatment plants being delivered with the removal / decommissioning of old treatment plants. The new Lee Road Treatment plant and the new wastewater treatment plants in Coachford, Dripsey and Innishannon are good examples of such new treatment plants. This has made a significant contribution to key outcomes in relation to additional capacity, better performing assets, and an improvement in compliance.

The delivery of new and upgraded wastewater plants has experienced delays due in particular to the complex nature of constructing this infrastructure including issues in relation to planning permission, and additional scope leading to delays. This has been offset by the delivery of additional new and upgraded water treatment plants. Therefore, the overall treatment plant targets are still projected to be achieved by the end of RC3.

Number of Existing Treatment Plants Upgraded

Output/Outcome	RC3 Target	RC3 Forecast
Number of Existing Treatment Plants Upgraded	89	95

UÉ is forecasting to exceed the target for existing water and wastewater treatment plants upgraded in RC3, with 74 treatment plants completed to end of 2023 and 95 projected by the end of the period.

Over the course of RC3, UÉ is forecasting to deliver 33 upgraded WTPs including Ballymore Eustace, Glengarriff and Lough Forbes. UÉ will also have successfully upgraded 62 WWTPs, including Gweedore.

The delivery of upgraded treatment plants in the early years of RC3 was significantly impacted by the COVID-19 pandemic and statutory consents. Over RC3, UÉ worked closely with supply chain partners to minimise the indirect effects of COVID-19, particularly in relation to pressures and constraints on the supply of labour.

Unforeseen complexities in delivering upgraded WWTPs continue to be a challenge in RC3. In particular, where there is a deficit in information at the initial stages of project scoping, or where additional requirements that were not evident at the time of the RC3 submission subsequently become known. An example of this is the Nenagh WWTP, where the completion of the DAP on the sewer network has resulted in a better understanding of peak hydraulic load arriving at the WWTP. This necessitated a redesign of the storm storage and inlet works at the treatment plant, both increasing the overall cost of the project and the length of time to deliver the upgrade.

Water Treatment Plant Capacity (Total ML/day)

Output/Outcome	RC3 Target	RC3 Forecast
Water Treatment Plant Capacity (Total ML/day)	625	1,403

UÉ is expecting to meet and exceed its targets for new and upgraded WTPs respectively, which in turn will contribute significantly to the WTP capacity target for RC3. UÉ is projecting achievement of 1,403 ML/Day to the end of the RC3 period.

The major contributors to progress have been water quality upgrades which have been delivered within the CFC Programme, the Disinfection programme, and larger site upgrades.

Additional Water Supply Capacity

Output/Outcome	RC3 Target	RC3 Forecast
Additional Water Supply Capacity (ML/day)	46	53

UÉ is forecasting to exceed the target for additional water supply capacity in RC3, with a forecast of 53 ML/Day against the RC3 target of 46 ML/Day.

UÉ completed the Lee Road WTP in Cork City which replaced the existing WTP which was at end-of-life stage and delivered an additional 4ML/Day of supply capacity.

Wastewater Treatment Plant Capacity (Total Population equivalent)

Output/Outcome	RC3 Target	RC3 Forecast
Wastewater Treatment Plant Capacity (Total Population Equivalent)	3,070,158	3,059,090

The new and upgraded WWTPs completed to the end of RC3 will benefit a total Population Equivalent (PE) of 3,059,090.

The programmes driving new and upgraded capacity include the Inlet Works programme, Storm and Sludge (IWSS) programme and the National Certification Authorisation Programme (NCAP). These upgrades are benefiting smaller WWTPs and demonstrate the benefit of a programme approach to deliver quick results. The addition of these smaller upgrades have largely offset the capacity not achieved through delayed upgrades of larger plants and larger new plant builds.

Additional Wastewater Treatment Capacity (Population Equivalent)

Output/Outcome	RC3 Target	RC3 Forecast
Additional Wastewater Treatment Capacity (Population Equivalent)	770,751	654,725

The Additional Wastewater Treatment Capacity (Population Equivalent) delivered to the end of RC3 will benefit a total Population Equivalent (PE) of 654,725.

Additional wastewater treatment capacity is linked to the number of new and upgraded treatment plants that UÉ is expecting to deliver in RC3 and the increased capacity associated with those plants. Wastewater projects have experienced lengthy delays in achieving planning permission and progressing through the statutory requirements, which has increased the time required to deliver WWTPs to eight years on average, which is far in excess of original estimates.

As a result, the volume of additional PE to be delivered in the RC3 period will be below the target by 15%.

UÉ expects that the Ringsend WWTP upgrade will be completed by 2025. This includes additional capacity which is being delivered in two stages; the first a further 484,000 of Wastewater Treatment Capacity PE delivered in RC3; with the remainder of c. 300,000 of Wastewater Treatment Capacity PE expected to be delivered in 2025.

Number of Reservoirs Upgraded

Output/Outcome	RC3 Target	RC3 Forecast
Number of Reservoirs Upgraded	132	333

UÉ is expecting to significantly exceed the RC3 target, with a total of 333 reservoir upgrades projected to be delivered against a target of 132.

Reservoir upgrades over later RC3 have increased significantly compared to the preceding RC3 years. Several factors have contributed to this including increased investment and activity within UÉ’s Reservoir Inspection, Cleaning & Leakage Repair Programme which has improved the identification of leaking reservoirs. An increase in the availability of contractors has also improved the level of delivery activity.

New Watermains (km)

Output/Outcome	RC3 Target	RC3 Forecast
New Watermains (km)	496	500

For new watermains, UÉ is projecting that the RC3 target will be achieved and slightly exceeded. Some of the potential schemes identified in the RC3 submission are not progressing as originally planned. UÉ has therefore increased the number of WTPs being rationalised which requires the laying of more new mains to connect weaker supplies to more secure treatment locations.

Rehabilitated or lined mains (km)

Output/Outcome	RC3 Target	RC3 Forecast
Rehabilitated or lined mains (km)	731 ¹⁰	948

For Rehabilitated or lined mains, UÉ is projecting that the RC3 target of 731kilometres will be significantly exceeded.

Over the RC3 period, UÉ has continued to invest in rehabilitation of the poorest performing sections of the network based on criteria such as burst data, water quality issues and outages to customers. The progress in tackling underperforming watermains can be largely attributed to the notable increase in UÉ’s delivery activity over the revenue control period, including a more proactive approach to replacement activity. This includes an increased volume of larger diameter trunk-main replacements.

It should be noted that additional rehabilitated or lined mains were delivered over and above the CRU targets. This was as a result of the reallocation of funding across the overall portfolio.

New Sewers (km)

Output/Outcome	RC3 Target	RC3 Forecast
New Sewers (km)	241	245

UÉ has an RC3 target to install 241 kilometres of new wastewater sewer across the network and will moderately exceed this. This significant increase in installation of new wastewater sewer network relative to the previous revenue control period can be attributed to UÉ’s drive to ensure large standalone projects are delivered efficiently and on time. Many such projects concluded over the RC3 period,

¹⁰ CRU/2022977 decision paper reallocated ringfenced allowances for delivery of a further 220 kilometres of rehabilitated mains in addition to the RC3 target of 511 kilometres.

including the Upper Liffey Valley Sewerage Scheme Phase 3 and the Leixlip Transfer Pipeline.

The high delivery rate for installation of new sewer in the RC3 period was also driven by a focus on Growth and Development programmes such as the Network Extension Programme, Local Infrastructure Housing Activation Fund (LIHAF)/ Major Urban Housing Development Sites (MUHDS) Growth Programme (Wastewater) and Wastewater Below Ground Local Network Reinforcement Programme.

Rehabilitated Sewer (km)

Output/Outcome	RC3 Target	RC3 Forecast
Rehabilitated Sewer (km)	342	234

UÉ has a RC3 target to rehabilitate 256 kilometres of wastewater sewer across the network and 86 kilometres for ‘Taking in Charge – in Residential Estates’ (total of 342km).

As part of the initial plan for the RC3 period, UÉ had allocated €43m for the ‘Taking in Charge – in Residential Estates’ project. UÉ agrees resolution plans with the planning authorities to progress any significant sewer rehabilitation prior to the taking in charge of these residential estates. As part of any resolution plan, the planning authorities are also required to rectify other public infrastructure e.g., surface water, public lighting, footpaths and roadways. Resource availability for these other requirements has hampered the taking in charge of these estates. The planned rehabilitation work of the 86km target has therefore not progressed as required during RC3 due to the delay in the taking in charge process.

The rate of work on the remainder of sewer rehabilitation has increased over the RC3 period, largely due to the focus of the Wastewater Below Ground Capital Maintenance programme of work. However, UÉ is facing more complex rehabilitation in man-entry type sewers and a shortage in contractor availability is also impacting the delivery of this target.

7.2 Future Proofing – Supporting Social and Economic Growth

This section outlines how UÉ has performed over the RC3 period against our WSSP strategic objective of Supporting Social and Economic Growth.

Facilitating growth in line with national and regional economic and spatial planning policy

Over RC3, UÉ has delivered sustainable high-quality water and wastewater services which are critical to Ireland's future economic and social progress, and which are enabling communities throughout Ireland to thrive. This work is central to the Government's vision, to build an Ireland that is more resilient, competitive, and sustainable and will improve living standards for all.

UÉ's approach to planning and providing water services for growth is evidence based. UÉ examines national data and national policies and plans that have a direct impact on where investment should be prioritised, or which have a dependence on the public water and wastewater infrastructure, such as housing policies, job growth policies, and climate action plans. Even when the need to upgrade our water and wastewater projects is driven by regulatory and environmental standards, UÉ includes a provision for a 10-year growth horizon in designing upgrade projects.

During RC3, UÉ worked with key stakeholders to invest and deliver strategic water and wastewater infrastructure to cater for growth. Our strategic aims are to:

- Support the growth of identified settlements where these are prioritised in development plan core strategies at a county/city level;
- Ensure that growth in the five cities of Dublin, Cork, Galway, Limerick and Waterford, together with the regional centres identified in the NPF, is supported by the provision of water services investment;
- Delivery of the strategic capital investment plan set out under the NDP over the period 2018-2027 to improve resilience in areas most vulnerable to a shortfall in water supply and wastewater services, such as the Greater Dublin Area;
- Provide adequate capacity to meet the objectives of the Government's strategic approach to housing identified in the Rebuilding Ireland Action Plan for Housing and Homelessness and the NPF; and
- Support Government initiatives through the capital investment plan such as the Local Infrastructure Housing Activation Fund (LIHAF), Major Urban Housing Delivery (MUHD) sites and Housing for All.

The provision of water and wastewater infrastructure to facilitate growth is delivered through several initiatives under a dedicated Growth and Development programme. These initiatives include:

LIHAF/MUHDS Programme

The LIHAF and MUHDS Programme is a key Government initiative. The objective of the programme is to provide public infrastructure to relieve critical infrastructure blockages to enable accelerated delivery of housing on key development sites in urban areas with high housing demand. The key deliverable is provision of new water and wastewater networks to cater for capacity for growth.

Network Extensions Programme

The Network Extensions Programme is a Government initiative investing in network extensions for water services to support housing development in key strategic areas. The key deliverable is provision of new water and wastewater networks to cater for capacity for growth.

Wastewater Network Growth Programme

The Wastewater Network Growth Programme was established in 2021 by UÉ to oversee the delivery of wastewater network interventions funded through the capital investment plan. The objective of the programme is to provide for wastewater capacity for zoned lands which require strategic wastewater infrastructure upgrades to facilitate future growth and development. The programme also supports the Government's 'Housing for All' Programme, delivering strategic network interventions nationally.

The Wastewater Pumping Station Upgrade Programme is included within this initiative to facilitate future growth and development. The objective is to deliver upgrade works at a number of Wastewater Pump Station (WWPS) sites using a programme management approach to achieve efficiencies and standardisation compared with delivering the upgrade works as standalone projects. The Programme scope is the upgrade of WWPSs in order to achieve the common objective at each site of (i) increasing the WWPS capacity to facilitate growth and development and (ii) addressing any health & safety, operational, or other non-compliance issues at the sites.

Water Network Growth Programme

The Water Network Growth Programme was established by UÉ to oversee the delivery of water network interventions funded through the capital investment plan. The objective of the programme is to provide for water networks for zoned lands which are not readily serviceable and which require water infrastructure upgrades to facilitate future growth and development. The programme also supports the Governments 'Housing for All' Programme, delivering strategic network interventions nationally.

CDS Major Connections Programme

The Connection and Development Services (CDS) Major Connections Programme consists of customer funded major connection projects that are of an increased complexity and involve works associated with development of conceptual designs through to construction completion. The key deliverable is to provide new water and wastewater networks to cater for additional network capacity for customer needs.

Small Towns and Villages Growth Programme (STVGP)

The STVGP has been established to address capacity and compliance deficits at small wastewater treatment plants across the country, to cater for growth in rural settlements while ensuring compliance with wastewater discharge standards. The STVGP is a multi-year, multi-investment plan programme, extending from early-stage appraisal and development through to capital works delivery at sites across the country. The STVGP supports National Policy Objectives and National Strategic Outcomes under the National Planning Framework, by ensuring that essential infrastructure is provided within each LA area; and that investment is in accordance with County Development Plans.

A number of investment cycles will be required to deliver additional capacity in areas that are already identified and progressing under the Programme. UÉ plans to continue the Programme into the next investment period (2025-2029) and beyond, subject to the regulatory approvals process.

7.3 Future Proofing – Investing in our Future

This section outlines how UÉ has performed over the RC3 period under the WSSP Strategic Objective of Investing in our Future.

Asset Management

Over the RC3 period, UÉ has completed a baseline assessment and agreed the resulting roadmap towards ISO55000 compliance by building an Asset Management System for UÉ.

An Asset Management System provides the processes, documentation, systems, data and people/culture required to effectively coordinate activities on our assets across their full lifecycle. The illustration below outlines the Asset Management approach in UÉ:

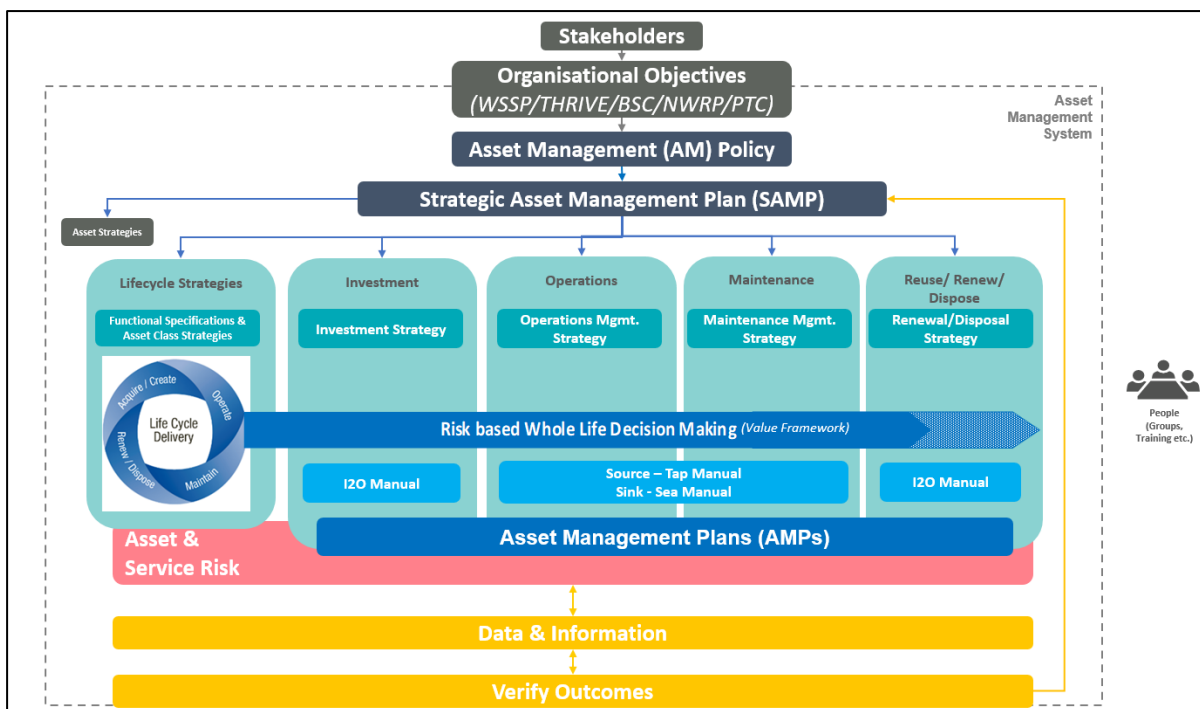


Figure 5.1: UÉ Asset Management Approach

Significant progress has been made in building elements of the UÉ Asset Management System including:

- A draft Strategic Asset Management Plan (SAMP);
- Completion of a number of Asset Class Strategies (ACSs);
- Building a Proof-of-Concept Asset Management Plan (AMP); and
- Development of a People & Groups model and Asset & Service Risk Framework.

Capital Maintenance

Capital Maintenance is the replacement or refurbishment of existing assets with the objective of maintaining our existing levels of service to our customers and to the environment. It maintains service delivery for our customers, avoids operational cost increases, and maintains asset performance. The programmes cover the full asset base; water and wastewater, above and below ground assets.

The Programme delivers the refurbishment and replacement of:

- Failing assets where the failure is intermittent, adds to the operational cost, and/or impacts on other issues such as water quality/availability/compliance;

- Assets at or beyond the end of their design life where problems have been recorded or where the potential failure carries an unacceptable level of risk; and
- Failed assets where the system remains functional but is inefficient.

In recognition of the assessed needs, UÉ has increased its capital maintenance activities compared with previous investment periods.

Key highlights over the RC3 period to date are:

- Wastewater Discharge Authorisation Compliance: 7500+ interventions;
- Drinking Water Quality: 7000+ interventions;
- Leakage: 4800+ interventions; and
- Level 8 asset data hierarchy including 5000+ pump interventions, 1600+ small mains renewal interventions, and 1200+ tank interventions.

Health and Safety

UÉ is committed to ensuring the safety, health and well-being of our employees, customers and the public. All new investment incorporates design elements in compliance with relevant health and safety legislation. In addition, UÉ invests in providing specific programmes to address Health and Safety issues at our sites and assets, also ensuring compliance with relevant legislation. This will ensure the safety, health and well-being of our employees, customers and the public.

UÉ's Health and Safety programmes are targeted at addressing specific health, safety, and welfare issues within the UÉ asset base. All Health and Safety Issues are risk assessed taking account of the requirements of the Safety Health and Welfare at Work Act 2005, including Building Regulations and all other associated regulations.

Telemetry Programme

Telemetry, SCADA and associated equipment plays an essential role in supporting UÉ strategic objectives by providing real-time alarms when operational problems occur. It is also crucial in providing asset performance and reliable data to enable capital investment evidence-based decision making.

Over the RC3 period, UÉ has commenced the migration of Countywide and Third-Party Telemetry Systems to a standardised and UÉ managed National Telemetry System. This system provides the capability of automatic collection, transmission and measurement of data from remote sites. This ensures central access and monitoring of critical alarms and notifications from water and wastewater assets.

UÉ expects to increase the overall investment in the Telemetry Programme as the UÉT model is progressed.

Metering Programme - Meters installed

Output/Outcome	RC3 Target	RC3 Forecast
Meters Installed	50,815	76,173

To date, 58,085 meters have been replaced. These new meters replaced older less reliable and underperforming meters, providing improved data collection for leakage calculation purposes.

UÉ will continue to progress meter replacement works throughout the remainder of the RC3 period and is forecasting the replacement/installation of an additional c.18,000 new meters in 2024. As a result, UÉ is expected to significantly exceed the associated RC3 targets.

7.4 Future Proofing – Capacity and Resilience

This section outlines how UÉ has performed over the RC3 period under the heading of Capacity and Resilience.

Major Projects Programme - Update on Water Supply Project (WSP)

Currently a single source, the River Liffey, supplies 85% of the water requirements for 1.7 million people in the Greater Dublin Area (GDA). This overdependence on one source, combined with limited supply availability, means that we lack the capacity and resilience to provide the level of service needed in a modern European economy. It is forecasted that by 2044 we will need 34% more water in the Eastern and Midlands region than we have today, despite UÉ’s ambitious leakage reduction programme. This situation of a growing water supply deficit and lack of supply resilience is not sustainable.

The Water Supply Project Eastern and Midlands Region is a generational project and is the first major comprehensive upgrade to our ‘new source’ infrastructure in the region in the last 60 years. It will deliver a safe secure sustainable source of water necessary to support our growing population and economy, including the demand for housing. It is a project that will enable us to adapt to the effects of climate change by diversifying our water supply sources. The successful delivery of this major national infrastructure project is critical to Ireland’s social and economic growth now and for generations to come.

The project involves the abstraction of water at Parteen Basin and its treatment at nearby Birdhill, together with an underground treated water pipeline from Birdhill to Dublin, capable of distributing treated water to locations across the region. It will meet an urgent need for a new water source for the Greater Dublin Area and the Eastern and Midlands Region and will provide resilience and headroom necessary for a growing region and economy.

To date, the project team has undertaken a significant programme of activities including:

- Significant inputs into four rounds of public consultations, which resulted in the identification of the preferred scheme;
- Concept design for the proposed project, which comprises 5 main infrastructure sites including a 28 Ha WTP Site and 172 km of pipelines across the country, including the preparation of design drawings and technical reports, along with architectural design of buildings;
- Modelling of the impact of the proposed abstraction on water levels and water quality in Lough Derg and Parteen Basin;
- Site investigations at over 3,000 locations at each of the infrastructure site locations and along the route of the pipeline;
- Development of an EIAR and NIS to an advanced stage; and
- Extensive engagement with landowners and farming bodies and with key stakeholders such as the DHLGH, the CRU and the ESB.

In 2023, the Preliminary Business Case (PBC) for the project was submitted to the DHLGH, CRU and NewERA for their consideration. Following the CRU's independent review of the project, carried out in its external assurance role under the Public Spending Code Water Sector Specific Guidelines, the PBC was issued to the Major Projects Advisory Group (MPAG) for further consideration. Following these reviews, a government decision on Approval in Principle to Proceed (Decision Gate 1 in the Public Spending Code process) is currently under consideration. Subject to the timing of Government approval and other key project dependencies, the project team is working towards a planning and CPO submission in early to mid-2025.

Water Pressure

The efficient and sustainable use of water is central to the River Basin Management Plan, which requires ÚÉ to implement water conservation measures to reduce high levels of network losses.

A systemised Capital Maintenance plan has been developed during RC3 for our existing assets. This plan will ensure that existing Pressure Reducing Valves (PRVs) will operate at an optimal level until full replacement is required. Our Leakage Management System now has sight of network pressure in 25% of our District Metering Areas (DMAs) nationally, with work ongoing to increase this number.

[Update on Greater Dublin Drainage \(GDD\) Project](#)

Having adequate wastewater infrastructure is vital to support the sustainable growth of communities and business and to protect the environment. UÉ is working to ensure that it has adequate capacity to collect and treat wastewater so that the treated wastewater can be safely returned to the environment. In the longer term, the Greater Dublin Drainage (GDD) project will provide wastewater treatment capacity for the region, once the country's largest wastewater facility at Ringsend reaches its upgraded maximum capacity. It will also provide the additional network capacity to prevent overloading of the network and breaches of the Urban Wastewater Treatment Directive in the Greater Dublin Area. The GDD represents the next vital step in the development of UÉ's wastewater infrastructure for Dublin and the surrounding counties. Once operational, the GDD project will have the capacity to provide wastewater treatment for the equivalent of half a million people living and working in this area.

The project involves the development of a new regional wastewater treatment facility and associated infrastructure to serve the Greater Dublin Area, in particular, the population of north Dublin along with parts of the surrounding counties of Kildare and Meath. The delivery of the GDD Project is a key strategic investment priority under the National Planning Framework (Project Ireland 2040) and the National Development Plan 2021-2030. GDD is a vital, once-in-a-generation, project to ensure the wastewater generated every day in homes, schools and workplaces will continue to be treated safely in compliance with the EU and national wastewater treatment regulations. The delivery of GDD will protect public health, safeguard the environment and facilitate sustainable growth up to 2050 and beyond. A shortfall in wastewater treatment capacity is expected to have serious consequences, inevitably impacting the delivery of housing, economic growth and development in the GDA, which could impact locally in terms of compliance and have potential environmental impacts, while clearly stemming the region's ability to grow socially and economically.

The proposed project is the most environmentally, technically, and economically beneficial solution to meeting Dublin's long term wastewater treatment needs. The GDD project is also identified as a critical project in the Eastern and Midlands

Regional Spatial and Economic Strategy 2019-2031, a strategic policy objective of the Fingal Development Plan 2023-2029 and the Dublin City Development Plan 2022-2028.

In November 2019, An Bord Pleanála granted planning permission and confirmed the Compulsory Purchase Order for the GDD project. This planning permission was quashed following legal proceedings and a Court hearing. The planning application was subsequently remitted back to An Bord Pleanála by the High Court in 2021. An Bord Pleanála subsequently wrote to UÉ in August 2022 providing UÉ the opportunity to update, where appropriate, the Environmental Impact Assessment Report and Natura Impact Statement. UÉ submitted an updated EIAR, new NIS and supporting documents in a remittal to An Bord Pleanála on the 26th of October 2023. In March 2024, An Bord Pleanála responded to UÉ's submission advising the submission material is deemed to be significant and that a further round of public consultation will be required. UÉ are engaging with An Bord Pleanála on the remaining steps in the planning process and expected timeframe for the consultation.

8 Capital Efficiencies

For RC3, the CRU set a capex efficiency challenge totalling €285m (in 2017 monies).

As shown below, the annual profile of the efficiency challenge set by the CRU increased each year during the RC3 period. While this target was stretching, the graph also demonstrates that UÉ has made steady progress and is forecasting that the overall requirement will be met by the end of 2024.

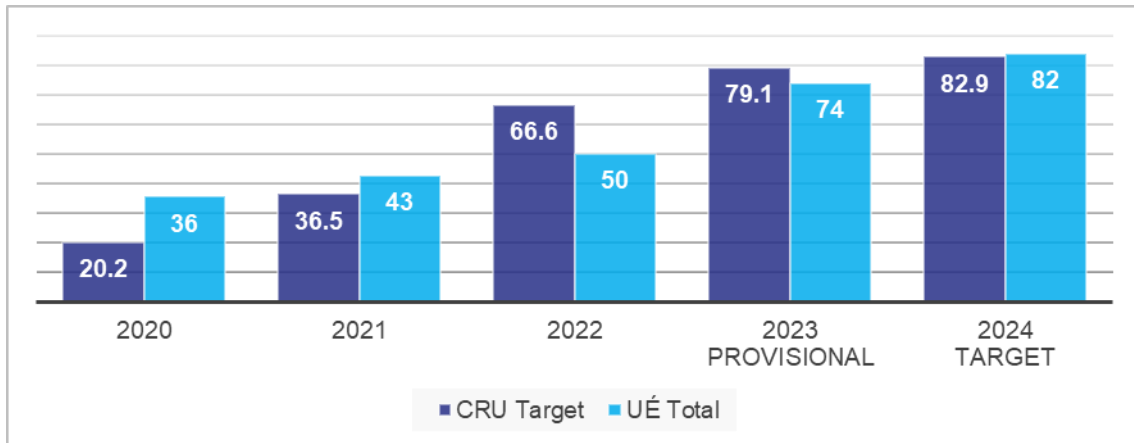


Figure 8.1: Efficiency Target versus Outturn

8.1 Efficiency Categories

Capital efficiency occurs when an investment has less cost as a result of an intervention by UÉ. For the RC3 period, UÉ is delivering capital efficiencies across four categories:

- Procurement;
- Value engineering;
- Standardisation; and
- Innovation.

The figure below shows the forecasted breakout of efficiencies across the four categories.

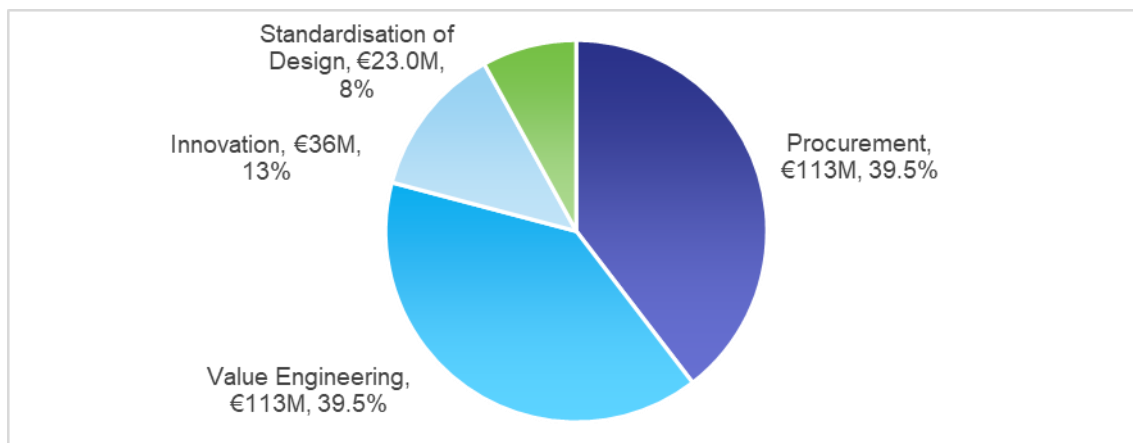


Figure 8.2: RC3 Forecasted capital efficiencies by category

Procurement

UÉ delivers procurement efficiencies through its contracting strategy, national procurement frameworks, and the bundling of works packages. The utilisation of frameworks improves both procurement timelines and quality. Early Contractor Involvement (ECI), including input from contractors in the design phases of projects, has also been a key enabler in procurement efficiencies. UÉ also utilises a Best and Final Offer (BAFO) process and a standardised approach to procurement, both of which support the achievement of capital efficiencies.

Procurement Example – Projects that have taken advantage of early contractor involvement (ECI) have achieved procurement efficiency due to the removal of tendering and burdening costs, passed on contractor overhead reductions, and optimised risk management. Ensuring that the contractor has ‘buy in’ to the agreed solution at an earlier stage means that risks can be mitigated or removed entirely. This enables a target cost to be negotiated with reduced cost uncertainty.

Value Engineering

This category is applicable during the design phases of interventions. Value engineering seeks to ensure that scope items have been optimised while still delivering the required functionality and outcome. Utilisation of existing assets, or an alternative improved pipeline route which reduces the scheme length, are examples of value engineering.

Value Engineering Example – As part of delivery of a project, a large steel frame structure was originally designed and costed utilising single span construction. An

alternative design was identified that involved the installation of additional columns to support the structure. This resulted in a large reduction in the tonnes of steel required and associated cost for the structure.

Standardisation

Capital efficiencies can be driven through the repeatability that comes from UÉ standard designs and specifications, the construction methods that can be applied to standard works, and the associated project management and supervision. For example, development and delivery of National Programmes has brought economies of scale in design, engineering and project management.

Standardisation Example – Production of a standardised design specification for programme works across multiple regions and portfolios has resulted in efficiencies for each investment location. Previously, the specification documentation would have been required to be produced for each individual contract.

Innovation

UÉ leverages its national utility expertise and supply chain relationships to develop innovative investment solutions and more efficient ways of working. These include the use of new technologies to achieve the required outcome. These opportunities are typically identified at an early stage of design. Optimisation of the delivery process can also include novel resourcing approaches to reduce project overheads. These approaches can be identified during programme planning and construction delivery (e.g., project grouping for tendering).

Innovation Example – UÉ established a Leakage Reduction Programme to reduce leakage and improve customer service. Traditionally, to administer this work a Resident Engineer (RE) would have been required within each county. The UÉ Programme Managers reviewed the delivery mechanism associated with the programme and, through bundling of counties, the number of REs required has been halved, which greatly reduces the delivery overhead.

9 Conclusion

RC3 was the first long term revenue control in the water services sector since the establishment of UÉ in 2014, which marks an important milestone.

Over the RC3 period, UÉ invested €4,593m (2017 monies), delivering significant benefits in terms of reliability, availability and improved performance of both water and wastewater assets to the benefit of customers, communities, the environment and also in support of social and economic growth.

UÉ is forecasting that it will achieve 20 of the 24 targets set by the CRU for RC3. This includes 10 targets where UÉ expects to exceed or significantly exceed the RC3 target. Of the remaining four targets, three relate to Wastewater and while UÉ does not expect that these will be fully met by the end of 2024, it does expect that significant further progress will be made in 2025. In relation to the final target of 'Leakage Reduction', the forecast for the end of 2024 is currently under review.

UÉ successfully delivered this capital investment plan during a time of unprecedented global events including Covid, significant increases in the inflationary environment and supply chain disruptions. These factors also created extraordinary pressures for UÉ's supply chain, and UÉ had to work closely with delivery partners to manage impacts and to maintain momentum. A key focus was placed on providing confidence in UÉ's funding, which is critical to maintaining a stable and reliable water services industry.

There are many other internal and external factors which can drive change in a five-year capital investment plan. In recognition of this, UÉ has implemented a formal change control process whereby an annual change control report is submitted to the CRU. This details adjustments to the CIP made by UÉ in response to material shifts, and provides transparency to stakeholders on the impacts.

UÉ delivered considerable capital efficiencies of €285m over the RC3 period, meeting the target set by the CRU. These were achieved through standardisation, value engineering, efficient procurement processes and innovation.

A key focus was maintained on process improvement and UÉ made significant progress in implementing the recommendations of Scottish Water International, arising from an independent review of UÉ's investment delivery processes and capability.

UÉ also made significant steps towards delivering on its sustainability agenda, including delivery of sustainable energy efficiency improvements. UÉ's RC3 Investment Plan is focussed on reducing energy consumption by 22 GWh over the RC3 period and it is projected that this target will be met by the end of 2024.

As set out in this capex lookback review, RC3 was a period marked by disruptive global events, yet UÉ has made clear progress in ramping up investment to meet key service, compliance and growth needs. Significant additional capital investment must continue to be delivered in future Revenue Control cycles in order to fully address the historic underinvestment in Ireland's water and wastewater infrastructure.

UÉ will take important learnings from RC3 as it transitions into the next cycle of 2025 to 2029, including the key need for proactive management of the supply chain, the critical requirement for climate resilience, and the benefits of continuous process improvement. UÉ's proposals for the next investment cycle are set out separately in the RC4 Capital Investment Plan.

Appendix 1 Glossary

Abbreviation	Description
AA	Appropriate Assessment
ACS	Asset Class Strategy
AGS	Aerobic Granular Sludge
AMP	Asset Management Plan
BFP	Business and Finance Plan
BOD	Biochemical Oxygen Demand
Capex	Capital Expenditure
CCAMS	Climate Change Adaptation and Mitigation Strategy
CDS	Connection and Development Services
CFC	Coagulation, Flocculation and Clarification
CFG	Catchment Focus Group
CIP	Capital Investment Plan
CPO	Compulsory Purchase Order
CRU	Commission for Regulation of Utilities
DAP	Drainage Area Plan
DCC	Dublin City Council
DHLGH	Department of Housing, Local Government and Heritage
DMA	District Metering Area
DWSP	Drinking Water Safety Plan
ECJ	Court of Justice of the European Union
EIAR	Environmental Impact Assessment Report
ELV	Emission Limit Values
EPA	Environment Protection Agency
ESB	Electricity Supply Board

F&F	Find and Fix
GDA	Greater Dublin Area
GDD	Greater Dublin Drainage
HRW	HR Wallingford
HSQE	Health, Safety, Quality and Environmental
HVAC	Heating, Ventilation, and Air Conditioning
IFRS	International Financial Reporting Standard
IRC2	Interim Revenue Control 2 (2017-2018, extended to 2019)
IWSS	Inlet Works, Storm and Sludge
LIHAF	Local Infrastructure Housing Activation Fund
MLD	Million Litres per Day
MLPS	Main Lift Pumping Station
MUHD	Major Urban Housing Delivery
NCAP	National Certification Authorisation Programme
NDP	National Development Plan
NIS	Natura Impact Statement
NPDWAG	National Pesticide and Drinking Water Action Group
NPF	National Planning Framework
NWRP	National Water Resources Plan
Opex	Operational Expenditure
PAL	Priority Action Areas List
PBC	Preliminary Business Case
PRV	Pressure Reducing Valve
RAL	Remedial Action List
RBMP	River Basin Management Plan
RC3	Revenue Control Period 3 (2020-2024)
RC4	Revenue Control Period 4 (2025-2029)

RPE	Real Price Effects
RWRP	Regional Water Resources Plan
SAMP	Strategic Asset Management Plan
SEA	Strategic Environmental Assessment
SFP	Strategic Funding Plan
SMF	Service Measure Framework
SRA	Source Risk Assessment
SSS	Source and Sanitary Surveys
SWI	Scottish Water International
SWIR	Scottish Water International Review Recommendations
SWO	Storm Water Overflow
THM	Trihalomethanes
TOM	Target Operating Model
UÉ	Uisce Éireann
UÉT	UÉ Transformation Programme
UKWIR	UK Water Industry Research
UV	Ultraviolet
UVT	Ultraviolet Transmittance
UWWTD	Urban Wastewater Treatment Directive
WEMP	Water and Environment Management Plan
WSP	Water Supply Project
WSPS	Water Services Policy Statement
WSSP	Water Services Strategic Plan
WSZ	Water Supply Zones
WTEF	Water Technical & Environmental Forum
WTP	Water Treatment Plant
WW	Wastewater

WWBG	Wastewater Below Ground
WWDA	Wastewater Discharge Authorisation
WWPS	Wastewater Pump Station
WWTP	Wastewater Treatment Plant

Appendix 2 Case Studies (Projects & Programmes)

This appendix provides details on some key projects/works delivered during RC3.

The Vartry Water Supply Upgrade

The Vartry Water Supply Scheme provides drinking water for a supply area stretching from Roundwood, through north Wicklow up to south Dublin and serves over 200,000 people. It was developed by Dublin Corporation in the 1860s and includes two reservoirs, a water treatment plant, a 4km tunnel under Callowhill and 40kms of trunk mains that deliver water to storage reservoirs at Stillorgan in Dublin.

The objective of the Vartry Water Supply Scheme Upgrade project was to ensure that the water provided complies with water quality standards set out in the European Union Drinking Water Directive and National Drinking Water Regulations.

This major upgrade included three key elements:

- **A new water treatment plant at Vartry** - constructing a new water treatment plant on the site of the existing plant at Vartry – operational November 2021
- **A new link pipeline from Vartry to Callowhill** - a 4km pipeline to secure the transfer of treated water from Vartry to Callowhill – operational December 2018
- **A new covered reservoir at Stillorgan** – operational September 2021

The delivery of the new Water Treatment Plant will facilitate the removal from the RAL of the seven water supply zones linked to Vartry and will secure the water supply for much of the highly populated North Wicklow and South Dublin area for the coming decades. The new pipeline secures and safeguards this water supply, with the new covered reservoir eliminating the risk of water being contaminated by wildlife, animal waste, airborne material and by people accessing the water.

Lee Road Water Treatment Plant (WTP)

The Lee Road WTP provides approximately 70% of Cork City's total treated water supply. Water is taken from the River Lee and treated water is then pumped to reservoirs in the North West of the city through a system of rising mains.

This project has provided much needed upgraded facilities to the Lee Road Water Treatment Plant to safeguard the water supply for Cork City, and ensures the removal of the Cork City Water Supply Scheme from the EPA's RAL.

The project included:

- On-going works at the site which included concrete pour of the new infrastructure.
- Works to replace the existing plant with a new water treatment plant that supplies 40 Megalitres per Day (MLD).
- Upgrades to the pumping stations, tanks, treatment systems and flood protection works.

The construction of the new water treatment plant in 2022 took place on the existing site at Lee Road while maintaining water supply throughout construction.

Benefits:

- Provides a safe and secure water supply.
- Supports the ongoing social and economic development of Cork City.
- Removal of supply from the EPA's Remedial Action List.

Ringsend Wastewater Treatment Plant

Wastewater from Dublin has been treated in the Ringsend treatment plant since 1906. Built in 2005, the current plant is the largest in Ireland and was designed to cater for an equivalent of 1.64 million people. The Ringsend Wastewater Treatment Plant (WwTP), which provides over 40% of Ireland's wastewater treatment capacity, is currently overloaded and is not in compliance with the EU's Urban Wastewater Treatment Directive.

There is a major upgrade project underway which will allow the Ringsend WwTP to treat the increasing volumes of wastewater arriving at the plant to the required standard, enabling future housing and commercial development.

The project comprises four key elements and underpinning these is a substantial programme of ancillary works:

1. Provision of additional secondary treatment capacity with nutrient reduction.
2. Upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction, which is essential to protect the nutrient-sensitive Dublin Bay area.

3. Provision of a new phosphorous recovery process; and
4. Expansion of the plant's sludge treatment facilities.

Works are proceeding on the upgrade of the 24 existing secondary treatment tanks. The first of four contracts to upgrade the secondary treatment tanks at the plant with Aerobic Granular Sludge (AGS) Technology have commenced, allowing for more wastewater to be treated to a higher standard within the existing tanks.

Benefits:

The proposed works are due to be completed in 2025 and the plant will be able to treat wastewater for a population of up to 2.4 million people.

Castletownbere Wastewater Treatment Plant

UÉ completed the works on the Castletownbere Sewerage Scheme in 2022. This investment involved the construction of a new wastewater treatment plant and sewerage infrastructure, which has now eliminated the discharge of untreated wastewater into Bantry Bay.

This project included:

- A new wastewater treatment plant at Drom South, which will serve a population equivalent of approximately 2,200.
- A 100m long marine outfall pipeline to safely discharge treated wastewater to the sea near Doctor's Rock to the south of Castletownbere.
- Construction of 750m of new sewer pipelines and 1,700m of rising mains to transport untreated wastewater to the proposed new wastewater treatment plant.
- Construction of 4 new wastewater pumping stations across Castletownbere.

Benefits:

- Better health and integrity of the environment.
- Improved water quality in Bantry Bay.
- Protection of recreational waters for swimming, surfers, fishing, boating, and sightseeing.
- Enhanced local amenities and a platform for social and economic development.
- New wastewater treatment plant, sewer pipes and pumping stations sized to accommodate future population growth.
- Ensures compliance with national and EU regulations relating to the treatment of wastewater.

Donegal Countywide Water Main Rehabilitation Project

UÉ, working in partnership with Donegal County Council, has invested in the replacement and rehabilitation of approximately 40 kilometres of old water mains across multiple sites in County Donegal to improve water supply and tackle the high levels of leakage.

Benefits:

- A reliable water supply: Replacement of the ageing water mains and service connections will reduce the instances of bursts and water outages and ensure a reliable supply of water to customers and local businesses in the area.
- Improved water quality: Removal of old cast iron pipes from the public water network, and replacement with new plastic pipes, will reduce the risk of contamination.
- Reduced leaks: Replacement of the old water mains and service connections will reduce the amount of water lost to leakage.
- Improved operation and maintenance: These works will deliver cost savings by providing improved water network operation that will require less maintenance in the future.

Balbriggan Water Supply Network Upgrade

UÉ, working in partnership with Fingal County Council, has completed upgrade works to the Balbriggan, Howth and Malahide Water Supply Schemes.

These works have increased the capacity of the water main system to meet current and future water supply demands in Howth, Malahide and Balbriggan by upgrading over 14km of water mains. The upgrade works carried out as part of this project will safeguard the water supply to this area, reduce interruptions to the drinking water supply and improve water pressure for homes and businesses.

The project included:

Balbriggan Water Supply Scheme:

The Balbriggan Water Supply Scheme serves a population of approximately 24,200 and the reservoir at Kilsough is supplied by the Leixlip Water Treatment Plant. The existing water main between Jordanstown and Kilsough Reservoir was previously operating beyond its capacity, resulting in interruptions to supply and was inadequate to meet potential growth in the area.

Malahide Water Supply Scheme:

The Malahide Water Supply Scheme serves a population of approximately 20,000 and is supplied by the Leixlip Water Treatment Plant. The existing water mains between Swords and the Seamount Reservoir in Malahide were operating beyond capacity, resulting in interruptions to supply. This project has upgraded the water mains to achieve adequate capacity to meet the Malahide Water Supply Scheme demands.

Howth Water Supply Scheme:

The Howth Water Supply Scheme currently serves a population of approximately 20,900 and is supplied by the Leixlip Water Treatment Plant through the North Fringe Water Main. Previously, the existing water mains that supplied Howth's main reservoir at Dungriffen from the North Fringe Water Main was operating beyond capacity. This resulted in interruptions to supply and was inadequate to meet potential growth.

Benefits:

- Improved the security of the drinking water supply to householders and businesses in Malahide, Howth, Balbriggan and the surrounding areas.
- Safeguarded the water supply to this area.
- Improved water pressure for homes and businesses.

Arthurstown, Ballyhack & Duncannon Wastewater Treatment Plants

UÉ has completed works to eliminate raw sewage being discharged directly into the Barrow, Nore & Suir Estuary.

UÉ, working in partnership with Wexford County Council, has completed works to end the discharge of raw sewage from Arthurstown, Ballyhack and Duncannon. This investment involved the construction of a new wastewater treatment plant in Arthurstown which also serves Ballyhack and Duncannon.

Benefits:

- Improved water quality in Barrow, Nore & Suir Estuary.
- Protection of recreational waters for swimming, surfers, fishing, boating and sightseeing.
- Cleaner water will enhance the amenity value of the beaches and harbours at Arthurstown, Ballyhack and Duncannon and act as a platform for social and economic development.

Leixlip Water Treatment Plant Upgrades

UÉ is investing to reduce the risk of any future boil water notices and safeguard drinking water to 620,000 people in the Greater Dublin Area.

UÉ, working in partnership with Fingal County Council, has completed essential upgrade works at the Leixlip Water Treatment Plant (WTP). This investment will benefit over 620,000 people across the Greater Dublin Area (GDA) through an improved water supply.

The existing water treatment system at the plant had suffered due to limited investment. These upgrades have modernised the existing facilities and improved the quality, reliability and resilience of the water supply serving the Greater Dublin Area. The works on-site commenced in June 2018 and included upgrading the filtration system, the installation of a new ultraviolet (UV) disinfection process and upgrading of the existing disinfection system. These upgrades have resulted in significant improvement in the drinking water quality for consumers in the Greater Dublin Area, while also reducing the risk of any future boil water notices.

This project involved the following works:

- Upgrade of the filtration system at the plant which comprised the full refurbishment and upgrade of 15 rapid gravity filters at the plant.
- The installation of an emergency ultraviolet (UV) disinfection system process at the plant to provide additional resilience.
- Upgrade of the existing on-site electro-chlorination disinfection system including construction of a new back-up system and other refurbishment works.
- Cleaning, repairing, and upgrading of the existing Clearwater tank.
- The installation of new turbidity, flow and UVT monitoring system at the plant as well as other ancillary works.
- Upgrade of the control and monitoring systems to improve the performance of the plant.

Benefits:

- Improved drinking water quality for over 620,000 people.
- Ensured the delivery of safe drinking water to residents and businesses in the Greater Dublin Area.
- Significantly reduced the risk of any future boil water notices.
- Improved the security of the drinking water supply.
- Improved control and monitoring of the plant processes.
- Ensured compliance with current drinking water regulations.

- Facilitated the removal of the Leixlip Water Supply Scheme from the EPA's Remedial Action List.

Western Trunk Watermain

This project involves the construction of a 5.5km link between the Cork City Water Supply Scheme and the Cork Harbour and City Water Supply Scheme, as supplied from the Inniscarra Water Treatment Plant. This watermain provides additional water supply capacity to Cork City by providing a strategic connection between the water supply schemes and provides necessary headroom to facilitate growth and increase security of supply.

The project included:

- Connecting to an existing 1500mm diameter city and harbour trunk (city ring) main at Curraheen.
- Construction of a new 5.5 km trunk main connecting to the Cork City WSS at Lee Road Water Treatment Plant.
- This project includes a crossing of the River Lee and critical road arteries into Cork City.
- Connecting to the Lee Road Water Treatment Plant and new pumping regime and into existing network.

Benefits:

- Provides security of supply to Cork City.
- Provides necessary additional water supply capacity.
- Facilitates the growth and development of Cork City.

Inniscarra Water Treatment Plant Upgrade

This upgrade to the sludge treatment system at the Inniscarra Water Treatment Plant ensures a reliable and sustainable water supply for Cork City and the surrounding areas including Cork Harbour and Ringaskiddy.

These works have improved the efficiency of the facility and allow for future growth in the capacity of the plant.

Benefits:

- Improves security of water supply.
- Improves the efficiency of the facility.
- Ensures all sludge produced at the water treatment plant is treated in line with EPA standards and regulations.

Appendix 3 Alignment of WSPS themes to WSSP strategic objectives

WSPS Theme of Quality – Priority Objectives	WSSP Strategic Objectives
Promote drinking water source protection for public drinking water supplies and undertake some 350 source risk assessments by the end of 2021 as set out in RBMP 2018-2021.	Ensure a Safe and Reliable Water Supply
Take the necessary corrective action to ensure appropriately treated, safe and reliable drinking water and eliminate any risk to a drinking water supply on the EPA Remedial Action List.	
Provide for on-going implementation of the National Lead Strategy to mitigate the health effects of lead in drinking water.	
Compliance with the requirements of UWWTD for qualifying urban areas.	Prove Effective Management of Wastewater
Protection of high-status waters, designated shellfish and bathing waters and support improvements in water quality as set out in RBMP 2018-2021.	
Prioritise improvements in urban wastewater collection systems to address growth and economic development, ensure continued environmental compliance and deliver water quality improvements identified in RBMP 2018-2021.	

WSPS Theme – Quality Priority Objectives and WSSP Strategic Objectives

WSPS Theme of Conservation – Priority Objectives	WSSP Strategic Objectives
Take a proactive approach in promoting awareness of the importance of water conservation in Ireland.	Ensure a Safe and Reliable Water Supply
Implement the necessary programmes and interventions to promote the efficient and sustainable use of water in order to achieve as a first step the leakage reduction targets identified in RBMP 2018-2021 with the ultimate aim of reducing leakage to sustainable economic levels.	
Completion of UÉ's Water Resource Plan as a key cross-cutting element in ensuring water resource sustainability.	

Plan for future climate change challenges and contribute to the development of the National Adaptation Framework under the Climate Action and Low Carbon Development Act 2015 and Sectoral Adaptation Plans required by September 2019.

Protect and Enhance the Environment

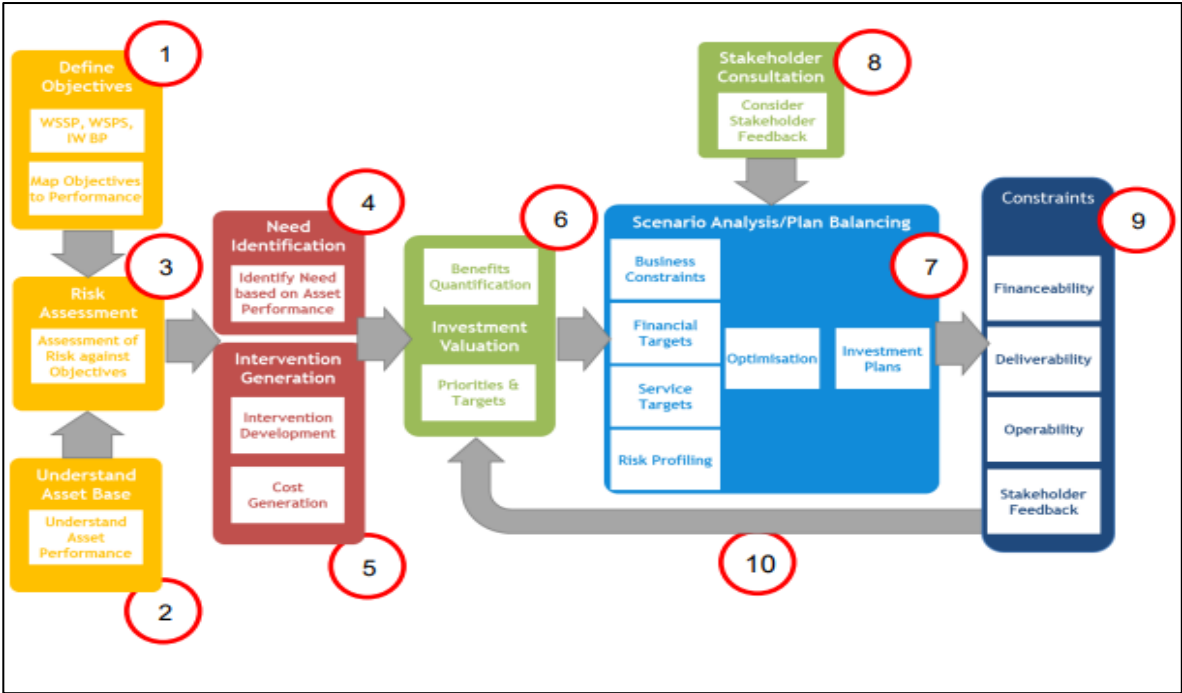
WSPS Theme – Conservation Priority Objectives and WSSP Strategic Objectives

WSPS Theme of Future Proofing – Priority Objectives	WSSP Strategic Objectives
Ensure that growth in the five cities of Dublin, Cork, Galway, Limerick and Waterford together with the regional centres identified in the NPF is supported by the provision of water services investment.	Support Social and Economic Growth
Support the growth of identified settlements where these are prioritised in development plan core strategies at a county/city level.	
Undertake detailed network and capacity assessments to support the provision of water services infrastructure to facilitate housing and economic development in priority towns and urban areas identified in Regional Spatial and Economic Strategies.	
Develop an asset management capability to ensure that the performance of assets is maintained and enhanced to the requisite standard and to achieve optimum balance of service risk and whole life cost.	Invest in our Future
Improve the quality and efficiency of services to customers in line with the performance standards for continuous improvement agreed with the CRU.	Ensure a Safe and Reliable Water Supply
Delivery of the strategic capital investment programme set out under the NDP over the period 2018-2027 to improve resilience in areas most vulnerable to a shortfall in water supply and wastewater services, such as the Greater Dublin Area.	Provide Effective Management of Wastewater

WSPS Theme – Future Proofing Priority Objectives and WSSP Strategic Objectives

Appendix 4 Investment Planning Process

Our ten-step approach to investment planning is set out below.



Based on the UK Water Industry Research (UKWIR) Common Framework for Expenditure Decision Making

Step 1 – Define Objectives The Investment Plan will contribute to the policy initiatives outlined in the WSSPs and continue to contribute to the delivery of our defined WSSP targets.

Step 2 – Understanding the Performance of the Assets A key advantage that UÉ is bringing to the water services sector is the ability to understand the water and wastewater assets and their performance at a national level. This is important in enabling us to determine how we will meet our objectives through a better understanding of the existing situation from a national perspective.

Step 3 – Risk Assessment Once the dataset of asset performance is established (as far as possible based on the available information), we then begin a process of risk assessment to identify assets which are at significant risk of failure. These assets are then put forward to the next step of the process.

Step 4 – Needs Identification This step then assesses why an asset is at risk of failing or has failed in terms of performance. This is identified at individual assets (e.g. Water Treatment Plants, Wastewater Treatment Plants) and the needs identification process sets out the range of solutions required to resolve or prevent these performance failures.

Step 5 - Intervention Generation Interventions refer to actions that will reduce risk to service delivery and can include projects, programmes, maintenance, investigative works, or operational measures. Intervention generation includes scoping these actions to achieve our objectives and improve performance of our assets. During this step we identify a range of interventions to meet the investment needs for each asset.

Step 6 - Prioritisation The next step is to prioritise the list of interventions. To do this, we use the SMF. Service Measures provide a consistent approach to articulate service risk and assess the value of interventions against each other. Each intervention is examined (in terms of service impact) against one or more of the service measures. The approach prioritises investment based on risk reduction per euro invested. This allows decisions affecting different asset types to be made based on consistent criteria.

Step 7 - Initial Plan Balancing This process involves assessing the prioritised list of interventions and how they achieve our objectives. The plan balancing approach allows budgetary constraints, asset performance, risk targets, and performance levels to be assessed, and the best combination of solutions to meet the constraints identified.

Step 8 - Consultation with Stakeholders A key element in the investment planning approach is meaningful consultation and engagement with stakeholders. As part of the process we provided an overview of the output of the Initial Plan Balancing step (Step 7) in a Draft Investment Plan.

Step 9 - Business Decision Making The initial optimised list of interventions resulting from the initial plan balancing, in conjunction with feedback from the stakeholder consultation, was used as input into the business decision making process. This supports the finalisation of the Investment Plan for submission to CRU. Decision making by UÉ considers the initial plan balancing output and stakeholder feedback in order to validate whether the proposed investments will meet the objectives and targets set out in the WSPS and WSSP.

Step 10 - Final Plan Balancing Outputs from the business decision making process are incorporated into a further process of refinement at Final Plan Balancing stage. This ensures that the profile of projected investment on interventions fits within the expected funding constraints, as well as other constraints (including deliverability, operability and further stakeholder feedback/input).