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**Current
Status of
Infrastructure**

4.1 Introduction

Uisce Éireann are committed to continuous improvement to our water supply network. Throughout the development of the Framework Plan and the RWRP-SE there has been a requirement to continue to design and deliver projects, particularly in relation to critical water quality risks (which could have the potential to impact human health) and / or supply reliability issues. For example, this may include projects required to remove 'boil water' notices. These critical works are addressed through our critical infrastructure projects which are completed under our Capital Investment Plans. Critical projects and programmes to address potential public health issues are therefore on-going and are not impacted or delayed by the delivery of the NWRP.

Outside of the NWRP, Uisce Éireann's investment follows investment periods (known as Revenue Control periods) which set out how much Uisce Éireann can spend on projects and programmes for that period. These are subject to oversight by and approval of the Commission for Regulation of Utilities (CRU). Our first Capital Investment Plan covered the period 2014-2016 whilst the second Capital Investment Plan covered 2017 to 2019. We are currently carrying out work which was identified in our RC3 Capital Investment Plan 2020-2024. Throughout the development of the NWRP and RWRP-SE, Uisce Éireann have continued working on a range of existing critical infrastructure projects funded by Uisce Éireann's RC3 Capital Investment Plan and we continue to identify and complete further critical infrastructure projects.

Between January 2014 and December 2019 Uisce Éireann invested €3.9 billion in public water and wastewater infrastructure, with a further projected spend of circa €5bn by 2024. We have invested in a range of water projects and programmes that will support and enable proper planning and sustainable development at a National, Regional and Local Level. The objective of this approach has been to deliver a balanced portfolio of investment across the three (3) themes of Quality, Conservation and Future Proofing.

This section provides in-sight into the current status of the infrastructure within the South East Region, critical infrastructure work that has already been completed and critical infrastructure work that is currently ongoing.

4.2 National Investment Programmes

Uisce Éireann are committed to improving the quality of water received by our customers. In order to bring about improvements, we have identified critical water quality requirements nationally and are currently delivering a range of national programmes to address high risk water supplies.

National programmes being implemented to address asset reliability and water quality issues include:

- The **Source Protection Programme** which develops or upgrades groundwater sources.
- The **Reservoir Cleaning Programme** which involves inspections of reservoirs and the development of a prioritised works (cleaning/repair) schedule for implementation. The programme aims to reduce network water quality issues.
- The **Disinfection Programme** which consists of chlorination upgrades and/or UV installations/upgrades to help resolve network water quality issues.
- The **Lead Mitigation Programme** which is a pilot programme that involves the addition of orthophosphate (a food additive) to the water to prevent lead in domestic pipes dissolving into drinking water. This programme will run in parallel to the Targeted Lead Services Replacement of all lead pipework on the public parts of the distribution system and the Government National Lead Strategy.
- **Trihalomethane (THMs) Reduction** works (Box 4.1).

Box 4.1 – Trihalomethanes

Trihalomethanes are a by-product that can be formed when we disinfect* water supplies that contain naturally occurring organic matter. Within the Drinking Water Regulations, the maximum permitted levels of THMs in drinking water is set at 100 µg/L. In 2017 the EU Commission issued a Letter of Formal Notice (Infringement No 2017/4007) in relation to compliance with the parametric values for Trihalomethanes (THMs). The Commission deemed that Ireland had not adopted the necessary measures to ensure compliance with the parametric values set out for THMs.

The Commission identified 74 of our public water supply zones affecting almost 500,000 people. Of the 74 supplies identified, Uisce Éireann has delivered solutions for 65 of these public water supplies and is working to address issues at the remaining 9 locations. The remaining 9 non-compliant supplies serve a combined population of almost 50,000. We hope to have addressed issues at these remaining supplies by the end of 2026. Identifying solutions to address non-compliance for THMs can be a complex process requiring various studies and assessments.

* It should be noted that the potential health risks associated with THMs are much lower than the risk of serious illness that could result from drinking water that has not been properly disinfected.

Through our National Disinfection Programme, we have upgraded a total of 255 Water Treatment Plants (WTPs). Under our National Lead Programme, we have replaced a total of 51,669 lead services (to the end of 2022), which represents a significant investment in protecting public health.

We are also targeting investment to improve water quality in order to lift Boil Water Notices (BWN). Since 2014 we have lifted 341 BWN's impacting over 2.1 million people of which over 41,000 of these people were on BWN's for a period of over a year. Through investment in water assets and infrastructure, the number of customers served by vulnerable water supplies (those on the EPA's Remedial Action (RAL) list) has reduced to its lowest ever level. Uisce Éireann has removed 115 public water schemes from the EPA's remedial action list (RAL) between 2014 and 2022 reducing the number of WTPs on the RAL.

These national programmes are currently funded and being delivered as part of our regulated Capital Investment Plan 2020-2024 however, due to the condition of our existing asset base and the large number of sites to be addressed, it may take several investment cycles before we have the appropriate risk controls in place across all our supplies. For this reason, the development of our Preferred Approaches, presented in Section 7 and Section 8 of this Plan, consider these water quality issues alongside the supply demand balance issues. As explained in Section 2 of this Plan, our long-term approach will increasingly include catchment management for drinking water source protection in partnership with key stakeholders.

4.3 Progress in the South East Region

4.3.1 National Investment Programmes within the South East Region

The implementation status of national programmes across the South East Region is summarised in Table 4.1. One hundred and forty (140) of the 341 BWNs that have been lifted since 2013 were located in the South East Region benefitting approximately 300,000 customers. Currently there are approximately 650 customers on BWN in the South East Region.

Within the RWRP-SE there are currently 13 WTPs which are listed on the EPA's remedial action list.

Table 4.1 National Investment Programmes in the South East Region

Study Area	Source Protection Programme	Reservoir Cleaning Programme	Disinfection Programme (Completed upgrade works*)
SAK	Works progressing at 5 WTPs	Works progressing at 42 sites	Works complete at 39 sites Works progressing at 36 sites
SAL	Works progressing at 1 WTP	Works progressing at 7 sites	Works complete at 8 sites Works progressing at 5 sites
SAM	Works progressing at 3 WTP	Works progressing at 13 sites	Works complete at 23 sites Works progressing at 3 sites

*Any other requirements within the remaining supplies will be identified via Drinking Water Safety Plans with solutions developed as part of the Regional Plan.

4.3.2 Identification of Critical Infrastructure Projects within the South East Region

Local critical infrastructure projects have and continue to be completed across the South East Region (in-flight projects). These include WTP upgrades to improve water quality, critical mains replacements to improve supply reliability, critical network upgrades, reservoir refurbishments, construction of new reservoirs and the installation of new boreholes. These works are important as the benefits of having sufficient water supplies in terms of Quality and Quantity are negated if we cannot distribute the water we produce effectively around our networks. We also need sufficient treated water storage to enable us to respond to planned or unplanned outages on our trunk main and distribution networks. It is likely that it may take 5-10 investment cycles before we address all issues with the existing water supplies. As a result of this, priority projects (such as those to remove sites from the RAL) have been identified.

Examples of critical infrastructure projects progressing in the South East Region include:

- Development of the existing Monroe well field to address the short-term needs of Clonmel Town. The first stage of this work, which involves testing and evaluating the existing source has been completed.
- Construction of Mountain Road pipeline and upgrade to Glenary water treatment plant. This project will transfer customer on Mountain Road onto the Glenary Water Supply Zone to increase supply resilience.
- Linguan water treatment plant upgrade development of production bores to improve resilience and address deficits in the supply to Carrick-on-Suir. This will include network upgrades to augment supplies to the Crotty's Lake water supply zone.

4.3.3 Completed Critical Infrastructure Projects

Uisce Éireann have been working across the nation since 2014 to support growth by constructing new water treatment plants, upgrading existing water treatment plans, laying new water mains and rehabilitating existing water mains. Major national strategic infrastructure water projects have also been progressed. Case studies of work completed in the South East Region include:

- The National Leakage Reduction Programme addressing leakage across the South East Region (Box 4.2).

- Water Treatment Plant upgrades as part of the National Disinfection Programme (Box 4.3)
- Kilkenny Regional Water Supply Scheme (Box 4.4)
- Clonmel Regional Water Supply Scheme (Box 4.5)
- Gorey Rural Public Water Supply (Box 4.6)
- Drinking Water Safety Plan – Burncourt Ballylooby Public Water Supply (Box 4.7)

It should be noted that some critical infrastructure projects have been progressed to support growth as part of our current regulated investment cycle. As such these measures do not improve Levels of Service, they prevent current levels from deteriorating further. Future need will be addressed through the Preferred Approaches discussed in Section 6 - 8.

Box 4.2 – National Leakage Reduction Programme

Everyday treated water in Ireland is lost through leaks before it reaches our taps. Leaks can be difficult to find because they happen in the vast and complex network of pipes below ground. Many of these pipes are now old and damaged and need to be repaired or replaced to improve our water quality and supply.

To reduce drinking water lost to leaks Uisce Éireann have implemented the National Leakage Reduction Programme (investing €800 million between 2020 and 2023) to provide a more reliable water supply. As part of the National Leakage Reduction Programme, we're working with Local Authorities across the country. This involves fixing or replacing old, damaged pipes and reducing high levels of leakage to provide a more reliable water supply.

Watermain replacement works have been carried out across the South East Region including:

- The replacement of approximately 300 meters of old cast iron water mains at Factory Road, Portlawn, Co Waterford. The works have been designed to alleviate water quality issues that have resulted in 'Boil Water Notices' for a small number of residents and businesses along Factory Road.
- The replacement of approximately 600 meters of high-density polyethylene (plastic) pipes in Carrick-On-suir, Co Tipperary. The works and resulting water network improvements will enable the decommissioning of problematic water mains in close proximity to the locations of works.
- The replacement of over 1,470 meters of problematic water mains at Abbey and Marlfield Roads, Clonmel, Co Tipperary. The works will also involve laying over 65 new water service connections from the public water main in the road to customers' property boundaries and connecting it to the customers' water supply. Where the existing service connections on the public side are lead these will be replaced as part of this improvement work.
- The replacement of approximately 500 meters of old cast iron water mains in Kilkenny City. The works will take place along Dean Street where 400m of new water main will be laid. The works will continue on Black Mill Street where a further 100m of problematic water main will be renewed. The works will also involve laying new water service connections from the public water main in the road to customers' property boundaries and connecting it to the customers' water supply. Where the existing service connections on the public side are lead these will be replaced as part of this improvement work.
- The replacement of approximately 450 metres of problematic water mains at Jerpoint Abbey, County Kilkenny to improve security of supply, reduce high levels of leakage and improve water quality.

As part of the National Leakage Reduction Programme Uisce Éireann have replaced ageing backyard water mains in Kilkenny City and Wexford Town through their Backyard Service Replacement which involves the replacement of ageing water mains which run to the rear of properties on older estates. These are usually shared connections which run through multiple properties making leaks hard to detect and repair. These connections are typically made of iron or lead and are a significant source of leakage and reduced levels of service due to their deteriorating conditions.

Similarly ongoing work under this scheme includes Tramore's Backyard Service Replacement. The works on Market Street Lane will involve the construction of approximately 30 metres of new public water main and provision of 5 new service connections for properties on Market Street Lane. These works will also remove lead services at the affected properties. The work will bring benefits of reduced leakage and higher levels of service (improved water pressures).

Box 4.2 – National Leakage Reduction Programme Continued

The National Leakage Reduction Programme provides various benefits including:

- A more reliable water supply
- Improved water quality
- Reduced levels of leakage
- Individual water connections

Due to the implementation of this programme, we are now saving 166 million litres of drinking water daily.

In 2018 the rate of leakage nationally was 46%, but our ongoing work has reduced this to 38%.

Box 4.3 – The National Disinfection Programme in the South East Region ¹⁻³

As part of the National Disinfection Programme Uisce Éireann have upgraded water treatment plants across Wexford, Waterford and Kilkenny. The programme works in two phases with the first being an assessment of the water treatment plant followed by the second phase which involved the completion of upgrade works. The works may include upgrades to chemical storage and dosing infrastructure, installation or replacement of ultraviolet disinfection systems, installation of monitoring systems and or installation of process alarms.

Box 4.4 –Kilkenny Regional Water Supply Scheme Outrath Reservoir⁴

Improvements have been completed to the Kilkenny Regional Water Supply Scheme in order to provide a minimum of 24 hours storage for the area supplied by the Outrath reservoir. The upgrades were required as during periods of high demand there was insufficient storage and pressure. The location of the pump station was also unsuitable. As part of the works additional storage was provided and the pump station was relocated to a suitable elevation. The works enabled increased water pressures, improved chlorine residuals for the townlands of Wallsough, Furzehouse and Kilferagh and increased resilience in periods of high demand. The works cost €1.5 million benefitting over 2000 customers.

Box 4.5– Clonmel Regional Water Supply Scheme⁵

The completion of the Clonmel Regional Water Supply Scheme has increased the security of the water supply for businesses and residents in North Clonmel. The scheme involved the construction of a 4,000 m³ reservoir, associated control building, installation of a new booster pumping station and the construction of 4km of new water mains. The increased storage capacity benefits current residents and also supports future growth and economic development in the area.

Box 4.6– Gorey Rural Public Water Supply⁶

Upgrade works have been completed at Gorey Rural Public Water Supply which serves Gorey, Courtown, Riverchapel and the surrounding areas. The upgrade works involved the construction of a 8,000 m³ capacity water treatment plant and a 7,500 m³ storage reservoir. In addition both new and refurbished boreholes have been incorporated into the supply arrangements. Enhanced monitoring and control facilities have also been integrated. Together these have increased the security of the supply which has been relying on six (6) temporary water treatment plants. The works will also allow future growth in the area.

Box 4.7– Drinking Water Safety Plan Burncourt Ballylooby Public Water Supply (Burncourt Ballylooby Water Treatment Plant)

Following the detection of Cryptosporidium in the Burncourt Ballylooby PWS, Uisce Éireann applied the Drinking Water Safety Plan, Cryptosporidium Source Risk Assessment Methodology to understand the potential risk score to this supply and inform the appropriate treatment barrier.

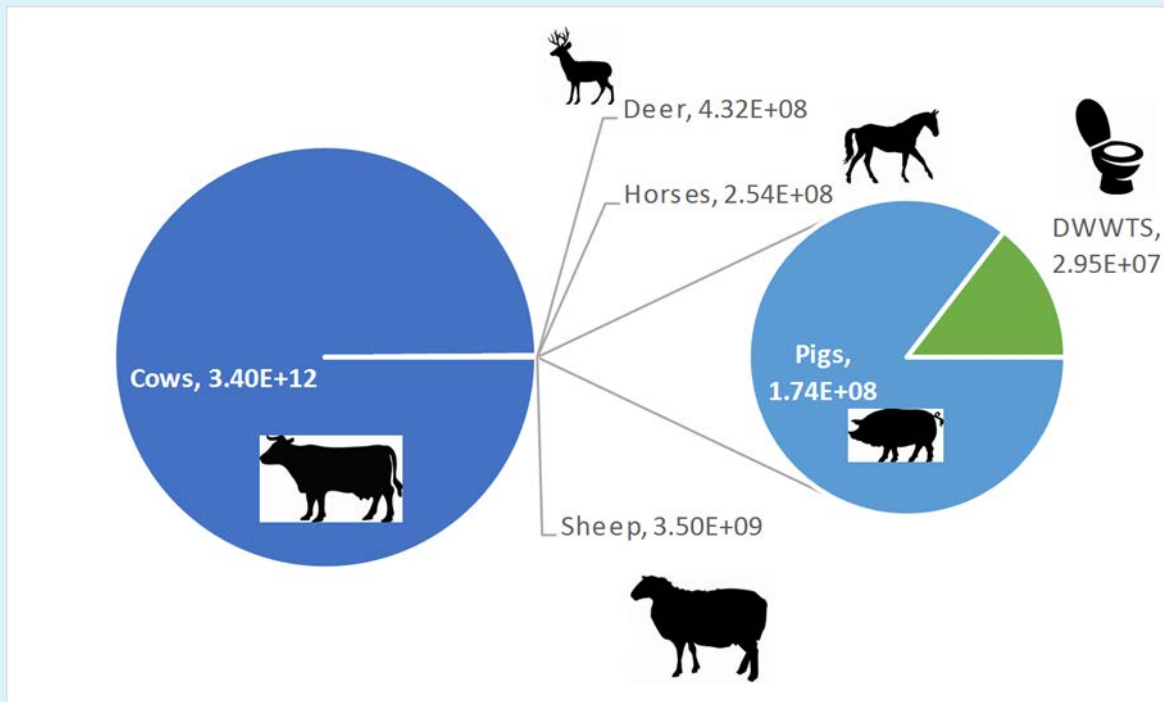
Burncourt Ballylooby PWS receives water from two (2) boreholes. The Zone of Contribution (ZOC) has been delineated for the spring and is 123 hectares (ha). The ZOC draws from the Clonmel (IE_SE_G_040) Groundwater Body which is associated with a 'Good' status.



Box 4.7– Drinking Water Safety Plan Burncourt Ballylooby Public Water Supply (Burncourt Ballylooby Water Treatment Plant) Continued

Oocyst loads are calculated from livestock (cows, sheep and horses), pigs and deer and subtracted from an oocyst retention factor based on ZOC characteristics such as sub-surface nitrate susceptibility and potential of karst features within the ZOC. This ZOC has shown potential for karst features (+5) and the proportional area for sub-surface susceptibility has scored 3 (1 – low; 5 – high). The fraction of loading associated with this ZOC is 0.5.

The relative contribution of oocyst load by input type can be seen below:



The maximum observed *Cryptosporidium* oocyst concentration in the raw water is 1 oocyst m⁻³ which is much lower than the predicted of 84 oocysts per m³. A sanitary survey has not been completed for this supply yet, therefore the Log requirement for this source presently is Log 3 (i.e., a 1000-fold reduction).

4.3.4 In-Flight Critical Infrastructure Projects

Some of the in-flight projects across the South East Region are presented in Table 4.2.

Uisce Éireann has commenced works to improve the security of water supply across Kilkenny City & Environs for over 28,000 people. Currently Kilkenny City & Environs is serviced by two (2) separate water treatment plants (WTPs) at Radestown and Troyswood. The existing Radestown WTP includes slow sand filtration followed by disinfection but it is unable to remove THM precursors and is currently on the EPA's Remedial Action (RAL) list. The existing Troyswood WTP also requires a significant upgrade to provide robust water treatment facilities. In addition, the raw water intake at Troyswood is inaccessible in periods of flooding. The existing WTPs also have inadequate capacity to cater for future growth in Kilkenny City & Environs⁷. The works will involve the upgrade of Troyswood WTP to increase capacity. A new 2.9 km watermain from Troyswood to the Radestown site will connect to the existing service reservoirs and enable the decommissioning of Radestown WTP. The upgrade will solve accessibility issues relating to the Troyswood intake pipe, improve flocculation and clarification, upgrade the sludge treatment facilities and provide a new UV treatment facility.

Uisce Éireann is currently tendering for works aimed at improving the quality and security of the water supply in Gowran Regional Water Supply Scheme⁸. The scheme supplies nine (9) housing estates, housing over 1,225 residents and non-domestic properties, which are currently utilising boreholes which have been subject to boil water notices.

Table 4.2 An Example of In-Flight Projects in the South East Region

In-Flight Project	Study Area	Progress
Troyswood Water Treatment Plant	SAL	In Progress
Gowran Regional Water Supply Scheme	SAL	In Tender

Upon progression with the NWRP and RWRP-SE, “In-flight” projects will be assessed against the Preferred Approaches identified and adapted as required. It should be noted that assessments and Preferred Approaches and solutions at this stage are at a Plan Level. The Preferred Approaches will have their own public consultations as part of the development of the RWRPs. These public consultations will take place throughout 2022. Environmental impacts and costing of projects are further reviewed at Project Level. No statutory consent or funding consent is conferred by inclusion in the RWRP-SE. Any projects that are progressed following this Plan will require individual environmental assessments, including Environmental Impact Assessment (as required) and screening for Appropriate Assessment, in support of planning applications (where a project requires planning permission) or in support of licencing applications (for example, for new abstractions). Any such applications will also be subject to public consultation.

4.4 Summary

In summary, there are asset reliability issues across the distribution network within the South East Region and works will be required over the coming years to address this need. An overview of the need across the area is provided in the Study Area Technical Reports (Appendix 1-3).

4.5 Conclusions

Uisce Éireann are committed to improving supply Reliability across the South East Region. This section provides in-sight into the work that has already been completed to improve our water network as well as ongoing and planned work. Critical projects and programmes to address potential public health issues are on-going and are not impacted or delayed by the delivery of the NWRP.

Between January 2014 and December 2019 Uisce Éireann invested €3.9 billion in public water and wastewater infrastructure, with a further projected spend of circa €5bn by 2024. We have invested in a range of water projects and programmes that will support and enable proper planning and sustainable development at a National, Regional and Local Level. The objective of this approach has been to deliver a balanced portfolio of investment across the three (3) themes of Quality, Conservation and Future Proofing.

Uisce Éireann are progressing National Programmes across all SAs to address asset Reliability and water Quality issues. They include the:

- Source Protection Programme – with works ongoing across the South East Region

- Reservoir Cleaning Programme – with work ongoing/planned in each of the region’s SAs.
- Disinfection Programme – with work ongoing across the South East Region.
- Lead Mitigation Programme- planned across the South East Region in line with the Government National Lead Strategy.

Across the South East Region, works have been completed to address critical water Quality issues including the Kilkenny Regional Water Supply Scheme and Clonmel Regional Water Supply Scheme. Leakage is being addressed across all Study Areas through the National Leakage Reduction Programme. Distribution network repairs and upgrades are continuing across all Study Areas. These projects are of vital importance and are critical to meeting Ireland’s growing water needs.

4.6 References

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