



Greater Wellington Regional Council

Part 3: Asset Management Plan

For Release, Version 9 – 27 February 2025



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Context, purpose and assumptions

Context

- This Asset Management Plan (AMP) provides the shareholder council with details on each of its 3 Waters physical assets including the scale and extent, condition and performance, financial forecasts and associated risks.
- This council-focused AMP is supported by three linked, higher tier AMPs, covering physical assets at a metropolitan scale by each of water supply, wastewater and stormwater.
- This AMP has been produced based on the most relevant data available at the time e.g., shareholder council adopted Long Term Plan (LTP 2024-2034); 30-Year capital programme forecast provided as part of council's infrastructure strategy development– see s8.1; LTP 10-Year budget – see s8.2, 8.3 and 8.4; and National Transition Unit (NTU) 30-year unconstrained capital forecasts (April 2023) – see s9.1 and s9.2.
- There are a relatively high proportion of assets still in service operating beyond their expected service life therefore renewals planning has forced a more reactive approach than is ideal under good asset management practice e.g., robust risk-based renewal prioritisation.

Purpose

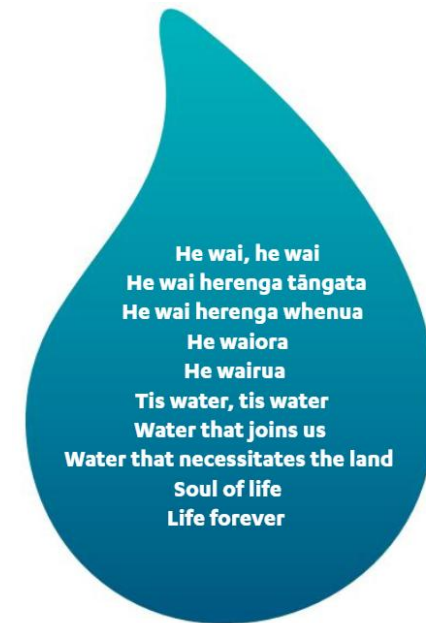
- This AMP is produced for the shareholder council so it can understand key aspects of the respective physical assets and be aware of uncertainties, confidence and risks.
- Elements of this AMP and the higher tier AMPs may be used to support production of Water Service Delivery Plans (WSDP). Material differences between data presented in the AMP and WSDP may arise e.g., through WSDP funding scenario modelling.

Assumptions

The following key assumptions apply to this shareholder councils AMP:

1. LTP-related asset values are based on unit rates obtained from specific, representative capital projects identified by Wellington Water Limited (WWL) and has 'Level zero - 100% contingency' applied – see the WWL Cost Estimation Manual.
2. NTU projects and programmes reflect the upper limit value of all 3 Waters activities required to deliver all projected metropolitan scale renewals, levels of service, and growth requirements as assessed at that time. Due to financial constraints driven by council affordability levels some NTU projects are not accommodated in the LTP 10-Year plan.
3. WWL financial data has by necessity been drawn from several sources which reflects the focus/refocus from Water Service Entities to shareholder council requirements.
4. The scale (including cost), extent and timing of renewals across all physical assets has been estimated based on various methodologies including desktop, physical inspections, and inferred analysis (same materials, installation years etc).
5. The financial constraints of shareholder councils have not enabled WWL to fully adopt a best practise approach to critical and non-critical asset renewal based on criticality, condition (failure risk), and levels of service, as councils have been unable to fund the required level of asset renewals.

1. Introduction
2. Partnerships and stakeholders
3. Three Waters services and assets we manage
4. Three Waters current level of service and performance measures
5. Demand and planning for the future
6. Risk management and resilience
7. How we deliver the services (Lifecycle management plans)
8. 10-year Three Waters investment forecasts
9. 30-year Three Waters investment forecasts
10. Continual asset management improvement



Wellington Water's Purpose:

Wellington Water exists so that people in the Wellington Region have safe, reliable, compliant, and affordable drinking water, stormwater, and wastewater services.

1. Introduction

1.1 Council Overview

The region makes up the southern reaches of the North Island comprising the Kāpiti Coast, Porirua-Tawa, Wairarapa South, Te Awa Kairangi ki Uta/Upper Hutt, Te Awa Kairangi ki Tai/Lower Hutt, and Pōneke/Wellington councils. Its northern boundary extends from north of Ōtaki on the west coast across to north of Castlepoint on the east coast.

The nonurban environment comprises approximately 80% of the region, with 320km of rivers and waterways, and a coastal marine area of 7,867km². Wellington is the most populated city, however over 50% of our regional population lives outside of the capital in cities and smaller towns.

The Greater Wellington Regional Council (GWRC) drinking water network supplies water to four surrounding cities: Lower Hutt, Porirua, Upper Hutt and Wellington.



Population
~550,000



1.2 Community Outcomes

Our long term impact

Everything we do contributes towards improving the environmental, social, cultural, and economic wellbeing of our Region. We describe these long-term impacts through our Community Outcomes:

Nui te ora o te taiao
Thriving environment

Healthy waterways and coastal waters, clean and safe drinking water, unique landscapes, indigenous biodiversity, sustainable land use and a prosperous low emissions economy.

Water is a fundamental need for our communities, so we will continue supplying a sustainable, clean, and safe drinking water supply.



He hapori kotahi
Connected communities

A vibrant and liveable region in which people can move around on safe, sustainable, and effective public transport, there is inclusive and equitable participation, and our sustainable rural and urban centres are connected to each other.

Respecting the environment and tackling climate change are key considerations in how this is achieved.

He manawaroa te āpōpō
Resilient Future

Safe and healthy communities, a strong and thriving regional economy, adapting to the effects of climate change and natural hazards, community preparedness and modern robust infrastructure.

Source: GWRC LTP 24-34

1.3 GWRC Water Services

Greater Wellington is responsible for collecting, treating and distributing safe and healthy drinking water to Wellington, Lower Hutt, Upper Hutt and Porirua City councils. This work is carried out for Greater Wellington by Wellington Water Limited (WWL), a joint council-owned water management company. City and district councils are responsible for the distribution of water to households and businesses through their own networks.

Providing the bulk water supply to the city councils involves managing a network of infrastructure, ensures safe, high-quality, secure, and reliable water sources, and that our freshwater is sustainable

Water supply: The water provided by GWRC goes to reservoirs owned by each city. From there, city council infrastructure conveys the drinking water from the reservoirs to local residents and businesses. • Wellington Region encompasses 811,100ha. 16,000ha are managed as Water Collection Areas. • 5 regional catchment areas, known as Whaitua: Kāpiti Coast, Te Awarua-o-Porirua, Te Whanganui a Tara, Ruamahanga, and Eastern Wairarapa.

Source – GWRC AMP

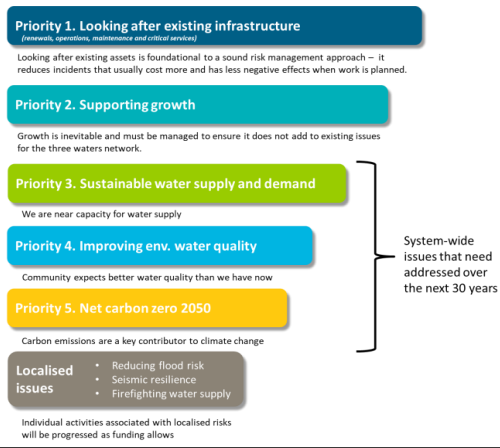
1.4 Key Asset Register Facts

Water Type	Asset Type	Quantity
Drinking Water	Reservoirs	3
	Pipes	192.8km
	Pump Station Sites	15
	Treatment Plants	4

Source: WWL DPS Asset Data Summary Report 2024

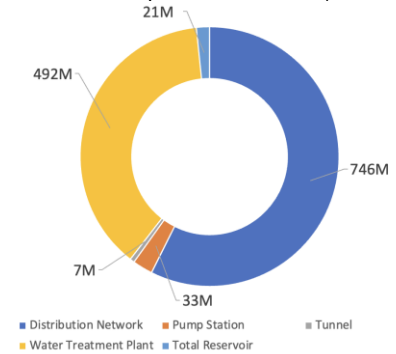
1.5 WWL Service Delivery Priorities

The WWL priorities below support Greater Wellington Regional Council’s vision for its community:



1.6 Asset Valuation Data (Water Supply)

An overview of the water assets replacement value is provided below. Total replacement cost is \$1.3B excluding land.



Source: WWL
GWRC 2022
June Valuation
Summary
Spreadsheet-
V1-241122

GWRCs asset data reliability and condition information is described in in Section 3.

2. Partnerships and stakeholders

2.1 Mana Whenua Partnership

Greater Wellington has links with mātāwaka through marae and economic development initiatives (Te Matarau a Māui) around the region. Over the coming years, our focus for decision making is putting into practice partnering for improved outcomes for Māori. This signals a transformational change across the business as we look to an active partnership by design with mana whenua.

We have listened to what our partners have told us:

- We need to plan for the long term (much longer than 10 years)
- The relationship mana whenua partners have with Greater Wellington needs to be based on our mutual interests and on collaborations based on shared visions and shared power
- Greater Wellington’s Te Tiriti relationship with our partners needs to acknowledge their mana motuhake and tino rangatiratanga which may be demonstrated in co-design and collaboration, and equitable resourcing
- Continue embedding Te Tiriti and prioritising taiao and community outcomes
- Develop value led policy, so that behavioural change aligns with values
- Recognise the specific impact of climate change on mana whenua, especially coastal sites. There is urgency in resourcing and funding objectives related to climate change and the partnership role of mana whenua
- Develop co-management opportunities in our natural places to ensure kaupapa-driven outcomes

We are moving from a relationship that could be described as transactional to one of active partnership by design so that we achieve goals through collaboration and high trust. This means moving from short term initiatives and goals, to long term high-quality relationships that are mokopuna and rangatahi focused.

Our partnership recognises and supports mana whenua as kaitiaki (guardians) of their broad whenua, freshwater and moana interests in their ancestral lands. We continue to work with our mana whenua partners in new ways at all levels of our organisation including governance, management and operations. We are committed to striving for excellence, in using the poutama model to ensure we continue to improve how we work with mana whenua and Māori to achieve outcomes across all the work we do in the region. At the governance level, Council has established two new committees of Council: a Long-Term Plan Committee and a Te Tiriti o Waitangi Komiti.

Water supply & Iwi and Community Engagement

Iwi and community consultation is undertaken for abstraction/discharge consents and all significant projects.

Source:
GWRC
2024LTP

2.2 Key Customers and Stakeholders

GWRCs primary responsibility it to provide bulk water to four customers: the metropolitan cities of Upper and Lower Hutt, Wellington and Porirua.

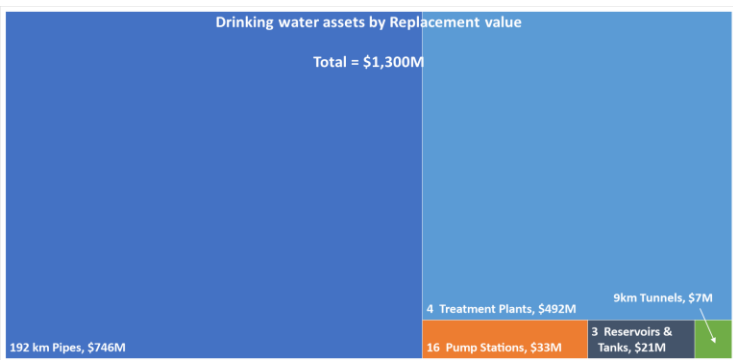
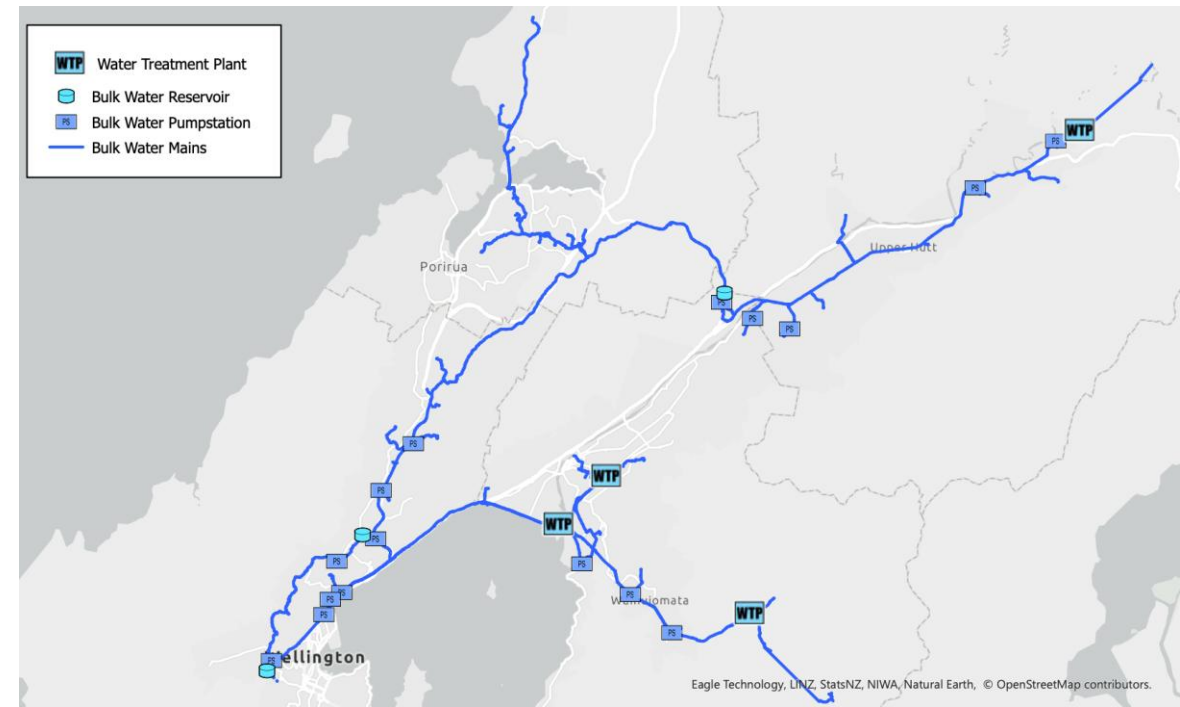
The activities exist to meet the needs and requirements of customers, partners and key stakeholders. The table below identifies the areas of interests, expectations and involvements of these groups.

Customers/Stakeholders	Area of Interest	Involvement/Expectations
Homeowners, businesses, organisations, health and medical facilities, education facilities, community groups, tourists and visitors	Water usage	These customers realise the benefits provided by the water supply activity
Iwi-Māori	Te Mana o te Wai Iwi & Hapū cultural heritage	All water to be respected and mauri of water to be protected and enhanced. Mana whenua to be involved in management of water supply, wastewater and stormwater issues
Water Services Regulator Taumata Arowai & Ministry of Health	Drinking water safety Three Waters service performance	Compliance with drinking water standards and regulations
Audit New Zealand	Compliance and financial regulation	Carries out annual audits of Council on the Auditor-General’s behalf to give ratepayers assurance that Council is appropriately reporting on how they spend public money and, on the services, they have provided
Other Government agencies, Ratepayers Associations, Environmental groups, Fish and Game	Development, usage and discharge plans	These groups liaise with Council in relation to three waters services. Affected parties to Council’s resource consents.
Utility providers	Service delivery (Term Service Contracts)	Access to assets for operations and maintenance, including planned and reactive works. Payment for services provided within contract terms.
Other utility providers	Operations, performance and management of works	New Zealand Utilities Advisory Group (NZUAG) requirements for co-ordinating networks
Emergency Management/Civil Defence	Emergency Operations	In the event of a Civil Defence emergency, they provide advice and work alongside emergency services, lifeline utilities and government departments
Elected Members, Committees, CEO, Management and Staff	Performance and management of services	Key internal stakeholders responsible for the management and operation of the Three Waters system

3. Bulk Water assets we manage

3.1 Water Supply

The four Councils water supply networks receives treated water from GWRCs bulk water network. This is stored by Councils in their local reservoirs and distributed via a pressurised pipe network to consumers at their point of connection (boundary toby). A summary of the extent and value of GWRCs water assets is provided below. These assets total \$1.3B, with bulk conveyance pipelines and water treatment plants comprising most of the value.



Source – WWL GWRC 2022 June Valuation Summary Spreadsheet-V1-241122

3.4 State of the assets

3.4.1 Asset Condition, Criticality and Reliability Definitions. Critical Assets.			
The tables below describe the asset condition, criticality and reliability definitions. An outline of this Councils critical asset groups is provided. To determine the condition and physical state of an asset, the asset's age is used to indicate replacement and timing, as well as the identification of maintenance or other interventions that may be required.			
Definitions	Asset Condition	Data Reliability	Critical Assets
	Determined based on the performance of a physical, visual, desktop, or modelled condition assessment activity. Inspection techniques differ by asset class. See chart below: Very Good (1): No observable defects or deterioration. Good (2): No defects evident that if worsened would result in asset failure. Moderate (3): Defects evident that if worsened could result in asset failure. Poor (4): Significant defects and/or serious deterioration affecting an asset's structural integrity evident. Very Poor (5): If the asset has not already failed, it could fail at any time.	Determined based on the type of inspection method and extent of that inspection method. The determination may differ between asset classes: (A) Highly Reliable: Data based on sound records, procedures, investigations, and analysis which is properly documented and recognised as the best method of assessment. (B) Reliable: Data based on sound records, procedures, investigations and analysis which is properly documented but has minor shortcomings; for example, the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation. (C) Uncertain: Data based on sound records, procedures, investigations, and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available. (D) Very Uncertain: Data based on unconfirmed verbal reports and/or cursory inspection and analysis. (E) Unknown: None or very little data held.	Determined based on an assessment of the asset(s) failing against Wellington Water's service goals and four criticality factors. See Asset Criticality Framework for details. VLCA (1): Very Low Critical Asset LCA (2): Low Critical Asset MCA (3): Moderate Critical Asset HCA (4): High Critical Asset VHCA (5): Very High Critical Asset
Actions	There is a programme in place to improve understanding of the condition of the assets we manage. Through the collection and analyses of condition data, we will be able to progress to a more condition-based remaining life approach.	There is an ongoing programme in place to improve asset data reliability. This takes place through the analysis of asset data completeness and accuracy and through the update of asset data information, from field checks, audits and condition assessments. The aim is to move the asset data reliability rating up to reliable and very reliable.	An asset criticality framework exists and renewals and replacement priority is given to the 'Very High Critical Assets' (VHCA).
Critical Assets	Critical Assets		
	Water Services  • Water sources and treatment plants • Pump stations and reservoirs and trunk mains with no redundancy/contingency • Assets servicing a very large % of the connected/vulnerable population • Location based watermains that intersect a state highway/buildings or a water course		

3.4 State of the assets (cont.)

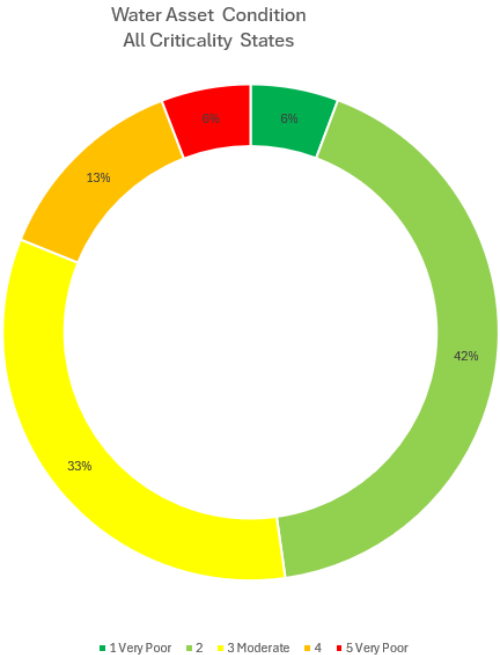
3.4.21Water Supply

Network Assets. The GWRC water asset register details are provided below. Asset register data is reviewed regularly.

Water Type	Asset Type	Quantity	Completeness	Confidence
Water Supply	Reservoirs	3	A	A
	Pipes	192.8km	B	B
	Pump Station Sites	15	A	A
	Treatment Plants	4	A	A

Source: WWL DPS Asset Data Summary Report 2024

Network Condition. The GWRC water asset condition is provided in the figure below.



Water Supply – Summary of Network Issues and Challenges

Because GWRC delivers treated water to the 4 city councils through bulk delivery mains, its network is primarily comprised of very high criticality pipes. The network still utilizes some very old (100 year +) pipes that were installed to supply water from the Wainuiomata/Orongorongo sources. It is these pipes that are given immediate priority for renewal unless the ongoing condition assessment programme can provide grounds to delay this work. Of potential concern in the longer term (ie beyond 10 years) is the life expectancy of the Kaitoke to Wellington water supply pipe that was installed in the late 1950s. The scale of a replacement programme for this pipeline would be vast – and it will remain as the single delivery mechanism for water produced at Te Marua from existing water sources and the proposed additional Pakuratahi storage lakes. It is critical that the condition of this pipeline undergoes ongoing vigilant condition assessment that would identify any work needed to extend the life of the pipeline If HCA or VHCA asset are not replaced until failure because of delays, lengthy and extensive service interruptions will occur. Ongoing condition assessment will be vital to maximise the life of the pipe network.

Reservoirs . GWRC operates a limited number of treated water reservoirs – the majority being owned by the Councils – PCC, UHCC, HCC and WCC. All reservoirs are regarded as VHCAs. If reservoirs are removed from service, widespread loss of water supply will result. All reservoirs have been visually assessed with emphasis on contamination and health and safety risks. In the interim all health and safety and contamination risks can be mitigated through minor works and good maintenance. Funding for minor works has been allocated, and work continues to prevent risks identified.

Pump Stations (water supply). Pumps stations are critical facilities. Within these facilities are also critical mechanical and electrical assets that on failure would result in supply disruption health and safety risks in the immediate vicinity, flooding and environmental pollution. Condition assessment of pump station assets is ongoing and critical asset renewal dates have been identified. Deferral of renewal funding will simply heighten the likelihood of the consequences listed above. Because of their bulk water function, the GWRC pump stations are large capacity facilities. Delivery times of replacement equipment can be lengthy as they are rarely “off the shelf” items.

Water Treatment Plants. The GWRC water treatments plant are all very highly critical facilities. Largely installed in the late 1980s - early 1990s, many of the mechanical/ electrical assets would be reaching the end of their life unless there had been proactive renewal of the items. Within the facilities are critical assets that on failure would result in supply disruption, health and safety risks in the immediate vicinity, flooding and environmental pollution. Although significant upgrade/renewal work has been done at the plant in recent years, a rigorous maintenance and renewal plan must be maintained in a plant that contains short lived mechanical/electrical assets that operate in a harsh environment. Failure of these assets heightens the risk of consent non-compliance and supply interruption as well as offering community health risks. Ongoing condition assessment programmes are a vital part of planned maintenance work.

4. Three Waters current Levels of Service and performance measures

4.1 Levels of Service defined

Levels of service define the type and extent of services delivered to the customer. They are written from a customer viewpoint such that Council can set targets against the levels of service to demonstrate outputs and performance against the community outcomes.

Levels of service are a link between Council’s strategic goals and key priorities, AM objectives, detailed operational objectives and performance measures. They are based on user expectations, statutory and national standard requirement:

The pyramid diagram illustrates the hierarchy of service levels. It consists of five stacked rectangular boxes. From top to bottom, they are: 'Community/Customer Objectives', 'Corporate objectives', 'AM objectives', 'Levels of Services', and 'Operational Objectives'. The pyramid is blue, and the boxes are white with blue borders.

The levels of service framework, outlined below includes service parameters, objectives, performance measures and targets.

The flowchart titled 'LEVELS OF SERVICE' shows a four-step process: 'Service Parameters' leads to 'Levels of Service Objectives', which leads to 'Performance Measures', which finally leads to 'Performance Targets'. Each step has a brief description below it.

Service Parameters	Levels of Service Objectives	Performance Measures	Performance Targets
Aspects of a service that reflects that the organisation delivers, e.g. service reliability, sustainability.	Describe the outputs a customer can expect to receive from the asset-related activity, e.g. provide safe housing.	The metric for measuring performance against the level of service objectives, e.g. number of safety incidents.	Provide a specific numeric target relating to the performance measure, e.g. <3 per year.

4.2 GWRC Key Priorities

GWRC key priorities identified in the LTP are summarised in the diagram.

The diagram shows three key priorities of GWRC. Each priority has a title in Māori, an English translation, and a brief description of the goal.

- Nui te ora o te taiao** (Thriving environment): Healthy waterways and coastal waters, clean and safe drinking water, unique landscapes, indigenous biodiversity, sustainable land use and a prosperous low emissions economy.
- He hapori kotahi** (Connected communities): A vibrant and liveable region in which people can move around on safe, sustainable, and effective public transport, there is inclusive and equitable participation, and our sustainable rural and urban centres are connected to each other.
- He manawaroa te āpōpō** (Resilient Future): Safe and healthy communities, a strong and thriving regional economy, adapting to the effects of climate change and natural hazards, community preparedness and modern robust infrastructure.

The GWRC Water Supply levels of service contribute towards achieving these key priorities:

- Provision of bulk water infrastructure to meet regulatory requirements, growth demand
- Compliance with resource consent requirements and undertaking operations and maintenance activities to ensure the environment is always protected
- Provision of bulk water infrastructure that underpins and supports the local economy
- Planning and delivery of financially sustainable waters services

4.3 Wellington Water Customer Outcomes and Goals

As the GWRC Water Supply service provider Wellington Water has developed customer outcomes and goals detailed in the table adjacent. These outcomes and goals guide Wellington Water’s service delivery and the achievement of the GWRC’s Water Supply Levels of Service detailed in the next three sections (Sections 4.4-4.6).

The levels of service and performance measures detailed in these sections align with GWRC’s LTP Water Supply performance measures.

There are also more technical performance measures included in operational plans and service contracts.

Safe and healthy water	Respectful of the environment	Resilient networks support our economy
We provide safe and healthy drinking water	We manage the use of resources in a sustainable way	We minimise the impact of flooding on people’s lives and proactively plan for the impacts of climate change
We operate and manage assets that are safe for our suppliers, people and customers	We will enhance the health of our waterways and the ocean	We provide three water networks that are resilient to shocks and stresses
We provide an appropriate region-wide fire-fighting water supply to maintain public safety	We influence people’s behaviour so they are respectful of the environment	We plan to meet future growth and manage demand
We minimise public health risks associated with wastewater and stormwater	We ensure the impact of water services is for the good of the natural and built environment	We provide reliable services to customers

4.4 Water Supply Level of Service and Performance

4.4.1 Water Supply - Safety of Drinking Water

Measure: The Council provides safe and reliable potable water for household and business use in urban areas

The table below shows that Council drinking water supplies have not fully complied with the following criteria for the last three years: (a) part 4 of the drinking-water standards (bacteria compliance criteria), and (b) part 5 of the drinking-water standards (protozoal compliance criteria)

Performance Measure	Target	2023/24 Result	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast	2027-34 Trend
The extent to which the local authority's drinking water supply complies with part 4 of the drinking-water standards (bacteria compliance criteria)	100%	Non-compliant	Non-compliant	Compliant	Compliant	Compliant
The extent to which the local authority's drinking water supply complies with part 5 of the drinking-water standards (protozoal compliance criteria)	100%	Non-compliant	Compliant	Compliant	Compliant	Compliant

Outlook: Council can expect to compliance with bacteriological compliance criteria from the end of 2025 once related initiatives that will increase the contact time for chlorine with water leaving the Waterloo Water Treatment Plant are delivered.

4.4.2 Water Supply - Fault Response Times

Measure: The Council provides a responsive call-out service to attend to customers' issues with their water supply

The table below shows the median times to attend and resolve call-out in response to a fault or unplanned interruption to the water supply system for Urgent and Non-urgent call-outs.

Performance Measure	Target	2023/24 Result	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast	2027-34 Trend
Median response time to attend urgent call-outs	<=90 mins	0 mins (no urgent call-outs)	N/A	N/A	N/A	N/A
Median response time to resolve urgent call-outs	<= 8 hours	0 hours (no urgent call-outs)	N/A	N/A	N/A	N/A
Median response time to attend non-urgent call-outs	<= 72 hours	0 hours (no non-urgent call-outs)	N/A	N/A	N/A	N/A
Median response time to resolve non-urgent call-outs	<= 20 working days	0 days (no non-urgent call-outs)	N/A	N/A	N/A	N/A

Outlook: Not applicable to GWRC.

4.4.3 Water Supply - Demand Management and Water Loss

Measure: The Council promotes the efficient and sustainable use of water

The table below shows the average consumption of drinking water per day per resident and the percentage of real water loss from the Council's water networks.

Performance Measure	Target	2023/24 Result	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast	2027-34 Trend
The percentage of real water loss from the local authority's networked reticulation system	<= 0.25%	0.08%	No change	No change	No change	No change
Average consumption of drinking water per day per resident	<385L	409L	Non-compliant	Non-compliant	Non-compliant	Improving

Outlook: These are not directly applicable to GWRC as they are a bulk water supplier only.

Comments in relation to average water consumption relate to the entire metropolitan region and reflect that investments to reduce leakage and manage demand will take some time to become effective.

4.4.4 Water Supply - Customer Satisfaction

Measure: The Council provides a responsive call-out service to attend to customers' issues with their water supply

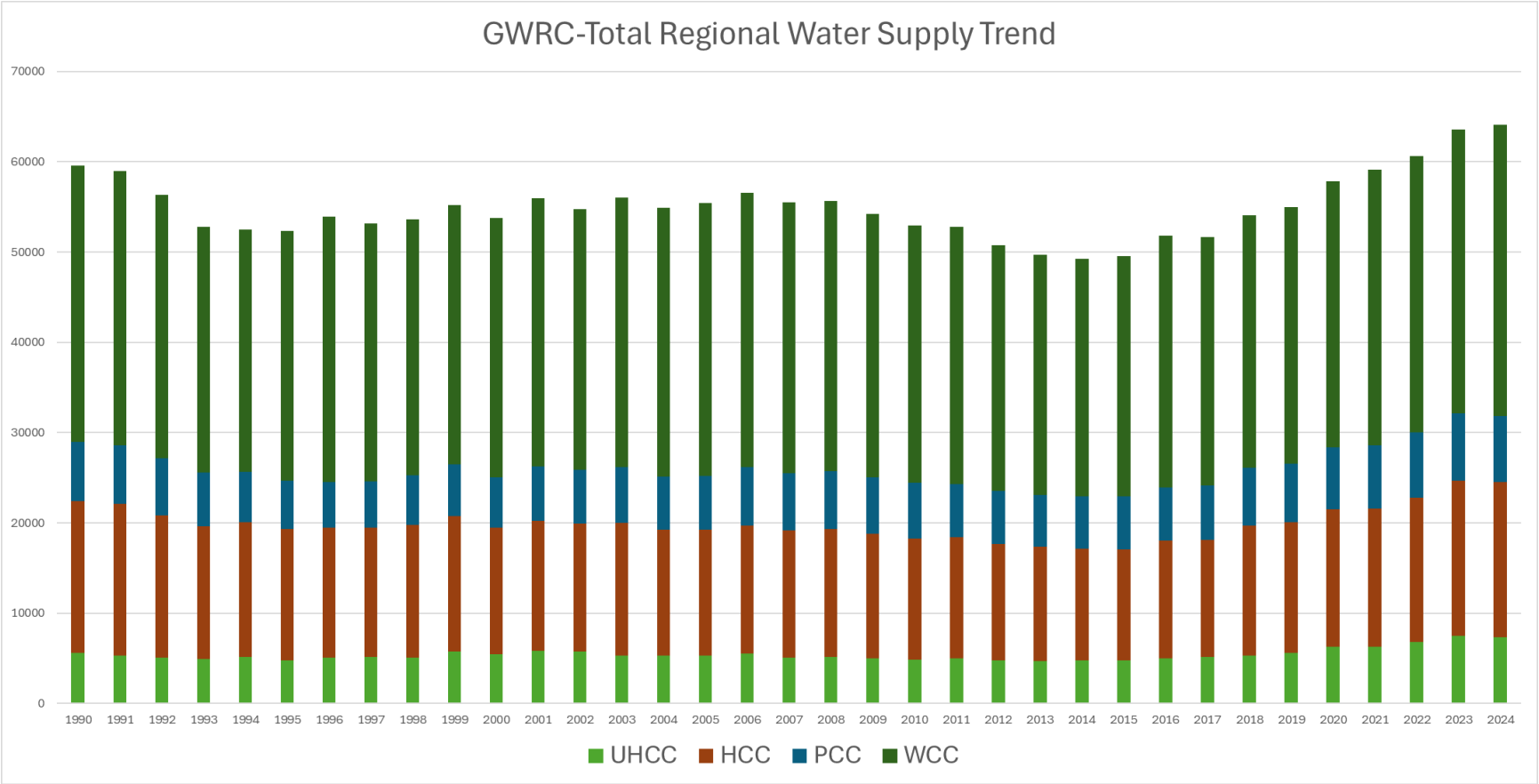
Performance Measure	Target	2023/24 Result	2024/25 Forecast	2025/26 Forecast	2026/27 Forecast	2027-34 Trend
The total number of complaints received about drinking water taste, clarity, odour, water pressure or flow, continuity of supply or the response to any of these issues; expressed per 1000 connections	<=20	0 complaints	No change	No change	No change	No change

Outlook: GWRC's responsibility is to provide a bulk water supply service to the Wellington metropolitan councils and does not include a direct customer relationship.

4.4 Water Supply Level of Service and Performance (cont.)

4.4.5 Water Supply - Volume of Water Abstracted

The figure below shows the total volume of water abstracted from consented water sources over time:



5. Demand and planning for the future

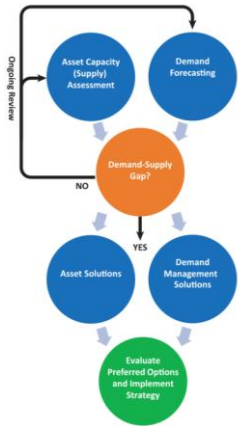
5.1 Understanding demand

Demand represents the quantity of products or services wanted by customers at a specified price and time. Demand forecasting helps provide an understanding of future service demand trends and helps with planning to meet changing demand over time. There is a level of inherent uncertainty and risk in the demand management process outlined in the diagram shown.

Demand management involves:

- Assessment of asset capacity
- Identifying demand drivers
- Forecasting future demand
- Assessing Demand-Supply gaps
- Identifying demand management solutions

Demand management planning is vital to ensure services are available at the required levels to meet customer requirements and expectations. It is also important to help effectively manage constraints and shortages of supply.



5.2 Key Three Waters demand drivers

Understanding and monitoring demand drivers helps plan for future service demand and the development of organisational growth and demand strategies, policies and plans.

Demand drivers	
Demographics	Trends in population growth, age demographics
Tourism	Seasonal peaks and tourism trends
Economic development	Economic climate and growth trends
Legislation	Legislation and regulatory requirement changes
Climate change	Climate change impacts and trends
Land use and land development	Land use and land development demand and trends

5.3 Demand management and forecasting

Wellington’s demand for water is increasing Wellington Water currently supplies approximately 175 million litres of drinking water per day on average to residents and businesses within the metropolitan area. Demand for water has increased by around 30% over the last 10 years - close to 3 time the rate of population growth. This has been caused by a rapid increase in water loss in the city council reticulation networks.

Challenges for future supply Looking ahead there are significant challenges that will affect supply and demand, and impact Wellington Water’s ability to provide appropriate standard of water security. These include:

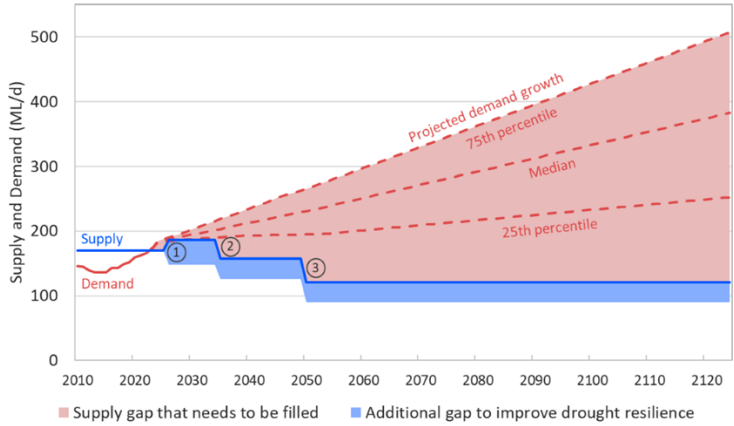
- Population growth – an additional 130,000 people over the next 30 years is expected to drive up the demand for water.
- Environmental enhancements – less water available during summer in response to recommendations from the Whaitua Te Whanganui-a-Tara Committee.
- Water loss – which has increased over recent years and is currently a substantial component of the overall demand for water. Water loss will also need to be reduced to meet water efficiency requirements in the Natural Resources Plan.
- Climate change and sea level rise –expected to impact demand, water availability and sustainable yield from the Waiwhetū aquifer.
- Water shortage level of service (LoS) – the current 1-in-50 year LoS is low by national and international standards. Pressure from public, political or regulatory sources could result in the LoS increasing to a 1-in-200 or 1-in-500 year standard.

There is uncertainty and variability in how and when these challenges might impact the supply / demand balance, because they largely depend on external factors outside of Wellington Water’s direct control. Instead of creating a single plan based on a single scenario, Wellington Water has developed an adaptive plan that responds to these challenges and their effects as they change over time.

Baseline supply / demand balance The baseline supply / demand balance for the Wellington metropolitan water supply is shown in the figure. This illustrates the supply gap that is predicted to occur with population growth if no action is taken to increase supply and/or reduce demand.

Timing and sequencing of options A Dynamic Adaptive Pathways approach was taken to testing different sequences, or pathways, of options to increase supply or reduce demand. The pathway that was found to be most robust was:

- Investment in water loss management (with investment increasing over time);
- Residential metering (with volumetric charging and demand management);
- Pākuraahi Lakes Stage 1 (lakes 1 and 2);
- Managed Aquifer Recharge;
- Wainuiomata Storage;
- Pākuraahi Stage 2 (lake 3 and WTP upgrade); and
- Purified Recycled Water or seawater desalination.



Source WWL Water Source Options Assessment 2023

Assessment of options using many combinations of future scenarios showed that the first three options are required in the 2024-34 period. This is referred to as the “Keep, Reduce, Add” sustainable water supply strategy, meaning:

- Keep water in the pipes by managing water loss and replacing old infrastructure.
- Reduce water demand through universal metering and demand management.
- Add more supply by completing the Te Marua WTP optimisation project and constructing the proposed Pākuraahi Lakes 1 and 2.

The timing for interventions beyond the mid 2030’s will depend on how growth and other factors change over time and will be the subject of ongoing monitoring.

Key Capital Investment-Storage Capacity Improvement – New Regional Water Source. A new regional raw water source is likely to be required within the next 10-15 years to adequately service predicted growth and avoid widespread water shortages. Demand management is also a key strategy to achieving sustainable water supply.

5.4 Managing demand

Water Supply		
Meeting Existing Demands	There are a range of Water demand management and mitigation measures to help manage the increasing Water demand challenges, including: • Water restrictions • Education programmes • Leak detection programmes • Network efficiency programmes • Effective demand forecasting to ensure that future demand for the service is understood • Water hydraulic modelling programmes to assist with growth and demand analysis and forecasting • Management of customer demand, to reduce demand for over-utilised assets, through pricing, regulation and education • Capital investment planning	Meeting Future Demands • Participate in wider organisation future planning and strategy development • Infrastructure planning and budget forecasting • Adopt “right sizing” the infrastructure assets approach • Capital project implementation • Network efficiency and optimisation programme implementation • Renewals projects with an element of upsizing due to growth capacity requirements have funding allocations split between renewals, levels of service and growth

6. Risk management and resilience

6.1 Risk Management Approach and Key Risks (contd.)

Council has developed a Risk Management Policy and a corporate Risk Management Framework. The Risk Management Framework ensures that all key risks have been identified, assessed and mitigation measures developed and implemented wherever possible. Wellington Water also operates a risk management framework aimed to identify, mitigate and report on risks and hazards. Key risks (Critical & High rated risks) for the Water Supply network are listed below.

6.2 Key Risks and Mitigation Measures – Water Supply and Water Supply (Source WWL 2021 AMP, Scotts, WIML)

Activity	Risk Item	Key Mitigation Measures
	Looking After Existing Infrastructure	
Water Supply	Current 10-year LTP investment is well short of what is required to renew ageing parts of the network.	- Condition assessment of assets in theoretical backlog, taking a criticality and risk approach to prioritising assessment work - Updating asset data based on assessment findings and reassessment of backlog - Planning and implementing risk-based priority renewals within funding limits. This may require a review of the balance of renewals funding between the Water Supply as new asset information comes to light - Implementation of Cathodic protection to significantly extend the asset life of the existing aging assets is a key mitigation – work underway.
Water Supply	O&M budgets are insufficient for the amount of planned maintenance needed and reactive maintenance increases. There are also challenges resourcing works.	- Review and develop risk-based O&M works priorities - Develop an understanding of critical risks and hazards within the operational works areas, monitor and report and adapt programme to allocate resource to areas of highest priority - Identify areas of expenditure that are imposed on operational costs by other stakeholders and utilities and that may present opportunity for saving through collaboration
Water Supply	Water demand for GWRC has increased significantly over the last 10 years and has threatened to exceed the network capacity. This adverse trend has been primarily caused by an increases in water loss from the city council reticulation networks. The key risks related to this (and identified in the WWL Risk register) are: - WWL will be unable to meet peak demand (acute); and - WWL will be unable to meet future demand (strategic)	GWRC and Wellington metropolitan councils via their LTP funding programmes to implement the ‘Keep, Reduce, Add’ sustainable water supply strategy. This means: - Keep water in the pipes by managing water loss and replacing old infrastructure. - Reduce water demand through universal metering and demand management. - Add more supply by completing the Te Marua WTP optimisation project and constructing the proposed Pākuratahi Lakes 1 and 2.
Water Treatment	Waste stream at Wainuiomata Water Treatment Plant lacks redundancy and capacity. A failure of the plant, prior to completion of wash plant capacity & quality Upgrade in 2031/32, will impact the performance of the water treatment plant and will eventually cause failure of provision of water. Consents for discharge of contaminants from the waste stream are at risk of breach due to the waste stream inability to treat.	- Ensure that funding for FY 31/32 remain in future LTPs (or equivalent funding programmes) - If possible, bring forward funding given the criticality of this work to ensuring continuity of production water.

6. Risk management and resilience cont.

6.2 Key Risks and Mitigation Measures – Water Supply and Water Supply (Source WWL 2021 AMP, Scotts, WIML)

Activity	Risk Item	Key Mitigation Measures
	Looking After Existing Infrastructure	
Water Supply	There is an Increasing demand for water due to high levels of loss within the territorial authorities' networks. This puts pressure on existing assets, creates lack of headroom to allow major assets to be taken off-line to perform maintenance and critical inspections, thereby compromising asset condition (e.g, bulk water meters)	Shareholder councils implement: • water metering • Increase funding for renewals to control and drive down reactive operations works • other activities as identified in each council's risk and investment plans
Water Supply	The Waitohu recommendations for changes to the GWRC Natural Resources Plan. Reduced water availability during through an expected increase in low flow limits after consenting water takes in the mid-2030's. There is therefore an inability to consent water takes in 2035 unless there is additional water storage available to offset a reduced ability to extract water at times of low river flow. There is a delivery lead time of 10 years for lakes works.	• Through the Waitohu processes, reduce the volume of water abstracted from catchments • Keep, add and reduce strategy. • Ensure funding remains committed for construction of Pākuratahi Lakes expansion in the final three years of the LTP (2031-34)
Water Treatment	Condition of some Water Treatment Plant and Water Intake assets may lead to operational disruptions and increased operational costs if the assets fail before the currently scheduled renewals:- assets include Waterloo Wellfield Pumps, Waterloo Treated Water Pumps, Te Marua Booster Pumps, Te Marua Treatment Pumps, all Water Source Intakes, Macaskill Lakes water quality improvements to improve source water quality.	• Plan and implement a criticality-based renewals and resilience works programme across all intakes • Undertake supply upgrades e.g., Te Marua DAF, additional storage.
Water Treatment	The full benefits of output capacity increase from Te Marua Treatment Plant optimisation will only be achieved once the pump station upgrade is completed in 2028/29. Both projects are funded in LTP. Until then, 50% of benefit realisation from delivering treatment plant optimisation by 2025, will help in reducing acute water shortage risk in the short term	• Continue phased treatment plant optimisation works Ensure funding identified in the 24/34 LTP for optimisation works in FY 28/29 are confirmed in the FY 27/37 LTP (or equivalent)
Water Supply	While water treatment plants and discrete parts of the network are seismically resilient to a degree, overall, bulk water assets do not meet the required earthquake resiliency standard for minimising impact and ensuring provision of safe drinking water following a significant earthquake event including Waterloo treatment plant (liquefaction), Te Marua clarifiers, Ngauranga Reservoir	• Establish the level of resilience of the current assets before mitigation plans are developed • Ensure sources e.g., Waterloo bores, transfer pumpstations and transfer mains are included in the resilience assessment • Provide a prioritized and funded programme of work
Water Supply	Waterloo Water Treatment Plant and Hutt City Council Water Network does not meet the new regulatory requirements for chlorine contact due to cross connections off bulk water main. Until changes to the cross connection are made there is a risk of non-compliance with regulations	• GWRC to fund works to meet the requirements (2025).
Water Treatment	A resilient and reliable fluoridation system is a requirement of the regulator. The system is not yet able to reliably meet regulatory requirements for Fluoride due to lack of redundant systems and asset reliability. Investment at Petone is required to meet regulatory standards and may need to be prioritised. Renewal of the existing system is required in 7-10 years and must be funded for.	• Ensure that delivery of works as identified in the FY24/25-FY28/29 LTP programme • If the performance of the existing system falls below regulatory levels, funding may need to be brought forward

6. Risk management and resilience cont.

6.3 Building Resilience

Resilience within Council is built on aspects such as response and recovery planning, financial capacity, crisis leadership organisational preparedness i.e. robust risk management, emergency response plans and business continuity plans developed and understood by staff. Infrastructure resilience includes the physical robustness of assets, the level of redundancy (contingencies and backups) and the management of the consequences of interdependencies between assets and organisations.

6.4 Water Headline Challenges

Our headline challenges



The Wellington region is facing some pressing issues. These issues of interest to Greater Wellington in both your role as an asset owner and as a regulator

- *We are facing ongoing water shortages*, with demand increasing faster than supply can be added
- The extent and speed of *urban growth is putting pressure on existing and future three waters infrastructure and services*, increasing the likelihood and consequences of network disruption and failing to meet performance expectations
- *Asset renewals are not keeping pace with asset deterioration*. Historic underinvestment in local three waters networks has resulted in aged infrastructure increasingly prone to failure contributing to water loss and water quality challenges
- Risks from *natural hazards and climate change are leaving communities and water assets vulnerable* to disruption and economic loss
- The *quality of water in the environment must be improved* to meet community expectations and regulations, but leaking, blocked or directly discharging stormwater and wastewater networks risk returning unsafe, contaminated water to the environment

The next section focuses on the issues specific to Greater Wellington in its role as an asset owner.

Source –GWRC stage 1 advice – pre-circulation material

6.5 Other localised issues and risks

6.5.1 Seismic resilience

Challenge: Wellington Water networks cross several fault lines, including the Ohariu and Wellington faults, which makes them particularly vulnerable to seismic events. The bulk water supply pipeline from the Te Marua Treatment Plant to Porirua and Wellington crosses the Wellington Fault at Te Marua, Silverstream and Karori. The Waterloo bore field and treatment plant is also vulnerable to a seismic event, which would impact the supply of drinking water.

Benefit to addressing the challenge: Provide 80 percent of our customers, within 30 days of a reasonable seismic event, with at least 80 percent of their water supply needs (80-30-80 strategy). Aim to improve resilience of water services through personal (customer) resilience, operational readiness, and long-term infrastructure improvements.

Investment advice: Through asset assessments, Wellington Water will identify assets that require strengthening and sequence upgrades based on priority. For example, we identified seismic strengthening of the Kaitoke Flume Bridge as a significant project that is currently underway. The project will improve the structure’s ability to withstand a major Wellington Fault earthquake. We will also continue educating customers on opportunities to improve household resilience. There are three new reservoirs scheduled for construction in the next 10 years; these will be constructed to a higher seismic resilient standard than existing reservoirs.



Source : WWL GWRC Part 3

6.5.2 Demand Forecasting and Management

Wellington Water’s response to the evolving water shortage challenge began in 2018 when the trend of increasing demand was identified. Water demand is a function of the amount of water customers use and how much water is lost through service delivery. Growth in demand is compromising our level of service standards. While population growth is a fundamental driver to the rise in demand, the ‘water intensity’ of day-today and economic activity within the region, expressed in terms of gross per capita demand, is also increasing. Customer water consumption, including losses (leaks) on private property, makes up the bulk of network demand and comprises residential and non-residential (commercial, industrial, municipal, education, etc.) demand.

Wellington Water has set water use reduction targets in the Metro Water Loss Plan (20ML/day by 2035), with the explicit intention of helping defer and reduce the need for investment in supply augmentation. Taumata Arowai has also stipulated a 7.4 ML/day reduction.

Leakage management will play a central role in achieving this target, with GWRC setting a target of +/- 0.25% for real losses in the bulk distribution network. However, this alone will not deliver the full quantum of savings needed as losses in the local and private networks and end-use are also major factors. Other forms of demand management will also need to play a role, including improved metering practices, expansion of customer metering and driving water efficiency through behaviour change, building regulation and customer outreach.

There has been, and continues to be, an increase in operational leakage management, better management of water pressure in the network and additional network meters to improve our understanding of demand and inform conservation programmes. WWLs expectation is that short term network efficiency improvements will provide margin but useful improvement to the overall supply-demand balance.

There are significant supply interventions planned in the next 5 years with Te Marua WTP Pump Station upgrade and completion of the Te Marua WTP Capacity upgrade project. Pakuratahi Lakes will be progressed to provide additional raw water storage. Belmont booster pump station is an additional upgrade planned in the LTP. These interventions are needed to ensure an appropriate level of water security.

A new regional raw water source is likely to be required within the next 10 years to adequately service predicted growth and offset the expected impact of reduced water availability following consenting water takes in the mid-2030’s.

Demand management alone is not likely to compensate for the growth forecast before this major infrastructure is required. Demand management however is the key strategy for influencing when it will be needed. It will not be possible to maintain service levels with the existing infrastructure as it cannot meet future demand, therefore planning and interventions are currently being developed and/or are underway.

7. How we deliver the Bulk Waters services (Lifecycle Management Plans)

7.1 Strategic Priorities

As the Water Supply Service Provider Wellington Water has developed strategic priorities that aim to look after existing assets, support growth and meet levels of service and customer expectations.

Priority 1. Looking after existing infrastructure
(renewals, operations, maintenance and critical services)

Looking after existing assets is foundational to a sound risk management approach – it reduces incidents that usually cost more and has less negative effects when work is planned.

Priority 2. Supporting growth

Growth is inevitable and must be managed to ensure it does not add to existing issues for the three waters network.

Priority 3. Sustainable water supply and demand

We are near capacity for water supply

Priority 4. Improving env. water quality

Community expects better water quality than we have now

Priority 5. Net carbon zero 2050

Carbon emissions are a key contributor to climate change

Localised issues

- Reducing flood risk
- Seismic resilience
- Firefighting water supply

Individual activities associated with localised risks will be progressed as funding allows

System-wide issues that need addressed over the next 30 years

These strategic priorities and specific challenges and impacts are addressed through the lifecycle management sections of the AMP.

7.2 Water Supply Service Delivery Overview

The Water Supply service delivery arrangements are summarised in the table below:

Task	Planning	Delivery
Operations and Maintenance	WWL	WWL-Contractors
Capital	WWL	Contractor
Renewals	WWL	Contractor
Compliance	WWL	WWL

7.2.1 Strategic Priority and Service Delivery Linkages

Task	O&M	Renewal	Capital
Priority 1: Looking after Infrastructure			
Priority 2: Supporting Growth			
Priority 3: Sustainable Water Supply and demand			
Priority 4: Improving Environ. Water quality			
Priority 5: Net Carbon Zero 2050			

7.3 Overview of Key Lifecycle Management Issues

Water	
Compliance Issues	Meeting drinking water standards
Priority tasks and activities	Operations: Routine maintenance and monitoring performance and compliance Capital: Treatment upgrades and improvements
Meeting Growth and Demand	Supplying sufficient volume and quality water
Priority tasks and activities	Operations: Efficient network mgt., water loss mgt. Capital: Source augmentation, Storage improvement, network extensions
Renewal of Ageing Infrastructure	Addressing renewal requirements to maintain LoS
Priority tasks and activities	Operations: Collection and review of faults data, Reactive maintenance Capital: Renewals prioritising, planning and delivery

7.4 Operations and maintenance plan

7.4.1 Operations and Maintenance Requirements

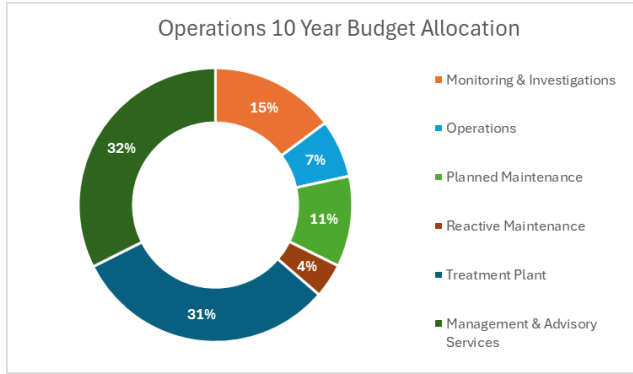
Operational and maintenance strategies address Strategic Priority 1- Looking After Existing Infrastructure.

The operational and maintenance activities cover the practices for optimising operation and maintenance activities of the Water Supply facilities and infrastructure to ensure:

- Reliable supply of safe water
- Achieve the optimum use of the asset at the agreed service levels
- Keeps the Water Supply facilities suitable, accessible, safe and well maintained
- Minimise total maintenance costs
- Levels of service are achieved across Water Supply
- Compliance requirements are met

Council outsources the Water Supply service delivery to Wellington Water.

The diagram below outlines the approximate Operations and maintenance activities budget allocations:



Source: Stage 4-Final LTP close-out advice – GWRC – August 2024

7.4.2 Operational Processes and Asset Maintenance

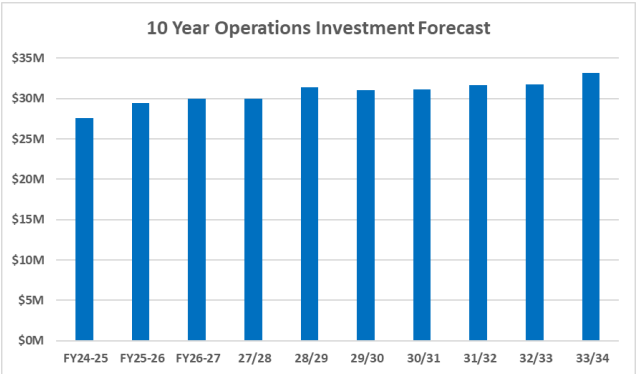
Operation and maintenance involves the two key types of activities:

- **Proactive maintenance** – proactive/scheduled inspections and maintenance works planned to prevent asset failure
- **Reactive maintenance** – reactive activities in response to unexpected asset malfunctions and failures, on an as-required basis (i.e. emergency repairs)

The optimal maintenance mix is a balance of planned and reactive maintenance activities. Maintenance also includes minor repairs that cannot be capitalised.

Operations and maintenance activities cover both the Water Supply networks (including pipelines and pump stations) and Plants and disposal facilities (including Water Treatment Plants, Wastewater Treatment Plants and outfalls).

Operational activities also include monitoring and reporting on resource consent conditions and drinking water quality assurance rules.



Total Water Opex 10 Year Budget: \$307.1M

Budget Source: WWL Final Council OPEX LTP 2024-25

7.4.3 Operations and Maintenance Plan

The operation and maintenance activities of Water Supply infrastructure are categorised into the following key operational areas:

- **Reactive Response**
 - Unplanned operations
 - Leak detection
- **Preventative Response**
 - Planned operations (day-to-day operations)
 - Acoustic Leak detection
 - Peak period operations
 - SCADA operation and maintenance
 - Resource consents
 - Ongoing monitoring
 - Bulk water meter reading
 - Backflow prevention
 - Water treatment plant/Filter Station audits
 - Pump Station/ Storage audits
 - Valve audits
 - Condition Surveys
 - Pre storm and seasonal readiness
- **Emergency Response**
 - Emergency Response Planning
 - Business continuity
- **Compliance**
 - Monitoring and reporting
- **Contract Management**
- **H&S**
 - Systems and processes
 - Monitoring and reporting
- **SOPs**
 - Establishment
 - Training
 - Monitoring and update

7.5 Renewals plan

7.5.1 Renewals Planning

Renewals Planning also falls within Strategic Priority 1: Asset renewal is the process of restoring the level of service delivered by an asset to its original design level, by upgrading or replacing the degraded components. The purpose of the renewal strategy is to maintain the levels of service by identifying the most cost-effective time to renew individual or groups of assets. Despite an uplift in renewals expenditure, the average age of the asset base continues to increase and there remains a significant amount of assets needing renewal over the short to medium term and there is a focus on undertaking asset condition assessments to confirm the extent and timing of asset renewal requirement.

Renewal Approach

7.5.2 Confirming the Renewals Extent

To improve network reliability, Wellington Water recommends renewing and upgrading the network based on **performance and criticality**, as well as improving service performance and capacity.

Capturing better data will improve the quality of decisions and enable more prioritised and targeted investment. We are proposing an investment strategy to improve performance by reducing the backlog (and risk) in renewals over the next 30 years.

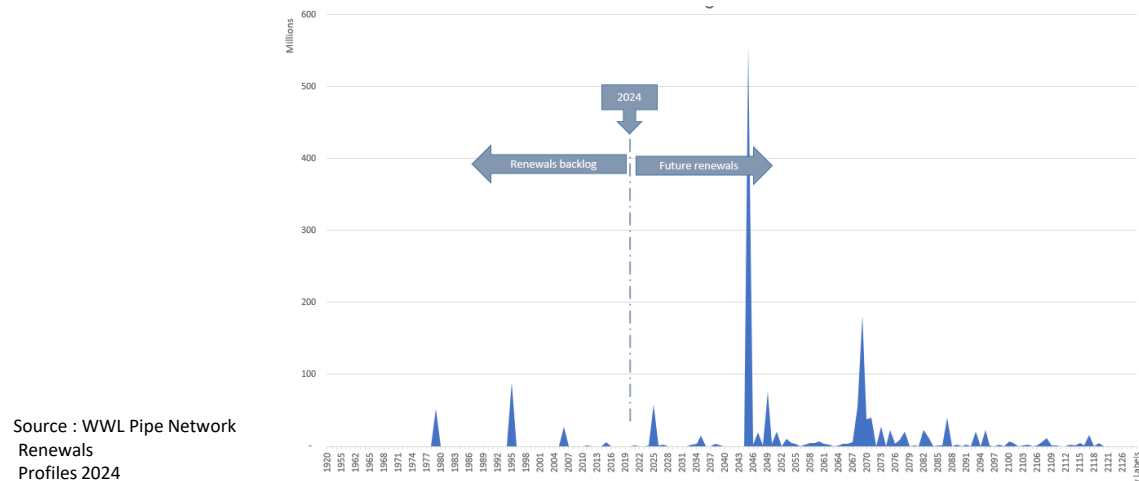
Specific renewals budgets are proposed aimed at achieving a sustainable asset base that is renewed at a pace that matches deterioration. These budgets have been built from:

- Requirements for treatment plants, reservoirs and storage, pump stations and pipe networks
- Looking at forward requirements over the lifecycle of the asset base
- Retain a level of budget for reactive renewals (based on history) to ensure that failed items can be replaced immediately

To note:

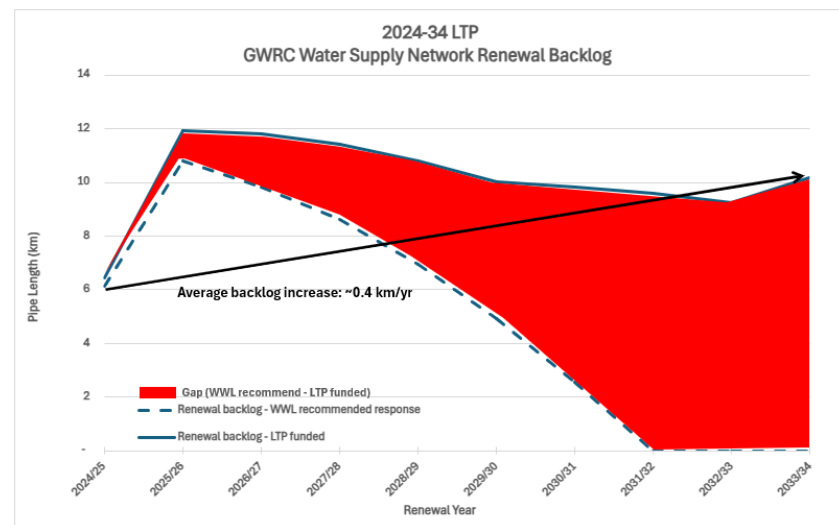
- Renewals needs are heavily dominated by pipe networks.
- The recommended programme has been prioritised to achieve a balance between critical and non-critical assets
- Deferral of renewal projects that make up the proposed budgets will lift the risk of increased service failures resulting in interrupted water supply and continued leakage, and unplanned overflows from wastewater pipes as well as elevated health and safety risks arising from collapsed or failed assets. Consequential rise in unplanned maintenance expenses.

The extent of the GWRC Three Waters Pipe Renewals challenge is highlighted in the figure below.



There is a significant gap between funded and calculated network renewals.

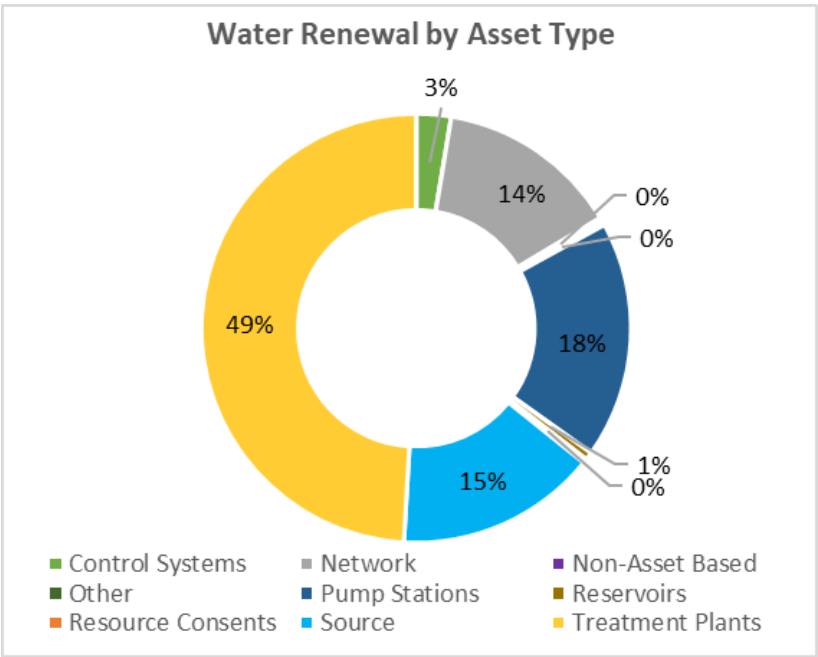
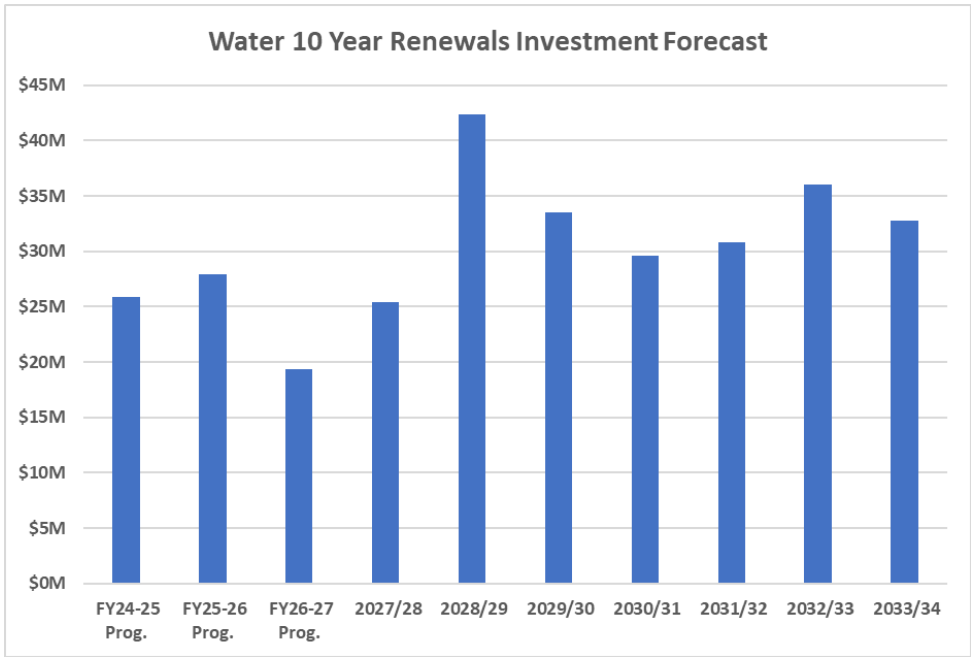
The renewal backlog, based on asset age and end of typical life values, provides a strong indication of the gap between assets which have reached the end of their typical life and those funded for renewal by GWRC.



7.5.3 Renewals investment forecasting

Water Supply

The charts below show the proposed 10 Year water renewals investment forecast:



The network renewals makes up the majority of the renewals programme, followed by reservoir storage, then pump stations and control systems renewals.

Source : WWL 2024-34 LTP Regional Baseline Programmes - 2024.10.20

7.6 Capital plan

7.6.1 Capital Works Drivers

Asset creation is the process driven by consumer growth or levels of service and most importantly water safety drivers. New capital investment involves the design and construction of new assets that will increase the capacity and/or performance of the Water Supply networks.

Key Asset Creation Drivers Are:

- To meet legislative compliance including DWSNZ where possible
- To meet the demands of growth by supplying water to Council's customers through efficient utilisation of natural resources
- To meet the levels of service with respect to safe and effective supply of water, wastewater removal and disposal, protection of property from flooding

Capital planning priorities are highlighted below:

Water Supply

- Asset condition assessments
- Asset data updated based on assessments
- Improvement of asset data quality and completeness
- Improvement and further development of renewals planning and programme development
- Review of Capital delivery framework
- Responding to legislative and compliance requirements

Water

- Resource consent review and improvement programme to ensure all consent conditions are met on time
- Ongoing Drinking Water Safety infrastructure upgrade programme implementation
- Drinking water standards compliance
- Investigate and develop additional water sources
- Investigations and master planning for water supply expansion in the district

7.6.2 2024 LTP Capital Programme Planning and Outcomes

In developing Council's 2024-34 LTP CAPEX programme, Wellington Water initially presented to Council a view of:

- Council's unconstrained CAPEX need, a maximum deliverable level of investment that Wellington Water could make (noting this should be viewed as a share of an overall regional maximum deliverable level of investment. As such, there is flexibility to support investment above this level if other councils did not fund to their maximum deliverable level), and
- a baseline level of investment based on Council's 2021-31 LTP budget level.

Council's preferred CAPEX programme as determined to be Option 2 with amendments, making the preferred council Option 2A (version 2). Further variations to this option, include:

- Deferring the Te Marua Pump Station Upgrade to start in 2026/27
- Gear Island and Waterloo Wells Replacement -Part 2 will now be replaced in two parts, first being 2024-26 and second starting in 2028/29.
- Reducing planned renewals over the first five years
- Defer the Kaitoke Bridges seismic strengthening project to 2027/28.

Council's CAPEX programme includes investment across the five strategic priorities but focuses investment on:

- Looking After Existing Infrastructure,
- Sustainable Water Supply and Demand, and
- Supporting Growth.

There is minimal activity to support environmental water quality and achieve net carbon zero and increased resilience to climate change in the programme. Councils programme has been built to include the following activity:

- Committed projects – all projects underway such as the Kaitoke Flume Bridge, Kaitoke main on the Silverstream Bridge and Te Marua WTP Capacity Optimisation.
- Compliance / consenting projects and programmes, for example for resource consent renewals and progressing the global stormwater and network overflow consents
- Control systems and modelling – programmes that are considered essential activity to manage assets and support other investment
- Reactive renewals for all asset types
- Planned renewals for all asset types

As the Option 2 budget s are below that recommended by Wellington Water the is some risk that not all service level targets, and key performance indicators can be achieved.

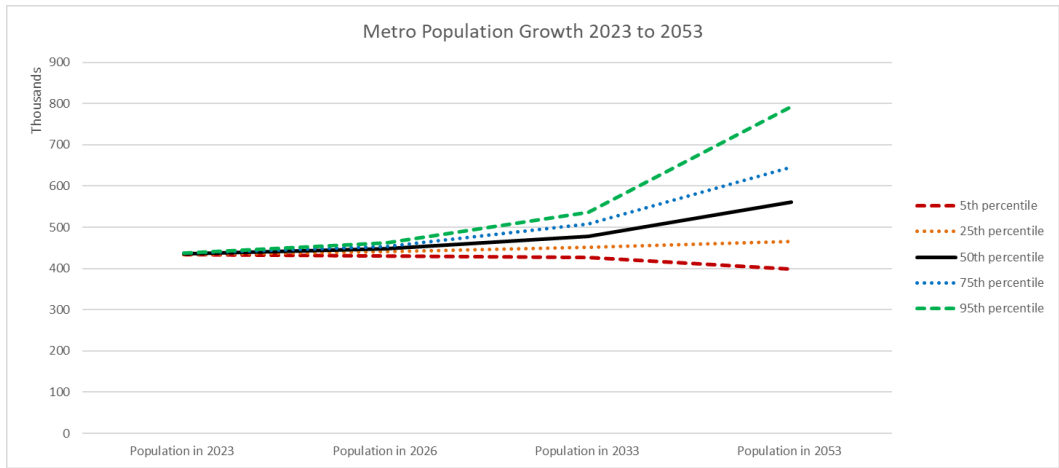
Source : WWL GWRC Advice Note 3

7.6 Capital plan (cont.)

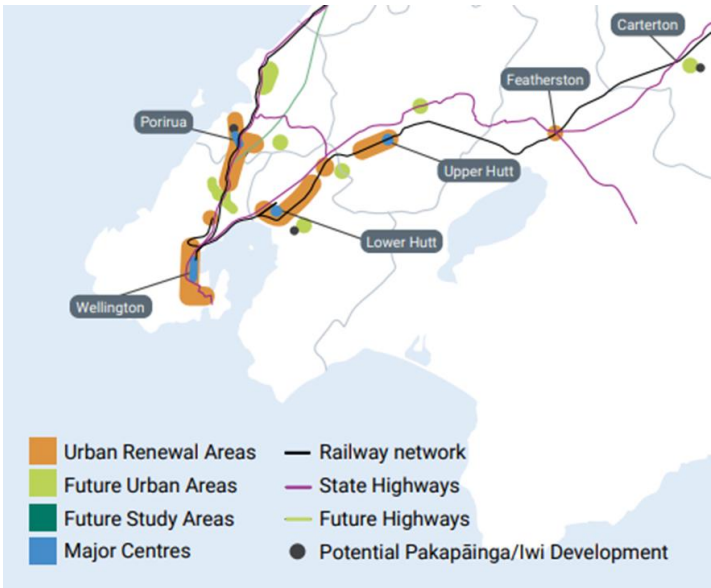
7.6.3 Capital Plan Priorities

Strategic Priority 2 - Supporting growth

Challenge: The region is experiencing and forecasting high growth in the short and medium term, which puts extra pressure on drinking water infrastructure. Some of this is already identified through the Regional Plan, and some will be identified in future revisions. Significant investment is needed, especially in the bulk water network to enable growth to occur. Current metropolitan area forecasts indicate 22 percent population growth over the next 30 years (50th percentile, 125,000 people).



Source: WWL January 2025



Investment advice: The region has experienced steady growth over the last 30 years, and this is expected to continue. This puts pressure on drinking water infrastructure.

GWRC investment advice for supporting growth is primarily based on the strategic planning report Water Source Options Assessment for Wellington Metropolitan Supply, June 2023. Some localised upgrades to the GWRC bulk network have also been identified in catchment growth studies completed for city councils. For example, we have identified bulk water network improvements to enable development north of Plimmerton in Porirua. This includes bulk pipeline extensions and pump stations to fill new reservoirs. Other similar improvements will become evident in the next few years as further growth catchment studies are undertaken across the region.

The 2023 water source options study incorporated best practice planning methods including Robust Decision Making and Dynamic Adaptive Pathway Planning. The Investment advice to ensure a sustainable balance is maintained between supply and demand is summarised in the Keep, Reduce, Add sustainable water supply strategy:

- Keep water in the pipes by managing water loss and replacing old infrastructure.
- Reduce water demand through universal metering and demand management.
- Add more supply by completing the Te Marua WTP optimisation project and constructing the proposed Pākuratahi Lakes 1 and 2.

7.6 Capital plan (cont.)

7.6.3 Capital Plan Priorities (cont.)

Strategic Priority 3 - Sustainable water supply and demand

Challenge: We need to ensure there is enough water for everyone in the region, now and in the future. After a period of declining water consumption, demand is again on the rise. Regionally, we are close to full allocation of current drinking water supplies, with intake at about 368 litres per person per day – one of the highest in the country. In comparison, Auckland (a fully metered supplier) uses about 270 litres per person per day.

The Wellington metropolitan area has exceeded its 1 in 50-year water shortage level of service standard. The situation will get worse with expected population growth leading to more frequent and severe water shortages (the last occurring in 2024).

Benefit to addressing the challenge: Community understands the value of water and decreases usage, so a new water source is delayed, and customers and the network are more resilient in times of shortage.

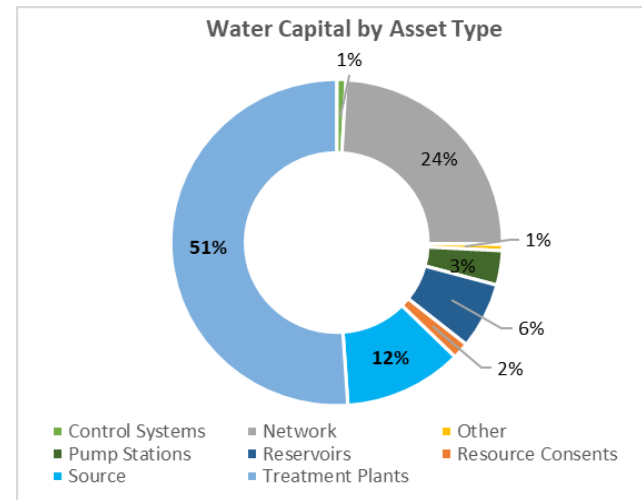
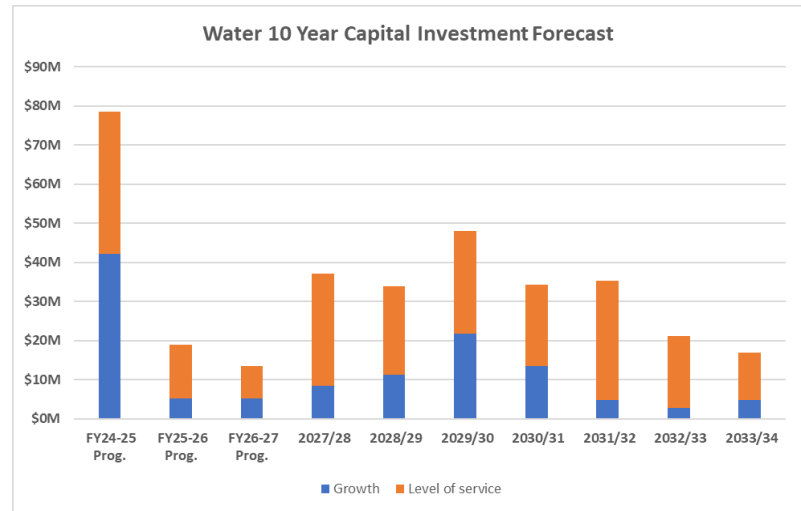
Investment advice: There is a high level of leakage in the Councils reticulation systems with poor data on where these are occurring, leaving a highly reactive and less efficient network. Current high levels of demand are influenced by water loss within the network and on private property.

- To reduce the amount of water use, so investment in supply upgrades are minimised as far as practicable, several improvements:
- Better management of network pressure
 - Active leak detection and repair
 - Installation of area water meters to understand demand
 - Introduction of universal household water meters
 - Education programmes to reduce consumption and change behaviour.

Reducing demand will defer the need for the supply-side investments proposed after completion of the Pakuratahi Lakes # 1 and #2.

7.6.4 Capital Investment Forecasting - Water Supply

The charts below show the proposed 10 Year Water Supply capital investment forecast. See s8.4 for detailed programme forecasts. Note that Pakuratahi Lakes #1 and #2 funding is not included here.



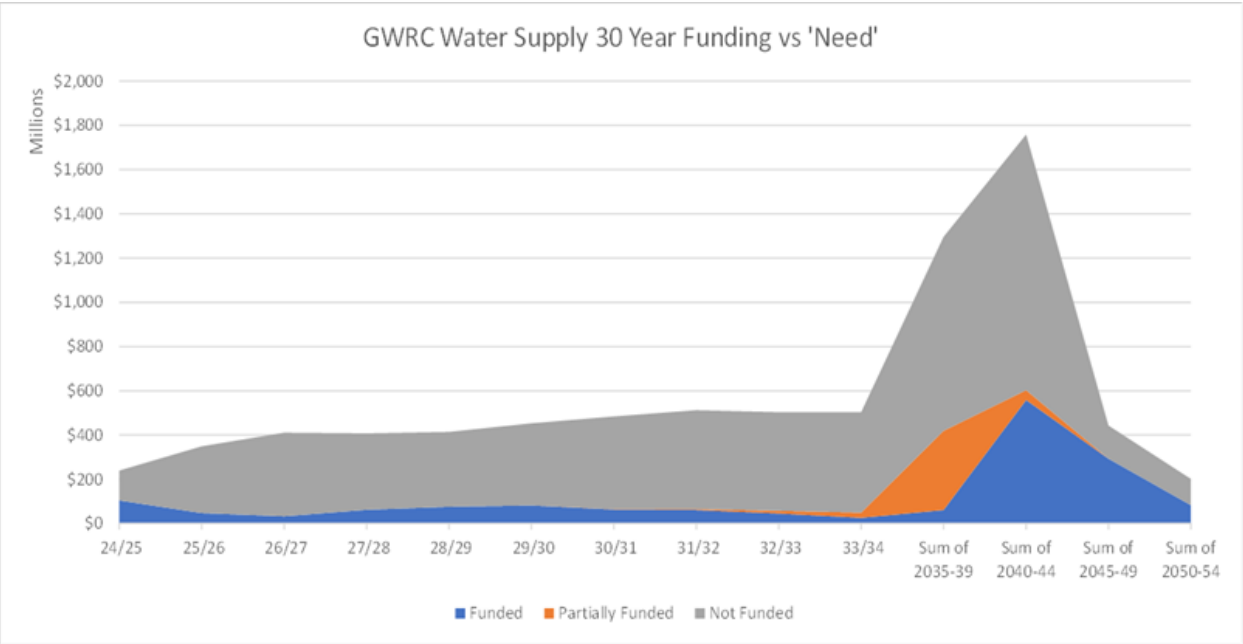
7.7 Asset disposal plan

7.7.1 Asset Disposals

Disposal is the retirement or sale of assets whether surplus or replaced by new or improved systems. Assets may need to be disposed of for a number of reasons, particularly if they fall under some criteria, including those identified below: • Under utilisation • Obsolescence • Cost inefficiency • Policy change • Provision exceeds required Levels of Service • Service provided by other means (e.g. private sector involvement) • Potential risk of ownership (financial, environmental, legal, social) As part of the lifecycle asset management process, Council considers the costs of asset disposal in the long-term financial forecasts. These costs are generally incorporated in the capital cost of level of service increases or asset renewals. While there are assets that fit under one or more of the above criteria, the Local Government Act provides clear instances when assets can be disposed of. Council has no plans to dispose of any Water Supply assets other than those that become obsolete as a result of renewal or upgrading works. Source : WWL GWRC Part 3 Advice
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8.1 The Funding Challenge

There are several major capital investment drivers such as aging infrastructure, regulatory compliance and growth and demand. This creates tension between funding demand and funding ability, that is managed though careful assessment, prioritisation and risk management. This will continue to be closely managed.



The water service capital forecast (refer adjacent figure) covers all investment categories i.e., growth, levels of service, renewals.

Investment Projections. Funded and partially funded values [blue and orange bands] are taken directly from GWRCs adopted LTP 2024/2034. The 'need' funding profile [grey band], is based on the submission to the National Transition Unit (for Entity C) of June/July 2023 and covers all assets including networks, reservoirs, pumpstations and control systems.

Risks to achieving Levels of Service. The gap between funded and partially funded investment and the investment 'need' maybe observed by the councils through reduced availability and supply of water. Further risks are identified in the Risk section of this document.

Note: figure supplied by WWL

8. 10-Year water investment forecast

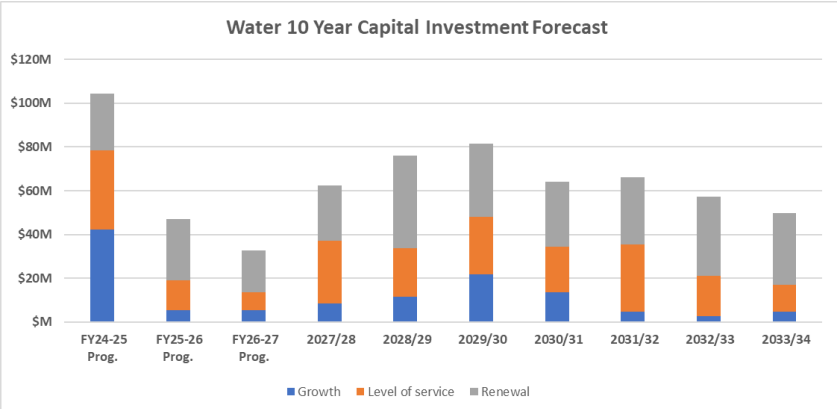
8.2 Total 10 Year Capital Investment - updated

This section provides an overview of the 2024 LTP Capital Programme investment forecast. GWRC’s total water investment forecast for the 10-year period 2024-2034 is \$641.2M (refer Advice Note 10).

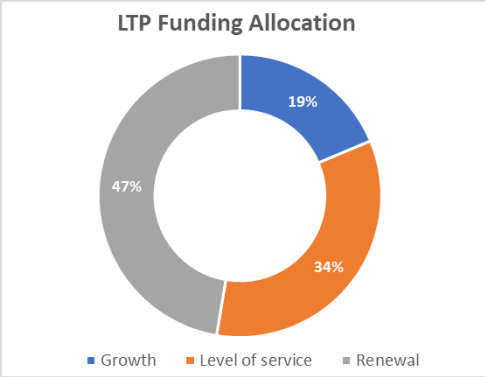
GWRC have included \$35M capital funding for pre-construction activities in the 2024-34 LTP but flagged that construction funding would be subject to further public consultation.

- The Capital investment is spread across:
- Renewals – to replace of existing assets at the end of design life
 - Additional Capacity - to provide for growth
 - Levels of Service - improvement to meet standards and regulations

The Water Capital Programme - has been refined and prioritised though the 2024 LTP programme and related deliberations and is summarised adjacent.



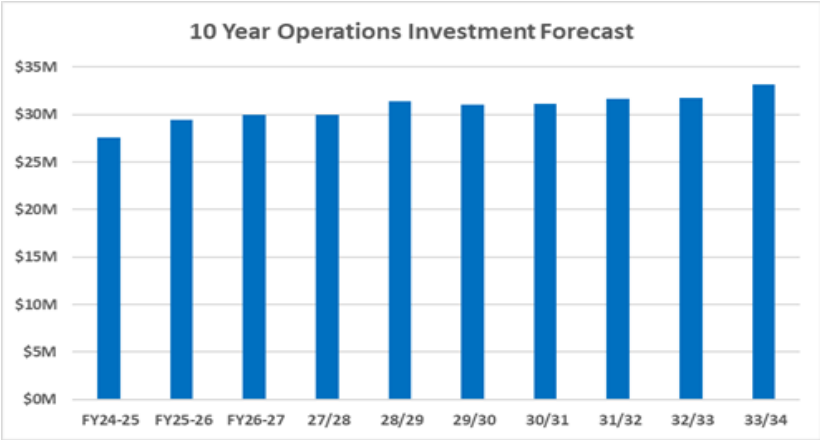
10 Year Capital Total (including renewals): \$641.2M



8.3 Total 10 Year Operational Investment - updated

The figures below present the break-down of operational investment for the Water activity. Future increases in Opex costs are anticipated due to increasing regulatory requirements and future maintenance contract costs.

The total 10-year operational expenditure for GWRC is approximately \$306.7 million on water supply (Advice Note 10).



8.4. 10-Year water capital programme forecast

8.4.1 Water Supply Projects - Growth

The 10 Year LTP Water Supply Growth capital works budget forecasts are detailed in the table below:

	FY24-25 Prog.	FY25-26 Prog.	FY26-27 Prog.	FY 27/28 Prog.	FY28/29 Prog.	FY29/30 Prog.	FY30/31 Prog.	FY31/32 Prog.	FY32/33 Prog.	FY33/34 Prog.	TOTAL LTP Prog.
Growth	42,223,225	5,175,000	5,175,000	8,390,000	11,023,297	11,846,594	3,631,540	4,755,540	2,690,000	4,691,500	99,601,696
Managed Aquifer Recharge for Waterloo WTP - Pilot Plant	-	-	-						500,000	500,000	1,000,000
Plimmerton Bulk Water Pump Station	-	-	-							480,000	480,000
Plimmerton Bulk Water Supply	-	-	-	390,000	2,000,000	1,800,000					4,190,000
Regional Fluoride Dosing System Improvement	54,425	-	-								54,425
Te Marua WTP Capacity Optimisation	41,145,300	-	-								41,145,300
Te Marua WTP Scheme Expansion Stage 1 (Pakuratahi Lakes 1 and 2) - Pre-construction	1,023,500	5,175,000	5,175,000	8,000,000	8,000,000	8,000,000	50,000	159,000	160,000	159,000	35,901,500
UPG25 Belmont Booster Pump	-	-	-		1,023,297	2,046,594	3,581,540	3,581,540			10,232,971
Wainuiomata Bulk Water Supply Pipe Upgrades - Section 1	-	-	-					1,015,000	2,030,000	3,552,500	6,597,500

8.4. 10-Year water capital programme forecast (cont.)

8.4.2 Water Supply Projects – Levels of Service

The 10 Year LTP Water Supply LOS capital works budget forecasts are detailed in the table below:

	FY24-25 Prog.	FY25-26 Prog.	FY26-27 Prog.	FY 27/28 Prog.	FY28/29 Prog.	FY29/30 Prog.	FY30/31 Prog.	FY31/32 Prog.	FY32/33 Prog.	FY33/34 Prog.	TOTAL LTP Prog.
Level of service	36,313,956	13,828,250	8,203,439	28,668,086	22,785,253	36,249,511	30,723,600	30,539,891	18,470,673	12,179,500	237,962,159
[Package] GWRC Smart Services	307,075	310,500	310,500	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,028,050
Big Huia and Little Huia intakes seismic strengthening	-	-	-	-	-	-	-	-	440,000	880,000	1,320,000
Catchment Risk Assessment	-	-	-	-	200,000	-	-	200,000	-	-	400,000
Dam Safety Management	102,350	103,500	103,500	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,009,350
GWRC Reservoir safety improvements	1,162,696	4,140	-	-	-	-	-	-	-	-	1,166,836
Hutt/Waterloo WTP Seismic Resilience	-	-	-	-	-	-	-	-	-	200,000	200,000
Installation of generator connection power supply plugs at pumping stations	-	51,233	204,930	-	-	-	-	-	-	-	256,163
Kaitoke Flume Bridge	4,789,400	-	-	-	-	-	-	-	-	-	4,789,400
Kaitoke main on Silverstream Bridge	23,838,150	551,350	-	42,400	-	-	-	-	-	-	24,431,900
Kaitoke Road Bridges Seismic Strengthening	-	-	-	1,000,000	7,000,000	18,000,000	2,750,000	-	-	-	28,750,000
Macaskill Lakes Dam safety	20,470	103,500	-	-	-	-	-	-	-	-	123,970
Moera Aquifer Monitoring Wells	204,700	310,500	-	-	-	-	-	-	-	-	515,200
Morton Dam Capex Maintenance	-	-	-	-	-	-	-	-	-	49,500	49,500
New Hutt WTP	-	-	-	-	-	-	-	-	297,000	4,950,000	5,247,000
Ngauranga Reservoir Seismic Strengthening	-	-	-	-	-	1,000,000	9,000,000	10,000,000	-	-	20,000,000
Orongorongo Intake Repair-Weir Crest refurbishment	-	-	-	-	99,000	495,000	297,000	-	-	-	891,000
Orongorongo tunnel - access, railway and rock bolting	-	517,500	-	-	-	-	50,000	200,000	300,000	-	1,067,500
Randwick Valve Chamber resilience improvement	-	-	-	-	-	-	-	-	510,000	1,020,000	1,530,000
Real-time Stream Monitoring - Kaitoke Pilot Study	8,719	1,732	8,568	1,686	8,253	1,711	-	8,291	1,673	-	40,632
Regional Fluoridation Improvement Stage 2	-	-	-	5,000,000	5,000,000	-	-	-	-	-	10,000,000
Relocation of Te Marua/Ngaauranga pipeline	-	-	-	-	-	-	99,000	12,375,000	12,375,000	-	24,849,000
Resource Consent for Te Whanganui-a-Tara primary water takes (exp 2033-2036)	-	-	-	-	-	-	1,000,000	1,000,000	2,000,000	1,500,000	5,500,000
Rocky Point and Ngauranga Interconnection valve chambers pipe connections	2,865,800	-	-	-	-	-	-	-	-	-	2,865,800
Smarter Bulk Water Lines Transient Loggers	-	-	-	-	-	-	-	-	-	250,000	250,000
Smarter Critical Bulk Water Valves	-	-	-	1,125,000	1,181,000	1,240,000	1,302,000	1,367,000	1,436,000	1,508,000	9,159,000
Te Marua Pump Station Capacity Upgrade	-	-	1,035,000	15,000,000	8,600,000	-	-	-	-	-	24,635,000
Te Marua WTP - Filter Performance upgrade	-	-	-	-	-	4,500,000	4,500,000	-	-	-	9,000,000
Te Marua WTP - Macaskill RW Lakes	-	230,546	537,941	-	-	-	-	-	-	-	768,488
Te Marua WTP Capacity Upgrades	-	-	207,000	6,000,000	-	-	-	-	-	-	6,207,000
Te Marua WTP Slope Stabilisation	102,350	414,000	-	-	-	-	-	-	-	-	516,350
Tunnel Grove Valve Chamber - Installation of flexible restrained couplings	-	-	-	-	-	207,900	415,800	1,455,300	-	-	2,079,000
Wainuiomata River Intake and Pipe Seismic Upgrades	-	-	-	-	-	-	-	-	396,000	792,000	1,188,000
Wainuiomata to Wellington Pipeline Resilience Upgrades	-	-	-	-	-	-	-	-	315,000	630,000	945,000
Wainuiomata WTP - Washplant Capacity & Quality Upgrade	-	-	-	99,000	297,000	9,900,000	9,900,000	-	-	-	20,196,000
Wainuiomata/Wellington Pipeline Waiwhetu Stream	-	-	-	-	-	504,900	1,009,800	3,534,300	-	-	5,049,000
Water Treatment Plant chemical storage risks/hazards	-	-	517,500	-	-	-	-	-	-	-	517,500
Waterloo WTP Pipework Reconfiguration	153,525	-	-	-	-	-	-	-	-	-	153,525
Waterloo WTP Pump Hall Ventilation Upgrade (incl Lime Dust Mitigation)	204,700	310,500	-	-	-	-	-	-	-	-	515,200
Waterloo WTP Sodium Hypochlorite storage and dosing	5,531	-	-	-	-	-	-	-	-	-	5,531
Waterloo WTP Ventilation System Upgrade (inc. Lime Dust and fluoride issues)	1,535,250	517,500	-	-	-	-	-	-	-	-	2,052,750
Waterloo WTP Wellington Pump Redundancy	1,013,265	10,246,500	5,123,250	-	-	-	-	-	-	-	16,383,015
Wellington Regional WTP Mechanical and Electrical Seismic Upgrade	-	155,250	155,250	-	-	-	-	-	-	-	310,500

8.4. 10-Year water capital programme forecast (cont.)

8.4.3 Water Supply Projects - Renewals

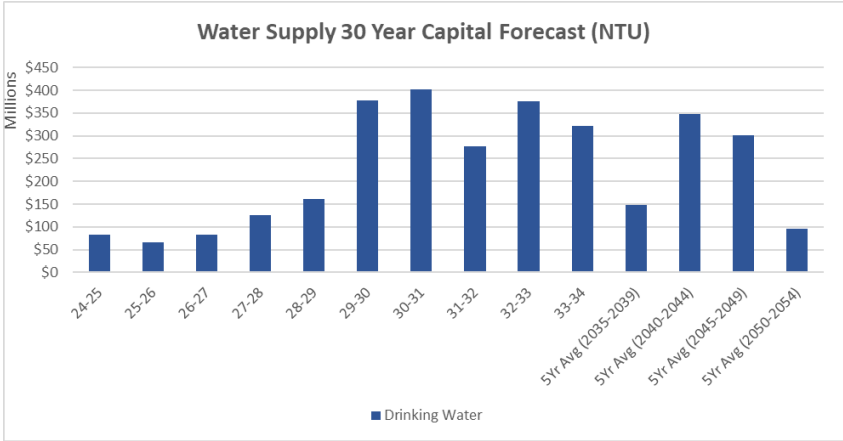
The 10 Year LTP Water Supply renewals budget forecasts are detailed in the table below:

	FY24-25 Prog.	FY25-26 Prog.	FY26-27 Prog.	FY 27/28 Prog.	FY28/29 Prog.	FY29/30 Prog.	FY30/31 Prog.	FY31/32 Prog.	FY32/33 Prog.	FY33/34 Prog.	TOTAL LTP Prog.
Renewal	25,864,385	27,961,694	19,357,284	25,359,561	42,333,026	33,514,591	29,582,308	30,822,171	36,025,348	32,802,782	303,623,150
(CP) Section 03 - Cpt008 to Cpt012	679,042	-	-								679,042
(CP) Section 06 - Porirua East High Level Reservoir to Transmission Gully	679,042	-	-								679,042
(CP) Section 10 - Vlv46 Porirua Branch to CPT 018 - VJs	570,551	-	-								570,551
(CP) Section 11 - CPT001 to vlv52-CPT021	570,551	-	-								570,551
(CP) Section 12 - CPT003 to Ngauranga	679,042	-	-								679,042
Bulk water Control System Planned Renewals	614,100	621,000	621,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	6,056,100
Bulk Water Control Systems REACTIVE Renewals	61,410	62,100	62,100	60,000	60,000	60,000	60,000	60,000	60,000	60,000	605,610
Bulk water flow meter REACTIVE renewals	167,043	173,623	138,458	153,406	149,804	149,326	150,475	152,007	23,954		1,258,097
Bulk Water Network Renewals - Valve Replacements	191,430	190,476	152,918	170,715	150,682	149,326	150,475	152,007	23,954		1,331,984
Bulk Water Reactive Renewals	265,475	269,483	299,198								834,156
Bulk Water REACTIVE Valve Renewals	364,775	405,761	446,747	474,210	521,730	574,200	631,620	694,980	764,280	840,510	5,718,814
Bulk Water Strategic Planning Tools (5-yearly SYM update)	-	-	124,200	100,000				120,000	100,000		444,200
Consent renewal - discharge to groundwater Waterloo and Gear Is	76,763	207,000	-								283,763
Consent renewal - Te Marua supernatant discharge (exp 2030)	-	-	-			75,000	175,000	100,000			350,000
Consent renewal - Te Mome Stream ground water discharge (exp 2033)	-	-	-				100,000	100,000	50,000		250,000
Consent renewal - To discharge contaminants from a wheel wash facility to land where it will enter George Creek (exp. 2032)	-	-	-				30,000	30,000			60,000
Gear Island and Waterloo Wells Replacements - Part 2	5,373,375	8,280,000	-		13,000,000						26,653,375
Gear Island and Waterloo Wells Replacements - Part 3	-	-	-					2,926,310	6,186,323	10,232,262	19,344,895
George Creek No2 Bridge Urgent Replacement	81,880	-	-								81,880
GWRC Drinking Water Network Modelling	51,175	51,750	51,750	50,000	300,000	50,000	50,000	50,000	50,000	300,000	1,004,675
GWRC Pipe Network Reactive Renewals - Drinking Water	1,023,500	1,035,000	1,035,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	10,093,500
GWRC Reservoir Leakage remediation	12,159	13,320	13,320	12,870	12,870	12,870	12,870	12,870	12,870	12,870	128,890
GWRC VHCA Reservoir Water quality Renewals	929,725	763,078	-								1,692,802
GWRC Water Pump Station REACTIVE Renewals	49,650	52,257	54,306	52,470	52,470	52,470	52,470	52,470	52,470	52,470	523,504
GWRC WS Pump Station Renewals	2,605,933	4,787,248	2,509,192	3,946,680	7,000,290	5,580,090	5,804,070	1,496,070	2,710,650	1,680,000	38,120,223
Haywards Pumping Station flow meter replacement	821,972	4,832	1,777								828,581
Hutt Aquifer Model Update	-	-	-					148,500	148,500	49,500	346,500
Kingsley Main Replacement	16,153	-	-								16,153
Knights Rd Wellfield cathodic protection	-	-	-		50,000	450,000					500,000
Korokoro pipe bridge replacement	-	220,300	440,600	1,489,950							2,150,849
OPE101306 - Wainuiomata Weir River Intake	-	-	-							49,500	49,500
Pinehaven AC pipeline replacement	-	-	-				207,900	415,800	1,455,300		2,079,000
Porirua Branch bulk main replacement	-	-	1,229,580	2,376,000	4,158,000	4,158,000					11,921,580
PS WS ALL - Smart Pump Performance Monitoring	104,397	105,570	105,570	102,000	102,000						519,537
Te Marua WTP - Filter Performance media renewal	4,094,000	-	-								4,094,000
Utilities Pressure Control Valves Renewals	151,990	161,895	169,067	172,260	180,180	189,090	198,990	208,890	219,780	230,670	1,882,812
Wainuiomata Bulk Water PS	-	-	-			1,429,219	2,858,438	5,002,267	5,002,267		14,292,191
Wainuiomata WTP Lime Silo Seismic Strengthening	-	-	-						65,000	195,000	260,000
Wellington Metro WTP Planned Renewals	3,582,250	8,487,000	9,832,500	12,500,000	12,500,000	15,500,000	15,500,000	15,500,000	15,500,000	15,500,000	124,401,750
Wellington Metro WTP Reactive Renewals	2,047,000	2,070,000	2,070,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	20,187,000
Wellington Trunk Main cathodic protection	-	-	-	99,000	495,000	1,485,000					2,079,000

9. 30 year water investment forecasts

9.1 Total 30-Year Capital Investment

This section provides an overview of the uninflated 30-Year capital investment forecast. It is based on the data submitted to the National Transition Unit (NTU Entity C) in June/July 2023 as part of 30-year capital investment requirements. Taking an unconstrained funding approach, it covers all assets including networks, reservoirs, pumpstations, treatment plants and control systems. The NTU capital programme is summarised in the chart below:

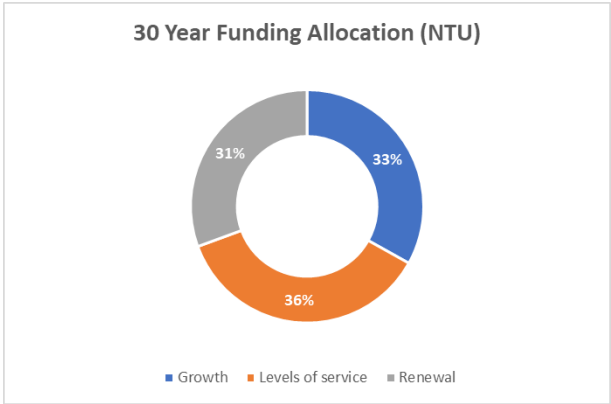


The NTU’s 30 Year total capital investment (including renewals) is projected to be \$3.17 Billion.

Capital investment is spread across:

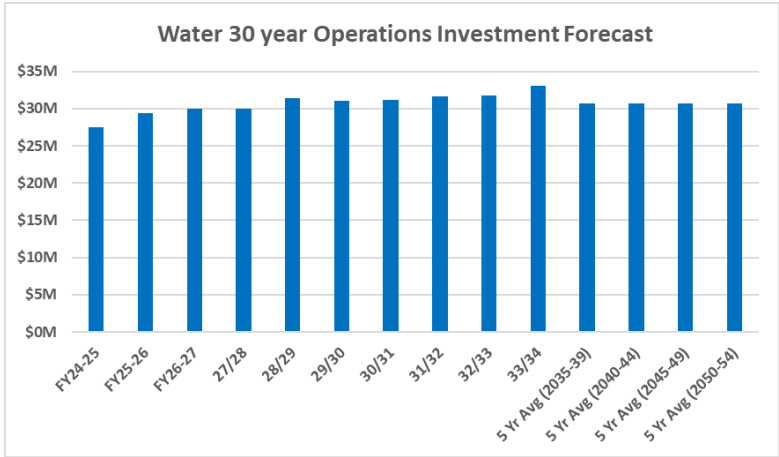
- Renewals - to replace existing assets at the end of design life
- Additional Capacity - to provide for growth
- Levels of Service - improvement to meet standards and regulations

The distribution is provided in the figure below.



9.2 Total 30-year operational investment

The Draft Water 30-year operational budget forecast is summarised in the chart below:



Total 30 Year Budget: \$921.2M

Note: Year 11 to 30 budgets are extrapolated from the average 10 Year budgets and have not been inflated.

10. Continual asset management improvement

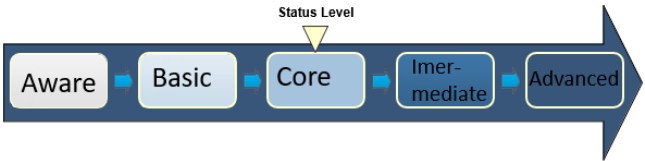
10.1 Asset Management Maturity

WWL is committed to continually improve asset management practices, processes, and tools. This is essential to ensure the asset system and services are effectively managed and delivered over the long term.

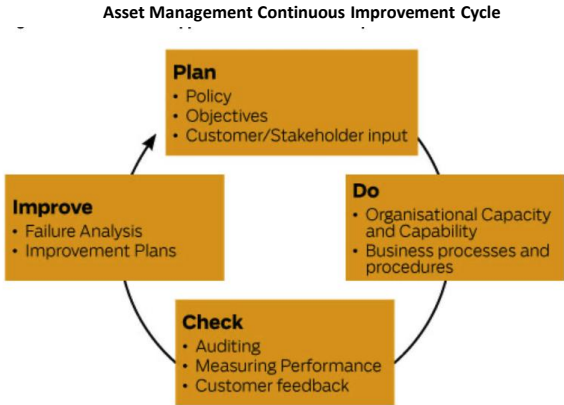
Asset Management practice is being developed in keeping with the NAMS guidelines as presented in their suite of asset management publications including the 2015 IIMM. Council is committed to delivering the most appropriate levels of service balanced with affordability and good industry practice.

Core and Advanced Asset Management

The Asset Management Policy states that Council is committed to meeting at least core asset management status for all activities. This is the most appropriate status for the scale, value and risk appetite of Council. The appropriate asset management status level will be reviewed periodically.



The last Three Waters asset management maturity assessment was conducted in 2021. The diagram below summarises the findings:



10.2 Asset Management Improvement Plan

- The key improvement actions items include:
- Continue to respond and adapt to the ongoing Three Waters reform programme ‘Local Water Done Well’
 - Continue to review and improve asset management systems and processes
 - Continue to build core asset management capability
 - Carry out asset data cleansing and verify asset condition information
 - Continue to improve the confidence and accuracy in locational asset data
 - Continue to assess the asset condition of below ground assets
 - Carry out asset criticality assessment and ratings
 - Continue to develop and implement condition-based reticulation renewals strategy
 - Continue capital investment in water assets to ensure consent compliance and operational efficiencies

- The following key improvement items have been identified in the recently completed Water Services viability assessment:
- Further assessment of the adequacy, planning and programming of the Three Waters Renewals Programme
 - Further assessment of the future Three Waters resource consenting requirements and related planning and budgeting for this area of work
 - Further assessment of the resources and procedures required to ensure the delivery of the proposed up scaled capital works programme
 - Further assessment and Opex budget provision for the increasing regulatory requirements (proposed in the Water Reform programme), and possible increases in future maintenance contact costs

10.3 Asset Management Improvement Monitoring Procedures

The Improvement Plan activities and priorities will be regularly reviewed, and progress reported on to ensure that a programme of continuous asset management improvement is achieved.