Activity Management Plan 2025-34

WATER SUPPLY

May 2025



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D: May 2025	Final AMP for review

Document acceptance

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Executive Summary

Introduction

This Activity Management Plan (AMP) provides an overview of how the Waitaki District Council (Council) intends to manage the Water Supply activity and associated assets in an efficient, cost effective and sustainable manner.

The plan:

- outlines key issues, goals, objectives, and the levels of service that the Council will provide to its communities.
- provides information on any new projects and expenditure that are required to meet future demand as well as detail about life cycle management and maintenance.
- provides an overview of costs and how the Water Supply activity is funded, the risks and uncertainties involved in undertaking the activity, and how we manage those.

What we do

Council currently owns 15 individual water supplies - five urban on-demand systems (Oamaru and Waihemo with specific supply zones) and ten restricted systems. These supply water to over 90% of the District's population. Over recent years we have progressively amalgamated water supplies, reducing the number of water supplies from 23 to the current 15.

Council is responsible for managing and operating these supplies, except for the four Corriedale supplies (Awamoko, Kauru Hill, Tokarahi and Windsor), which are managed on our behalf by Corriedale Water Management Ltd, and one other small rural supply.

The Water Supply activity includes safe and effective treatment, storage and distribution of water to urban and rural areas of the district. The water supplies contribute to improving, promoting and protecting public health, enabling commercial and industrial businesses, and provide firefighting capabilities in some urban areas. In rural areas, water is also provided to stock, contributing to the rural economy.

Council supports this service by:

- Providing, operating and maintaining water infrastructure in compliance with New Zealand legislation and standards
- Responding to call-outs and service disruptions quickly and efficiently
- Planning for future development and needs

Types of supply included are:

- On-demand supply – no restriction is placed on the supply.
- Restricted supply – a set amount of water per day is made available to the property, this typically only occurs on our rural supplies.
- Metered supply - Council installs water meters on some properties that are on On-Demand supplies and charges for the actual volume of water used.
- Firefighting capability to FW2 standard (SNZ PAS 4509:2008 – NZ Fire Service Firefighting Water Supplies Code of Practice) is provided in most urban supply areas.

Key components of our water supplies

Our water supply infrastructure is currently valued at $272,042,498 (treatment plants, pump stations and reticulation). At present, key assets include 12 water treatment plants, 40 reservoirs, 5 bore fields, 20 pump stations, 1,626km of water mains, 4,335 rural restrictors, 2,535 valves, and 1,318 fire hydrants.



Water sources:

- Surface takes (e.g. rivers, streams)
- Bores (groundwater)



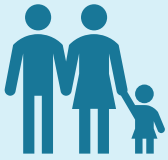
Domestic & commercial connections:

- On-demand
- Metered (on-demand)
- Restricted

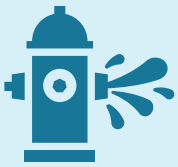


Treatment options:

- UV
- Ozone
- Filtration
- Chlorination

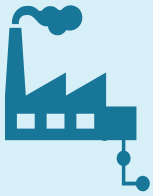


Around 20,000 people supplied



Reticulation infrastructure:

- Pipes
- Hydrants
- Valves
- Pump stations/pumps
- Backflow prevention
- Reservoirs



Large water users:

- Lean Meats Oamaru
- Rainbow Confectionery
- Canterbury Wool Spinners
- Whitestone Cheese

Supply Type	Definition	Application
On demand	A supply of water which is available on demand directly from the point of supply subject to an agreed level of service Water is supplied at pressure to the property boundary and is sufficient for domestic and industrial use Supply is for domestic, business and industrial purposes	Urban supplies
Metered	Where Council considers water use is unusually high for any property on an On-Demand supply, it may install a meter at the property owner's cost and charge for any extra water used	Urban on-demand supplies (with some exceptions)
Restricted	A small continuous flow of water supplied by a flow control device/restrictor across an air gap separation Supply is an agreed volume of water over a 24-hour period to a storage facility Supply is for domestic and stock purposes	Mainly rural supplies, but also zones within or on the fringes of Urban Supplies

Why we do it

Council is legally obliged under the Health Act 1956 to improve, promote, and protect public health within the District. The Health (Drinking Water) Amendment Act 2007 and Water Services Act 2021 place further obligations on Council to comply with the Drinking Water Standards for New Zealand 2008 and new Drinking Water Quality Assurance Rules.

Under the Local Government Act 2002, the continued operation of water supplies is required unless specific approval is sought to withdraw from the activity (in whole or part). The Council sees the provision of reliable and safe drinking water to the community as a major contribution to the District's economy and to resident's wellbeing.

Council's Strategic Framework was adopted in 2023. It guides Council decision-making, providing a focus for staff and elected members for all activities and service delivery.



Council's water supply activity contributes primarily to the following outcomes:

Prosperous district:

- Attractive to new opportunities
- Support local businesses

Valued environment:

- Protecting our diverse landscapes and water bodies
- Meeting environmental and climate change challenges

Quality services:

- Robust core infrastructure and services

Strong communities:

- Enable safe and healthy communities

Council has not identified any significant negative effects the water activity may have on the wellbeing of the community. However, we are aware that the demand for greater volumes of water has the potential to deplete water resources in the district. Council will continue to identify and implement methods of making water supply services more efficient and sustainable.

Levels of service

Council's overarching goal for water supply over the next nine years is to support and promote the health, wellbeing and financial prosperity of the community by providing a lawful, reliable, sustainable and cost-effective water supply for consumers.

We will continue to take all practicable steps to comply with relevant water services legislation, regulations and resource consents, and to report on performance.

In accordance with 261B of the Local Government Act 2002, Council adopted the Non-Financial Performance Measures on 12 November 2013. These require local authorities to report on the performance of the key activities of water supply.

Since 2015, Council has only reported on these mandatory performance measures, as these were considered to cover key expectations in terms of the delivery of the service. However, with the adoption of Council's Strategic Framework and changing regulatory and community expectations, new measures have been introduced in this AMP relating to managing the supply in a more sustainable manner and planning for current and future generations. More about this is included on page 59 of this plan.

The new Water Services regulatory framework makes the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and Drinking Water Quality Assurance Rules compulsory.

During November 2022, Taumata Arowai introduced new Drinking Water Quality Assurance Rules (as they relate to bacteria and protozoa). From 15 November 2022, councils had to report against the Drinking Water Quality Assurance Rules as they relate to bacteria and protozoa.

Overview of the levels of service framework for water supply

Community outcomes	How this activity contributes	Levels of service	Performance measures/(targets)*
Strong Communities Enable safe and healthy communities	Protecting communities from drinking water related health issues by providing safe water to agreed areas	Council will take all practicable measures to supply water that is safe to drink and compliant with relevant legislation	To comply with Drinking Water Quality Assurance Rules 2022 (targets as specified in the DWQ Rules)
Valued environment Protecting our diverse landscapes and water bodies Meeting environmental and climate change challenges	By managing the water supply resource in an efficient and sustainable manner	Avoiding wastage within the reticulation system Reducing water consumption where necessary and appropriate through education and enforcement	Real water losses from the reticulation (**New target:** annual reduction of percentage of real water loss from our networked reticulation system) Average consumption of drinking water (on average, less than 500 litres per person per day) **New measure/target:** Compliance with water take consent conditions (100% compliance)
Quality services Robust core infrastructure and services	Ensuring reliable, accessible water supply Supplying good quality drinking water	Council responds to service requests and system failures in a timely manner The community experiences a consistently good standard of water quality	Response to urgent callouts (1 hour) Resolution of urgent callouts (24 hours) Response to non-urgent callouts (2 working days) Resolution of non-urgent callouts (5 working days) Water quality complaints (fewer than 25 complaints per 1,000 connections)
Prosperous district Attractive to new opportunities Foster a diverse and resilient economy	Making provision for growth and providing assurance for a sustainable, cost-effective water service	Council's planning for water supply infrastructure and treatment provides for current and future needs	**New measure/target:** Design basis work, capacity studies, asset planning, financial and other planning is undertaken in accordance with industry best practice (design basis studies for each supply are developed and reviewed triennially)

*Detailed performance measures, including compliance, are outlined on the following pages.

How well are we doing?

Drinking Water Quality Assurance Rules 2022

The move to the new Drinking Water Quality Assurance Rules 2022 (DWQAR) places higher requirements on drinking water suppliers and as a result, some Waitaki supplies that were previously compliant are now non-compliant.

The results for 2023/24 were determined by an independent assessor from WaiComply. WaiComply completes these assessments for numerous councils around New Zealand. They have identified areas that will need improvement to achieve compliance going forward. These include treatment upgrades and additional data collections. Full results and reference to required improvements are included on Page 62.

Bacteria compliance:	Protozoa compliance:
DWQAR 2022: Compliant: Duntroon, Waihemo. *Achieved* Non-compliant: Awahokomo, Awamoko, Bushy Creek, Kauru Hill, Kurow, Lake Ōhau, Lower Waitaki, Ōamaru, Ōmārama, Ōtematatā, Stoneburn, Tokarahi, Windsor. *Not achieved*	***DWQAR 2022:*** Compliant: Duntroon, Ōamaru, Waihemo *Achieved* Non-compliant: Awahokomo, Awamoko, Bushy Creek, Kauru Hill, Kurow, Lake Ōhau, Lower Waitaki, Ōmārama, Ōtematatā, Stoneburn, Tokarahi, Windsor. *Not achieved*

**Ōamaru includes Hampden-Moeraki and Herbert-Waianakarua*

Water loss

Council currently aims to maintain or reduce water loss levels in the network. We measure the percentage of real water loss from our networked reticulation system, which is calculated in accordance with Water New Zealand's Water Loss Guidelines, with the methodology selected based on the information available for each specific network. *

2021/22	2022/23	2023/24		Trend
Kurow: 41% *Ōamaru:* 62% *Ōmārama:* 74% *Ōtematatā:* 45% *Palmerston:* 36% *Not achieved*	*Kurow:* 60% *Ōamaru:* 47% *Ōmārama:* 52% *Ōtematatā:* 35% *Palmerston:* 46% *Not achieved*	*Kurow: 49%* *Ōamaru: 42%* *Ōmārama: 31%* *Ōtematatā: 40%* *Palmerston: 33%*	Achieved for all in 2023/24 except Otematata	Some of the declines in water loss could be attributed to a leak detection programme that has been undertaken in several townships around the district. In particular, considerable progress was made in Ōmārama, where major leaks were identified and repaired, and we are now following up with leaks on private property. Leaks and losses have declined by about 50 per cent in Ōmārama as a result.

*For an explanation of how we calculate water loss under the Water Loss Guidelines, refer to **Section 6: Demand and Planning for the Future**. For asset management purposes, we also use other measures to help determine water demand and loss, which are also outlined in Section 6.

Customer callouts

Reporting on the achievement of customer service levels provides internal benchmarking within Council and provides an indication of the contribution towards community outcomes and well-beings.

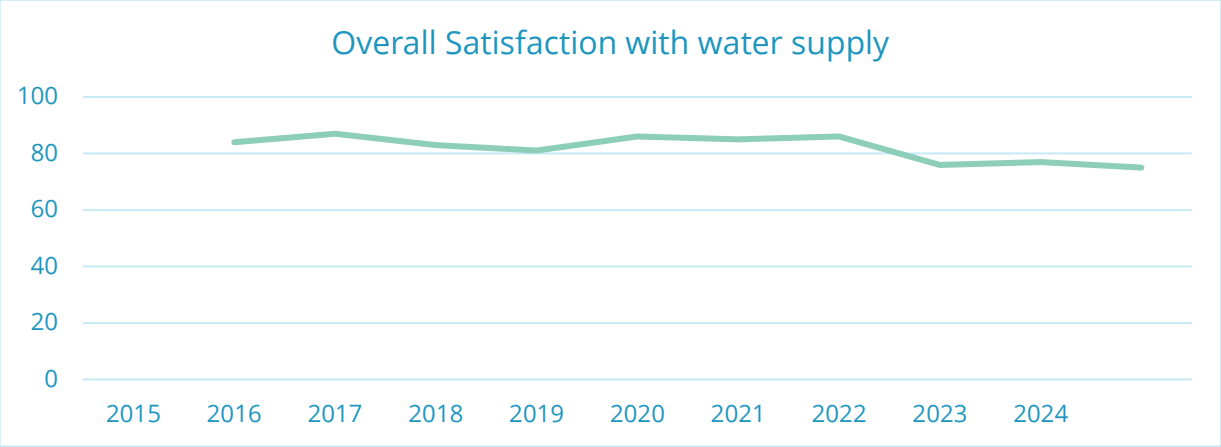
Where Council attends a callout in response to a fault or unplanned interruption to its networked reticulated system, the following median response times are targeted. All targets were achieved in 2023/24 following a renewed focus on service levels.

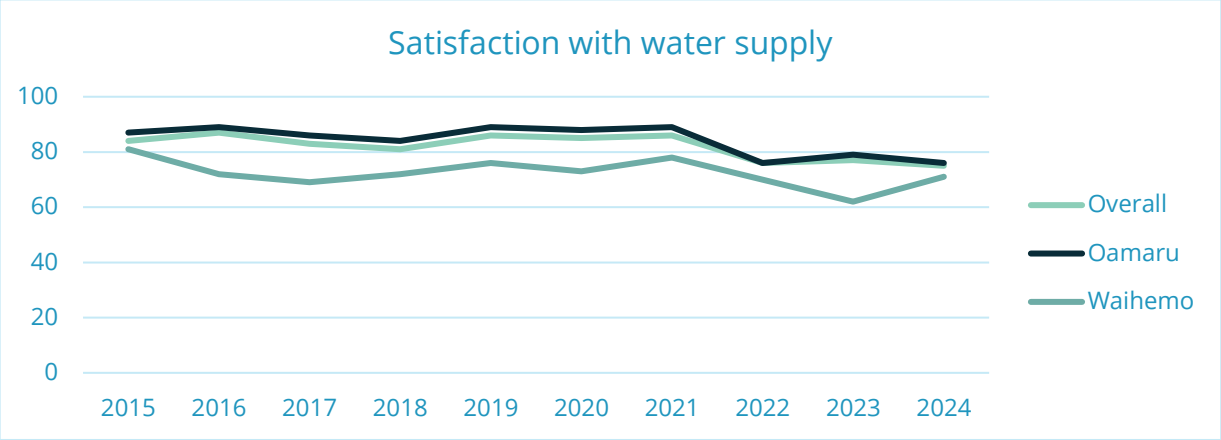
Performance target	2021/22	2022/23	2023/24
Attendance for urgent callouts: **One-hour median attendance time for urgent callouts.**	*Attendance for urgent callouts:* 1.1 hours. *Not achieved*	*Attendance for urgent callouts:* 1.5 hours. *Not achieved*	*Attendance for urgent callouts:* 0.6 hours *Achieved*
Resolution of urgent callouts: **24 hours median time for resolution of urgent call outs.**	*Resolution of urgent callouts:* 3.6 hours. *Achieved*	*Resolution of urgent callouts:* 4.9 hours. *Achieved*	*Resolution of urgent callouts:* 2.4 hours *Achieved*
Attendance of non-urgent callouts: **Two working day median attendance time for non-urgent callouts.** *	*Attendance of non-urgent callouts:* 0.4 working days / 4 working hours. *Achieved*	*Attendance of non-urgent callouts:* 0.7 working days / 6.1 working hours. *Achieved*	*Attendance of non-urgent callouts:* 0.5 working days / 4.4 working hours. *Achieved*
Resolution of non-urgent callouts: **Five working day median attendance time for non-urgent callouts.**	*Resolution of non-urgent callouts:* 0.7 working days / 6 working hours. *Achieved*	*Resolution of non-urgent callouts:* 1 working day / 9.3 working hours. *Achieved*	*Resolution of non-urgent callouts:* 0.8 working day / 6.7 working hours. *Achieved*

**A working day is any calendar day, between the hours of 8am-5pm, except for on Saturdays, Sundays, and public holidays. For routine fault notifications received outside of working hours, the service target response and resolution timeframes apply from 8am the next working day.*

Customer satisfaction

Council surveys customers annually to gauge their opinion on each issue and the trend across the results of each year's survey provides a long-term view of Council's performance. Overall satisfaction with the water supply activity improved markedly after 2005 and has remained relatively consistent in recent years, reflecting the investment Council has made into upgrading supplies around the district.





Historically the survey was conducted entirely via telephone interviews. In 2022, a mixed methodology was trialled, with some interviews being conducted via online surveys and some via the traditional telephone surveys. The results obtained via the online surveys were lower than telephone. Since 2023 the survey has been conducted entirely online.

Customer complaints

Council aims to deliver services to a standard where the number of customer complaints is minimised to the greatest extent possible. To measure performance, Council records any complaints relating to drinking water taste, drinking water odour, drinking water pressure or flow, continuity of supply, and drinking water clarity.

Target	2021/22	2022/23	2023/24	Notes
Fewer than 25 complaints per 1,000 connections to Council's networked reticulation system.	14 (183 complaints in total). *Achieved*	23 (279 complaints in total). *Achieved*	17 (228 complaints in total). *Achieved*	Significant progress has been made in asset renewal planning and problem assets (regularly failing, causing dirty water etc.) are being replaced or upgraded. This value should continue to drop as Council makes on-going investment in this space.

Average water consumption

Council measures the average consumption of drinking water per day per resident within the Waitaki District. This is based on production of water, rather than actual water use because most supplies in Waitaki are either restricted or on demand, rather than metered.

Target	2021/22	2022/23	2023/24	Notes
Fewer than 500 litres per day average consumption of drinking water per resident within the Waitaki District.	522 litres per day average. *Not achieved*	524 litres per day average. *Not achieved*	532 litres per day average. *Not achieved*	There was a small increase (less than 2% overall) in drinking water consumption between 2021 and 2024. Consumption on the Waitaki Valley supplies is higher than others and the recent leak detection programme has identified high leakage in private property. Community messaging around water usage and the impact a potential change in water billing could help to change behaviour. Council is also investigating a move towards universal metering in the later stages of the Long term Plan 2025-34.

Key AMP changes and additions since the 2021 AMP

Key changes to the Water Supply activity since 2021 include:

- Legislative changes – notably the introduction of the Water Services Act 2021 and Drinking Water Compliance Rules
- Government reforms – notably the introduction of *Local Water Done Well* and associated legislation following the 2023 general election
- Maheno Water Supply is now a zone within Ōamaru Water Supply
- Developing the Design Basis and Capacity Study for the Ōamaru Water Supply and commencing development of a new 50-year Ōamaru Water Supply Strategy

Where we are headed

Government reform

Following the change of Government in 2023, Council is required to implement the "Local Water Done Well" reforms, which will require us to reconfigure our water service delivery in a financially sustainable way. This will require Council to investigate collaborative models and partnerships that could support efficient and cost-effective water service management.

Under the new Local Government (Water Services Preliminary Arrangements) Act 2024, we must then produce a water service delivery plan by September 2025 detailing how water will be delivered in a financially sustainable way by 2028. This will require Council to decide how much and when to invest, and what to charge water supply consumers. The budgets for the AMP have been informed by the early development of this plan.

Council's implementation of the water services delivery plan will be monitored by the Department of Internal Affairs or the new economic regulator.

Compliance

Council's main focus for nearly two decades has been to improve water treatment throughout the district to comply with health legislation. Achieving compliance with the legislation and water services regulations is continuing. Major upgrades to supplies are expected to be substantially completed by the first year of this plan following significant investment by Council.

Operation and maintenance costs of the upgraded water treatment plants are expected to be significantly higher due to the more sophisticated treatment plants and increased monitoring of water supplies necessary to comply with the regulations.

Asset planning

In addition to the need to comply with water services legislation, there is an ongoing need to improve the quality of water network asset information to support maintenance and renewal planning and development of the water network to meet future demand. The continued development and implementation of a robust asset renewal programme is an ongoing area of focus.

The District's future development relies heavily on the availability of water and the responsible management, distribution and protection of existing and future water sources.

The Ōamaru bulk water system is likely operating beyond its sustainable capacity in terms of raw and treated water and typically lacks resilience and redundancy. Implementation of the Ōamaru Water Strategy will require significant capital investment.

Council extended the Ōamaru Water Supply to include Weston, Enfield, Kakanui; Hampden/Moeraki, Herbert/Waianakarua and Maheno and amalgamated Palmerston, Dunback and Goodwood to form the Waihemo Water Supply, effectively reducing the number of public water supplies and achieving economies of scale. Council will continue to investigate options to ensure the on-going affordability of the water supply through innovation in governing, operating and maintaining the water supplies.

Summary of key challenges for water supplies:

The following issues, if not addressed, are likely to impact on Council's ability to meet service levels for water supply over the next 9 years:

- **Balancing spending and funding** – including the increasing costs Council is facing to deliver water supply, increasing compliance requirements and community expectations for Council to deliver more for less, and the community's ability to pay water supply.

- **Compliance and reform** – including meeting new drinking water rules, resource consent compliance and the requirements of the new Local Water Done Well legislation.

- **Ageing infrastructure** - the average age of our water supply network is increasing, which may affect levels of service and the resilience of our water supply networks.

- **Ōamaru Water supply capacity and resilience** - over the coming decades, it is expected that the Oamaru Water Supply will come under pressure from increasing demand, climate change, changes in land use, and changes to consenting for the Waitaki River water take.

- **Climate change and increasing magnitude of storm events** - this is having a notable impact on the Waitaki district. Consequently, the resilience of Council's key infrastructure is being increasingly challenged. Storm events can significantly impact raw water quality, making the water harder to treat and impacting the capacity of our treatment plants.

- **Coastal erosion** – puts some of our coastal water assets at risk**.**

- **Population and economic growth** - will create additional demand on water supplies over the coming decade – notably for the Ōamaru Water Supply.

How we will meet the challenges

Council has been upgrading numerous treatment plants around the district over nearly two decades to meet the requirements of the Act. Water treatment will continue to be improved as needed to meet the requirements of the Health (Drinking Water) Amendment Act 2007 and Water Services Act 2021 and new Drinking Water Compliance Rules.

We have also improved our asset planning capability and undertaken a broader programme of renewal and upgrade works informed by more complete and detailed asset data.

Over the next ten years Council plans to:

- Maintain consumer's access to water
- Comply with the Water Services legislation and new regulatory framework
- Enable the future development, maintenance and renewal of the water network to meet the needs of current and future consumers
- Consult with the community on issues, including health and legislative compliance issues

Funding

This activity is funded by targeted rates collected from properties that have access to water supply systems. The Awahokomo water supply is not currently rated and is unlikely to require upgrading under the Water Services Act 2021. It is likely to be divested during the term of this Plan.

An overview of planned expenditure is outlined in the following tables and charts.

Planned operational expenditure – 2025 to 2027

The operations and maintenance programme covers all day-to-day activities that are required to manage the water supply activity.

Due to impending changes to service delivery under the Local Water Done Well reforms, Council is only including operational budgets for three waters activities for years 2025-26 and 2026-27 for this Activity Management Plan and the Long term Plan:

Operational budget	LTP Budget (000's)	
	2025/26	2026/27
Payments to staff and suppliers	5,742	5,715
Finance costs	1,987	2,423
Internal charges and overheads applied	20	27
TOTAL	**7,749**	**8,165**

Capital programme summary 2025-34

Project & Description	Year	Amount
New Capital Works – funded from loan, development contributions and reserves to create new assets or improve service levels		
Treatment plant upgrades to meet Drinking Water Standards		
• Bushy Creek	2025/26	$600,000
• Stoneburn	2025/26	$500,000
• Awamoko	2025/26	$800,000
• Tokarahi	2025/26	$2,000,000
• Kauru Hill	2025/26	$800,000
• Windsor	2025/26	$800,000
Upgrades and capacity		
• Mains upgrades (including Ōamaru North End Falling Main Upgrade)	2025 - 34	$12,800,000
• Lower Waitaki Water Supply capacity upgrade	2028/29	$500,000
• Appleby St suction main upgrade	2025 - 34	$100,000
• Oamaru Water Strategy (source resilience)	2028 - 34	$16,150,000
Universal water metering		
• Universal Water Metering	2033	$8,000,000
Water safety & improvements		
• Backflow Prevention Plan implementation	2025 - 27	$1,850,000
• Kurow Water Supply compliance and resilience	2025/26	$1,500,000
• Ardgowan Dam Upgrades	2025 - 27	$1,000,000
	Total	**$47.4m**

Renewals – funded from depreciation reserves to renew assets and maintain current service levels		
Facilities renewals	2025 - 34	$5,050,000
Mains renewals	2025 - 34	$17,100,000
Resource consent renewals	2027 - 33	$295,000
SCADA Renewals	2026 - 32	$1,670,00
	Total	**$24.1m**

Operational – funded from operational budgets to help maintain current service levels		
Leak detection programme	2025 - 34	$1,950,000
Condition assessments	2025 - 34	$1,550,000
Investigations (water metering/Otematata supply storage/Water Strategy Rest-of-District Stage Two)	2025 - 29	$230,000
Mains Flushing Programme	2025 - 34	$900,000
Restrictor Check Programme	2025 - 34	$135,000
	Total	**$6m**

Key Projects

Water Treatment Plant upgrades for the remaining small water supplies to comply with legislation and associated standards.

The preferred options for these smaller supplies will be those that are most cost-effective and affordable to build, run and continue producing safe, quality water that complies with New Zealand standards and legislative requirements.

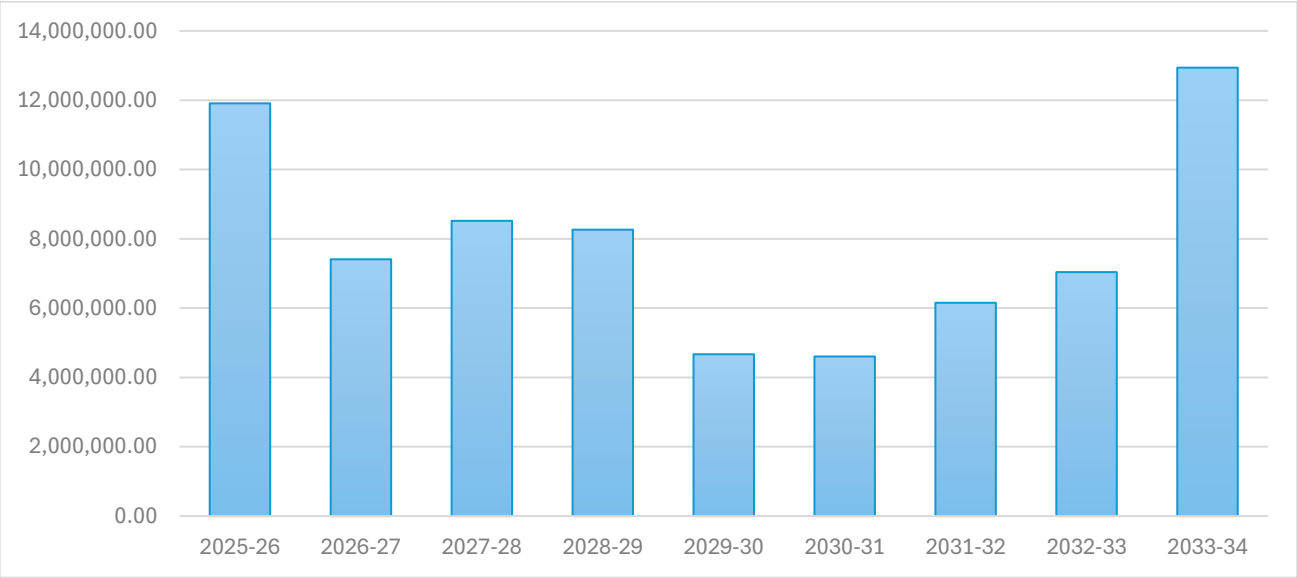
Capacity studies and upgrades to identify existing water system deficiencies, develop conceptual solutions and construct confirmed solutions e.g. new water source, raw water storage, pre-treatment and/or additional treatment. This will provide increased system resilience and the ability to meet future projected demand of safe, high quality drinking water.

The Ōamaru Water Strategy, which is a key driver for significant investment in the Ōamaru Water Treatment Plant and raw water source over the next nine years, reflects the outcomes of the Design Basis and Capacity Study work completed over the past few years. Design basis work and capacity studies for other supplies will be undertaken over the coming decade.

Water safety and improvements include the development and implementation of several plans and processes to secure the integrity of our water supplies through Water Safety Plans, Backflow prevention, etc. Regulatory changes require a multi-barrier approach to drinking water safety to manage risks, safeguard against the failure of any one barrier, support continuous improvement and guide day-to-day activities now and into the future.

Renewals safeguard the water source, treatment and distribution systems through optimum replacement of assets nearing the end of their operational life. The cost for renewal work (that is - upgrades, refurbishment or replacement of existing facilities and pipes to maintain capacity or performance) for water supplies is estimated to be $71.5m over the next nine years. All water supply renewal work will be funded by the annual depreciation provision where funds are available.

Total water capital and renewal projects 2025-34



What we cannot do

There are some operations and maintenance activities and capital projects that are required but are lower in priority and unable to be undertaken within the next nine years due to affordability and Council borrowing limits.

Council has been through an extensive process of ranking the most critical aspects of the programme and only including work that is considered critical to meeting service levels – or improving service levels to meet compliance requirements - now and over the next nine years. These are intended to be included in our Water Service Delivery Plan, required as part of the under the Local Government (Water Services Preliminary Arrangements) Act 2024.

Scaled back
Condition assessment of water infrastructure – scaled back from $100,000 to $50,000 for 2025/26
Leak Detection Programme – scaled back from $250,000 to $100,000 for 2025 - 2027

To off-set some of the reduction in the capital works programme, additional budget has been dedicated for other operational projects, including the leak detection and mains flushing programmes.

Funding impact statement

Council's Funding Impact Statement (FIS) for this activity is included in Appendix 1. This summarises in one place how this activity will be funded and how those funds will be applied over the next 10 years.

Risk, assumptions and uncertainties

Our present budget levels are generally sufficient to continue to manage risks in the medium term albeit with a focus on the most essential areas of the programme. However, if there is forecast work (operations, maintenance, renewal, acquisition or disposal) that cannot be undertaken due to available resources, there will be consequences to the levels of service for users.

There are also factors outside of the Council's control that can change and have an impact on Council's ability to achieve what it planned. The key risks and assumptions that relate to this activity include the impact of Government changes to water legislation, climate change impacts and the impact of growth.

The following uncertainties and key assumptions are specific to the water supply activity:

- Local Water Done Well: The nature of service delivery in response to these changes is uncertain. For the development of this plan, the service delivery model for the water supply activity has changed under Council's Transformation and will change again within the next few years under Local Water Done Well.
- We cannot be certain about the quantity of water that industrial users will require into the future. We have assumed that future use by existing industries will be in line with historic use. We have not planned for additional wet industries. If consumption of water is

significantly different to what we have assumed, it may have an impact on our future programme and budgets.

- Due to the uncertainty of how long each asset will last, to assist with renewal planning an average expected life is assigned for types of assets. Some assets will fail before reaching the end of their expected useful life, and some will last longer. We have assumed we will be able to manage this variance within set budgets by prioritising renewals annually.

1 Introduction

The purpose of this Activity Management Plan is to outline and to summarise in one place, the Council's strategic management and long-term approach for the provision and maintenance of its Water Supply activity. This is achieved through the planned management of assets, compliance with regulatory requirements, and the funding needed to provide the appropriate levels of service.

1.1 Rationale for Council involvement

The provision of water supply services is a core function of local government. The service provides many public benefits, and it is considered necessary and beneficial to the community.

Territorial authorities have numerous responsibilities relating to the supply of water. One such responsibility is the duty under the Health Act 1956 to improve, promote, and protect public health within their districts. This implies that, in the case of the provision of potable water, councils have the obligation to identify where such a service is required, and to either provide it directly, or to maintain an overview of the supply if it is provided by others.

Council's water supply assets contribute to conserving public health and enhance the quality of life of residents in urban areas of the District. The benefits to the District of rural water supplies also include animal health and farm productivity.

In terms of the Local Government Act 2002 Council is obligated to maintain the ongoing operation of water supplies unless it meets the specific criteria set out by the Local Government Act 2002 allowing the closure or transfer of the water supply.

The focus for the Three Waters activity is to ***Protect Public Health and the Environment***, while also continuing to support growth and economic development. For water supply, this includes ensuring compliance with the Health Act and Water Services Act 2021 and the new drinking water regulatory framework.

1.2 Goal and principal objectives for water supply

Council's goal for its water supply activity is:

"To protect public health and promote the social, economic, environmental and cultural wellbeing of Waitaki by providing a safe, reliable, sustainable and cost-effective water supply that meets the needs of consumers."

In meeting its water supply goal, Council plans to ensure:

- The water is safe to drink
- The water is clean in appearance, good to taste and has no smell
- The water supply is reliable at a consistently adequate pressure for urban water supplies
- The water supply is reliable at a constant flow for the rural water supplies
- That a firefighting supply is available, where appropriate
- The service is efficient and at a reasonable cost (cost-effective)
- The response to callouts is quick and efficient, based on the level of criticality

1.3 Strategic alignment

In 2023, Council adopted a strategic framework for Waitaki, as outlined on page 9 of this document. This framework guides Council's decision-making, providing a focus for staff and elected members for all activities and service delivery.

The Waitaki District Council vision for the future is:

Waitaki, the Best Place to Be / Waitaki – Whenua taurikura

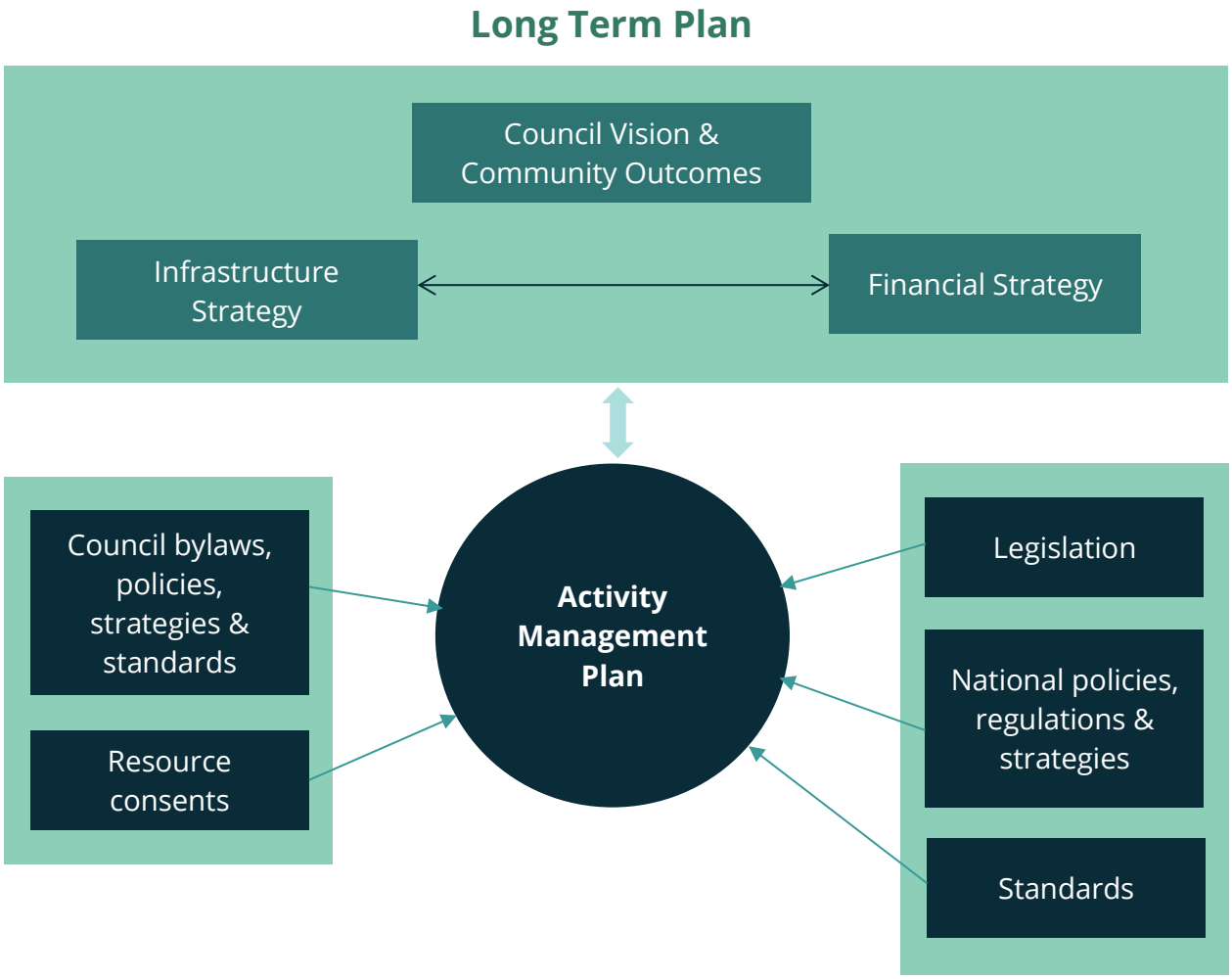
The following key objectives (community outcomes) will contribute to achieving this vision:

- Strong Communities
    - Enabling safe, healthy communities
    - Connected, inclusive communities
    - Promoting a greater voice for Waitaki
    - Celebrating our community identity
- Valued Environment
    - Protecting our diverse landscapes and water bodies
    - Meeting environmental and climate change challenges
- Prosperous District
    - Attracting new opportunities
    - Supporting local businesses
    - Fostering a diverse and resilient economy
- Quality Services
    - Robust core infrastructure and services
    - Community facilities and services we are proud of

To deliver the vision there must be a clear 'line of sight' between the high-level organisation policy, strategic plan and objectives, and the daily activities of managing our assets.

This Activity Management Plan (AMP) is a key part of the planning process and is guided by the framework. It supports and underpins the financial forecasts and work programmes contained in documents like Council's Long Term Plan and Annual Plans.

The drivers and constraints that influence how Council manages its activities are both internal and external and include legislations, policies, strategies and standards:



1.4 Long Term Plan

The Long Term Plan sets Council's strategic direction and work programme for the 10 years ahead. It outlines the services we will provide, the projects we will undertake, the cost of doing this work, how it will be paid for and how we will measure quality and our effectiveness.

The issues we face and the context within which we work are continually evolving. For this reason, a Long Term Plan is produced every three years.

Council resolved to defer the 2024 Long Term Plan for a year, meaning that Council produced an enhanced 2024-25 Annual Plan and will now produce a nine-year Long Term Plan for 2025-34. There will only be two years between the next two~~o~~ Long Term Plans to bring the three-yearly planning cycle back into line.

The decision comes after the Government gave local authorities the flexibility to defer their Long Term Plans amid uncertainty around the future of three waters service delivery in 2023.

1.5 Infrastructure Strategy

Council's Infrastructure Strategy informs this Activity Management Plan. The strategy takes a 30-year view, laying out the most likely scenarios for how our critical infrastructure will be managed, and the important challenges and decisions we are likely to face as a community.

Water supply delivery has been included in this Infrastructure Strategy for years 1 and 2 only, with the assumption that Council will continue to deliver the activity over this time. Following recent Government reform, Council must reconfigure its water service delivery in a financially sustainable way. By September 2025, Council is required to document, through a water service delivery plan, how water can be financially sustainably delivered for the district by 2028. This may include a joint Council delivery model or a Council Controlled Organisation.

The Infrastructure Strategy has identified the following key issues affecting Council's infrastructure in the next 30 years: Compliance and reform; Climate change and resilience; Growth and demand; Ageing infrastructure; Meeting community needs and expectations

1.6 Financial Strategy

The primary purpose in the Local Government Act 2002 (LGA) is to promote prudent financial management. Our Financial Strategy, which must address the ten years of the Long Term Plan, needs to take into account all relevant aspects of the LGA including the need to balance current and future needs of the community. This is particularly relevant to the Strategy as it sets out Council's approach to how it intends to allocate levels of spending over the short and medium term and how it will use the funding options available to it to share the funding between the current and future residents and ratepayers.

The Strategy must provide a context for consultation on Council's proposals for funding and expenditure by making transparent the overall effects of those proposals on the local authority's services, rates, debt, and investments.

Among other things, it must also outline the expected capital expenditure on network infrastructure required to maintain existing levels of service, quantified limits on rate increases and borrowing, and an assessment of our ability to provide and maintain existing levels of service and to meet additional demands for services within those limits.

More information about the Strategy is included under **Section 9: Financial summary**.

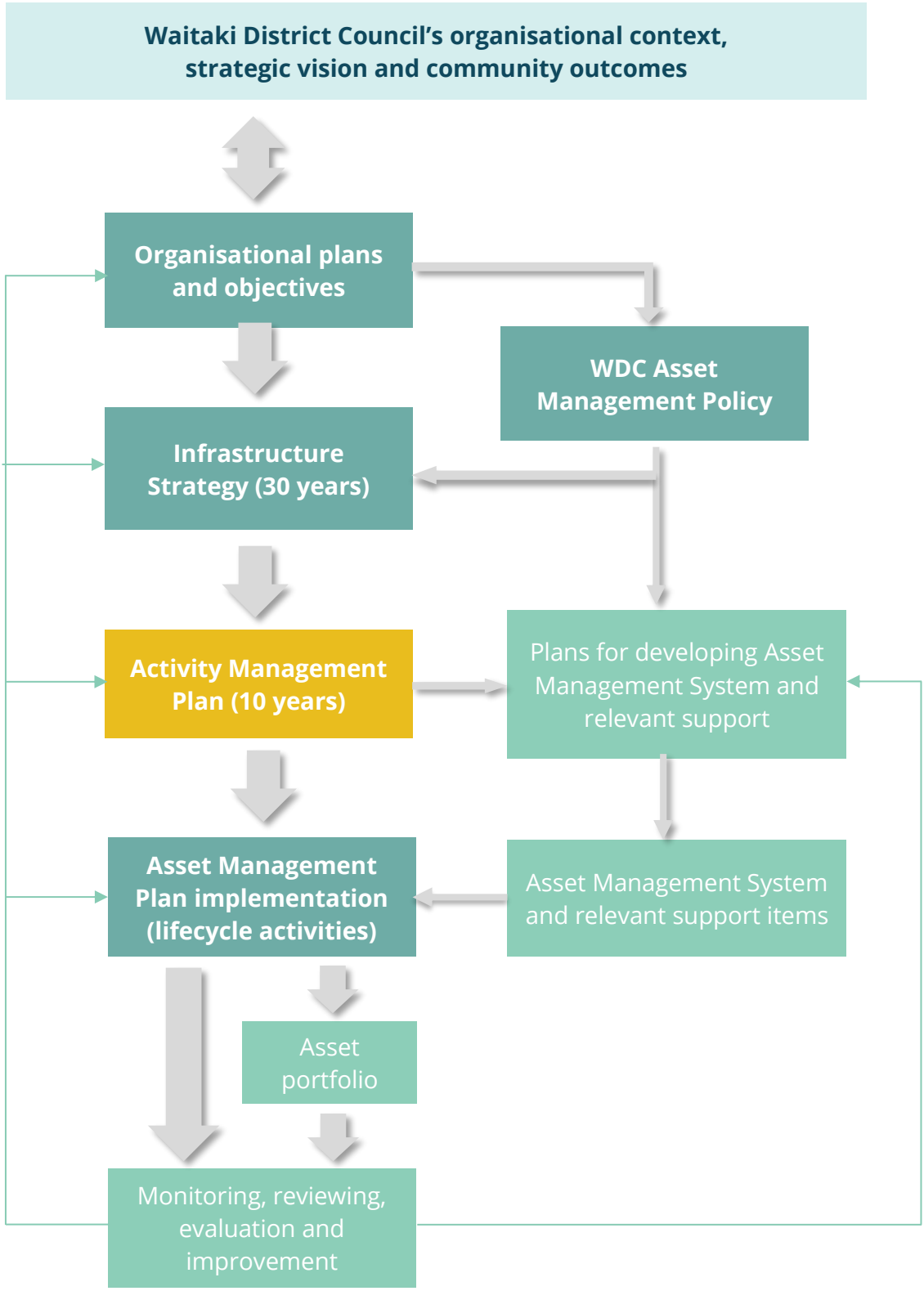
1.7 Key Council water supply documents

The following water supply-specific Council-adopted documents are key to this activity:

- Asset Management Policy 2010
- Waitaki Water Supply Bylaw 2021
- Drinking Water Safety Plans
- Policy of Drinking Water Quality 2020
- Backflow Prevention Policy 2021
- Asbestos Cement Pipe Policy 2024

Appendix 7 in this plan provides further details and outlines all other key legislation and regulation, and other Council plans and policies with linkages to the Water Supply Activity.

The diagram below outlines this connectivity between the asset planning cycle for Water Supply, and Council's broader planning context:



1.8 Community outcomes and the four well-beings

The Local Government (Community Well-being) Amendment Act 2019 resulted in a change in the purpose of local government, which is to promote community wellbeing.

This means local authorities are again responsible for improving the social, economic, environmental and cultural wellbeing of our communities.

Council's supply of reliable, quality drinking water contributes to all four well-beings to varying extents through alignment to its strategic framework and meeting the levels of service outlined in this Activity Management Plan.

Community outcomes	Levels of service	Community wellbeing contribution
Strong Communities Enable safe and healthy communities	Council will take all practicable measures to supply water that is safe to drink and compliant with relevant legislation	**Economic** – protecting public health and maintaining business continuity **Social/cultural** – community and cultural resilience through better health outcomes
Valued environment Protecting our diverse landscapes and water bodies Meeting environmental and climate change challenges	Avoiding wastage within the reticulation system Reducing water consumption where necessary and appropriate through education and enforcement	**Environmental** – protecting the health of water bodies for future generations **Economic** – minimizing the cost of water supply for households and businesses **Social/cultural** – water bodies and valued and cared for in accordance with social and cultural expectations
Quality services Robust core infrastructure and services	Council responds to service requests and system failures in a timely manner The community experiences a consistently good standard of water quality	**Environmental** – protecting the health of water bodies for future generations **Economic** – keeping businesses and households running and resilient **Social/cultural** – supporting quality of life through reliable, consistent service delivery and quick resolution of issues
Prosperous district Attractive to new opportunities Foster a diverse and resilient economy	Council's planning for water supply infrastructure and treatment provides for current and future needs	**Economic** – supporting economic resilience and growth **Social/cultural** – ensuring sufficient water is available for meeting current and future community and cultural needs

1.9 Engagement on strategic direction

Council has determined customer expectations for water supply through formal and informal consultation with the community over many years, including upgrades to supplies.

Appropriate community participation in Council decision-making is desirable and enhances the quality of decision-making for the district, and we are committed to the principle of consultation with or without the specific legislative requirements.

Council adopted its first Significance and Engagement Policy in 2014, and in August 2023, a new Significance and Engagement Policy was adopted. The policy provides a procedure to determine the significance of any decision and provides a community engagement guide.

Long Term Plan engagement

This Activity Management Plan informs and is informed by Council's Long Term Plan – which includes a review and update of its Financial Strategy and Infrastructure Strategy.

Council consults with the community during every three yearly Long Term Plan process and will engage with the community to develop the 2025-34 Long Term Plan in a variety of ways – both to meet statutory requirements and in accordance with its Significance and Engagement Policy 2023.

This engagement is likely to include:

- Pre-engagement activities to develop aspects of the draft plan
- A one-month consultation period through a Consultation Document identifying Council's key proposals for progressing its strategic vision and framework for the Waitaki District for the next nine years.
- A targeted social media campaign.
- Drop-in sessions at various locations around the district.

Fostering Māori Contribution to Council's Decision-making Process

Iwi-Council partnership is a key driver for achieving long term success and equitable outcomes within the Waitaki District.

Council is committed to strengthening its relationships with mana whenua and continuously fostering the development of Māori capacity to contribute to local decision-making processes, through giving effect to the principles of Te Tiriti o Waitangi and by participating in genuine and meaningful engagement with mana whenua.

Council acknowledges Te Rūnanga o Ngāi Tahu is the representative of Ngāi Tahu Whānui and that where any enactment requires engagement with any iwi or any iwi authority, that engagement shall, with respect to matters affecting Ngāi Tahu Whānui, be held with Te Rūnanga o Ngāi Tahu.

Council endeavours to engage genuinely and meaningfully with mana whenua.

A Partnership Agreement between Te Rūnanga o Moeraki and Council is under development (2023).

Te Mana o te Wai refers to the vital importance of water. When managing freshwater, it ensures the health and well-being of the water is protected and human health needs are provided for before enabling other uses of water.

The National Policy Statement NPS-FM 2020 intends for tangata whenua to be involved in the management of freshwater (including decision-making processes). Giving effect to Te Mana o te Wai requires local authorities to actively involve tangata whenua (to the extent they wish to be involved) in freshwater management.

To further foster the development of Māori capacity to contribute to local decision-making, Council is actively taking steps towards developing Council's internal capability for engaging with mana whenua, by investing in opportunities for both the Governance Team and Council staff to develop their knowledge of Te Ao Māori and build their cultural competency.

1.10 Monitoring and Reporting

Measuring and reporting on customer levels of service is achieved through the customer satisfaction survey. More than half (68%) of residents are connected to the Ōamaru Water Supply and 8% are connected to the Waihemo Water Supply. As a result, the resident satisfaction survey is conducted among these consumers.

The customer satisfaction survey is undertaken annually and is used as a benchmark for the following year. The trend across the results of each year's survey provides a long-term view of Council's performance.

Reporting on the achievement of customer levels of service can be compared across different activity groups to provide internal benchmarking within Council and combined to provide an indication of the contribution towards community outcomes and wellbeing.

Measurement and reporting of technical service standards is essential for the prudent management of the water activity. Measures reported on in our Annual Report are mandated by the Department of Internal Affairs.

Regarding water quality in particular, frequent monitoring and reporting is integral to meeting the Drinking Water Compliance Rules.

1.11 Asset Management Policy

Council's 2010 Asset Management Policy sets the appropriate level of asset management practice for Council's Water Activity as 'Core Plus'.

'Core Plus' (now referred to as 'Intermediate') asset management practice is undertaken at a level between 'Core' and 'Comprehensive' practice. The focus is to build on the basic technical activity management planning of 'Core' practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques.

2 Strategic challenges and responses

In developing the Infrastructure Strategy in advance of the 2025-24 Long Term Plan, Council identified key issues specific to the Water Supply activity, which are summarised below. Council's general responses to these issues are also included.

Government reform

Following a change of Government in 2023, Council is required to implement the "Local Water Done Well" reforms, which will require us to reconfigure our water service delivery in a financially sustainable way.

This will require Council to investigate collaborative models and partnerships that may support efficient and cost-effectiveness water service management and produce a water service delivery plan by September 2025 detailing how water can be delivered in a financially sustainable way by 2028.

When, how much to invest, and what to charge in three waters will not be just for Councils in the future. A decision on the water services model for the Waitaki district will be required within 1-2 years of this strategy being in place. A water services delivery plan is required to be developed by September 2025 documenting how affordable water can be delivered by Council. Council will be required to follow these plans, and they will be monitored by Department of Internal Affairs or the economic regulator.

The capital expenditure budgets for the AMP have been informed by the early development of the water services delivery plan.

Compliance

Council's main focus for nearly two decades has been to improve water treatment throughout the district to comply with new legislation. Achieving compliance with the legislation and water services regulations is continuing and expected to be substantially completed by the first year of this plan following significant investment by Council.

Operation and maintenance costs of the upgraded water treatment plants are expected to be significantly higher than current due to the more sophisticated treatment plants and increased monitoring of water supplies necessary to comply with the Regulations and Rules.

Council extended the Ōamaru Water Supply to include Weston, Enfield, Kakanui; Hampden/Moeraki, Herbert/Waianakarua and Maheno and amalgamated Palmerston, Dunback and Goodwood to form the Waihemo Water Supply, effectively reducing the number of public water supplies and achieving economies of scale. Council will continue to investigate options to ensure the on-going affordability of the water supply through innovation in governing, operating and maintaining the water supplies.

Asset planning

In addition to the need to comply with water services legislation, there is an ongoing need to improve the quality of water network asset information to support maintenance planning and

development of the water network to meet future demand. The continued development and implementation of a robust asset renewal plan is an ongoing area of focus.

The District's future development relies heavily on the availability of water and the responsible management, distribution and protection of existing and future water sources.

The Ōamaru bulk water system is likely operating beyond its sustainable capacity in terms of raw and treated water and typically lacks high levels of robustness and redundancy. Implementation of the Ōamaru Water Strategy will require significant capital investment.

Ōamaru source water has notable vulnerabilities and limited redundancy. The Lower Waitaki Irrigation Company, from whom we source our water from the Waitaki River, is required to apply for new resource consents in the near future, which will require significant upgrades to their supply network. Council, as a shareholder, will need to contribute to these. Distribution is likely reasonably robust with high levels of inter-connectiveness increasing redundancy/robustness in more densely developed areas. Bulk and pumped infrastructure lacks redundancy and generally has lower robustness.

Overview of key challenges

Challenge	Impacts	Response
Balancing spending and funding	Council is continuing to face increasing costs to deliver water supply – including inflation, interest rates, insurance. There are also increasing compliance requirements and community expectations for Council to deliver more for less. While inflationary pressures in the procurement of materials have eased, cost increases are still being experienced across the board. This has had an impact on the cost of delivering projects. The Waitaki community also has a relatively low discretionary income and population density relative to many parts of New Zealand which can result in a reduced willingness / ability to pay.	In general Council will seek to: ○ Use appropriate funding mechanisms. ○ Fund growth-driven capital expenditure through development contributions. ○ Fund capital expenditure to increase levels of service through borrowing ○ Fund renewals from revenue sources e.g. rates and charges ○ Fund depreciation on most infrastructural assets. Council will also consider the following measures to address the issue of affordability over the lifetime of this Strategy: ○ Appropriately prioritising Council work programmes. ○ Scaling the size of Council's capital programme to ensure that it's deliverable. ○ Water metering to raise awareness of water use and promote the value of water. ○ Deliver a new water service delivery model in accordance with "Local Waters Done Well" requirements.

Challenge	Impacts	Response
Compliance and reform	Council will be required to implement the "Local Water Done Well" reforms, and to reconfigure its water service delivery in a financially sustainable way. This will require Council to investigate collaborative models and partnerships that may support efficient and cost-effectiveness water service management. Over the next 10 years some consents relating to our water supplies will need to be renewed and the standards that we are required for some supplies are likely to may change – especially in the Waihemo area. Reporting requirements for Taumata Arowai and the Regional Councils continue to increase terms of both complexity and detail, which has required a corresponding increase in time and resources to manage. The new Building (Dam Safety) Regulations 2022 came into effect this year, which will require new consenting and improvements for Ōamaru's Ardgowan Dam, and development of a Dam Safety Assurance Programme by mid-2025.	Maintain a close watching brief and be open to finding optimum solutions that meet the requirements of central and regional government. Producing a water service delivery plan by September 2025 detailing how water can be delivered in a financially sustainable way by 2028. Meeting our consent requirements for water take consents. Our plan includes budgets to complete upgrades to our plants or network when our consents are required to be renewed. Communicate with both regional councils - Environment Canterbury and Otago Regional Council on Regional Policy Statement changes and development and regional plan changes. Council will continue developing the Dam Safety Assurance Programme to meet the new regulations. To date, the required Potential Impact Classification assessment has been completed and submitted by the required timeframe. Council staff will also continue working closely with specialist engineers and Otago Regional Council staff to ensure all required consent applications are submitted and any required safety improvements are identified and implemented.
Drinking Water Standards	Changing Government priorities for small water supplies further complicate Council's response. The Government is proposing several changes to the drinking water quality regulatory regime. These include reducing the burden on very small drinking water supplies by excluding 'shared domestic supplies' serving 25 consumers or fewer from regulation.	Options to address this issue include: ○ Implementation of improvement items outlined in the Drinking Water Safety Plans ○ Other interventions, as directed by the new changes

Challenge	Impacts	Response
Ageing infrastructure	The average age of our water supply network is increasing. This means service interruptions or total failure become more likely, which may affect levels of service and the resilience of our water supply networks. Those parts of our network which are ageing or in poor condition are more likely to leak, meaning that a percentage of all water that we source and/or treat is lost.	Council's older cast iron mains have been condition assessed. As a result, the expected life of these has not been extended, so they will be due for replacement soon. Council is now monitoring these and planning for renewal. Council undertook water supply pipe renewal forecast modelling to forecast water network deterioration over the next 30 years. It concluded that: • A significant portion of the water supply pipe network in Waitaki District is operating at the end of its useful life • Increased capital expenditure (CAPEX) is needed to reduce risk and break rates • Prudent investment will consider the "deliverability" of the renewal programme and balancing risk, break rates, investment levels and the non-financial impact of breaks. • Mid-ranged investment scenarios provide a prudent balance of these considerations. Overall, Council's approach to ageing water supply infrastructure will be to: • Prioritise asset replacement based on the asset's degree of criticality. • Renew critical assets before the end of their useful life. • Provide for progressive replacement of individual assets that have reached their end of life. • Renew non-critical infrastructure when failure rates become intolerable. • Continue to improve data collection on asset condition and performance. • Review levels of service on non-critical assets.

Challenge	Impacts	Response
Ōamaru Water supply capacity and resilience	Over the coming decades, it is expected that the Oamaru Water Supply will come under pressure from increasing demand, climate change, changes in land use, and changes to consenting for the Waitaki River water take. The treatment plant is currently not operating at full capacity due to treatment process constraints. The Ōamaru bulk water system is likely operating beyond its sustainable capacity in terms of raw and treated water and typically lacks high levels of robustness and redundancy. Source water has notable vulnerabilities and limited redundancy. Bulk and pumped infrastructure lacks redundancy and generally has lower robustness.	The Ōamaru Water Strategy is currently being developed and the design basis is complete. Phase One of the strategy has considered and assessed process improvements that will improve current WTP performance in the shorter term to 24 megalitres per day (MLD), but within a future design envelop of 42 MLD by year 2070. Budgets are included in LTP to support the implementation of this. Phase Two of the strategy is under development and focused on raw water capacity. Phase Three will explore additional treatment plant capacity and hinterland supply.
Climate change and resilience - general	The changing climate is having a notable impact on the Waitaki district. Consequently, the resilience of Council's key infrastructure is being increasingly challenged. Climate change may mean that the lifespan of our assets is shorter than planned, or that maintenance costs increase. It may also mean that repairs are needed more frequently or that materials deteriorate more quickly. For water supplies, this may mean a shift in demand profiles, increased pressure on water treatment and aquifers, and increased frequency and duration of drought puts strain on water sources.	Council's ongoing response to climate change is influenced by central and regional government direction. One challenge in this space is that the Waitaki district spans across two regional council boundaries – Canterbury and Otago. A Canterbury Climate Partnership Plan has been developed with input from all Canterbury councils, including Waitaki, and shows how councils will work together on specific climate actions to help minimise the impacts of climate change on Canterbury's communities and ecosystems. The plan includes ten primary actions focused on addressing key gaps, priority risks, and opportunities. Otago Regional Council has also prepared an Otago Climate Change Risk Assessment summarising the key risks

Challenge	Impacts	Response
		that the Otago region is facing due to climate change. Council has developed high level climate change projections for the Waitaki District as part of phase 1 of its Climate Change Risk Framework. A Council Climate Strategy is due to be developed in 2025. This strategy will identify how Council will respond to climate change both within the organisation and across the district, and document Council's roles and responsibilities to meet climate adaptation and mitigation goals. In the absence of a climate strategy, to address the impacts of a changing climate, Council will: o Apply national and regional directives and relevant legislation o Initiate conversations and planning with climate-impacted communities o Allocate adequate funding in current and future long-term plans to address the implications of climate change o Increase knowledge, data and capability in understanding the effects of climate risks and to make decisions based on the effects of climate risks o Apply climate risk into design of long-life infrastructure o Embed prioritisation of investment decisions in a way that improves infrastructure resilience

Challenge	Impacts	Response
Increasing magnitude of storm events	Storm events can significantly impact raw water quality, making the water harder to treat and impacting the capacity of our treatment plants. In some cases, where turbidity levels are high, raw water to plants must be turned off until the levels return to normal. Extreme storm events can also compromise dam safety - notably the safety of Ōamaru's Ardgowan Dam, which is classified as flood prone.	Recent plant upgrades have been designed to increase resilience to storm events – e.g. Omarama. Council is also undertaking work to increase the resilience of existing treatment plants in both the shorter and longer terms, notably the Oamaru Water Treatment Plant. Council is developing a Dam Safety Assurance Programme and Emergency management Plan for the Ardgowan Dam, which will increase its resilience and safety during severe storm events.
Coastal erosion	Coastal mains are potentially at risk from increasing coastal erosion.	Council will continue monitoring coastal mains and planning for future relocation, if required.
Growth and demand	Population and economic growth will create additional demand on water supplies over the coming decade – notably for the Ōamaru Water Supply.	Council will plan for additional water supply infrastructure capacity to cope with increased demand for the service due to population growth or increased usage. We are committed to sustainable growth and effective demand management. We will invest in water infrastructure strategically. Notably, the Ōamaru Water Supply strategy takes a 50-year view to ensuring raw water availability, treatment plant and network infrastructure will provide sufficient capacity to meet the future needs of the greater Oamaru population – including south to Moeraki and into the hinterlands to the west of Oamaru. We will also: • Prioritise investment in compliance-driven water supply infrastructure. • Investigate options to manage the demand for water through the use of water meters.

Challenge	Impacts	Response
		• Ensure existing commitments are completed before investing in new initiatives. • Review demand for services including treated water for use for irrigation or as stockwater.
Meeting social and cultural needs and expectations	There is increasing recognition of the significance and cultural value of water to Mana Whenua, which may impact existing water source takes and capacity for growth on these supplies. There are changing social views on water use, with more emphasis on sustainable use of this resource, which may conflict with economic development aspirations.	Council will continue to ensure that the social and cultural expectations and needs of our communities are well considered for current and future generations. This will include continuing to provide reliable and resilient waters infrastructure, while seeking to balance the needs and views of different interests. Overall, we will: • Engage with community, where appropriate, to understand local priorities. • Review activities where ratepayers are subsidising private or commercial benefit.
Recruitment and retention	Recruitment and retention of suitably qualified and experienced water engineers will be an ongoing challenge for the sector, as uncertainty around the direction of the Government's Local Water Done Well continues.	Council's Transformation project has created a new organisational design to foster a more integrated approach to all its activities, including asset planning and compliance. The programme also seeks to make Council an employer of choice by providing greater opportunities for staff to diversify their roles. This model is expected to remain in place for the first few years of the plan until Council's Water Services Delivery Plan is confirmed and fully implemented.

3 Our water supply assets

3.1 Water supplies

Council owns 15 separate water supply systems, comprising:

- Ōamaru – supplying a mix of on-demand and restricted zones (including formerly stand-alone supply areas of Weston, Enfield, Kakanui, Reidston, Maheno, Herbert-Waianakrua, Hampden-Moeraki)
- Waihemo - supplying a mix of on-demand and restricted zones from Palmerston south to Goodwood and inland to Dunback (formerly stand-alone supply zones)
- Five township supply systems (Kurow, Lake Ōhau, Ōmārama, Ōtematatā and Duntroon)
- Eight rural water supply systems operated by Council (Lower Waitaki, Bushy Creek) or a third party (Awahokomo, Awamoko, Kauru Hill, Tokarahi, Windsor)

The urban supplies provide water for domestic and industrial use with firefighting capabilities, while restricted supplies provide stock and domestic water without normal firefighting capabilities.

Table 3.1-1: Council-owned water supplies

Supply	Population (WINZ)	Type of Supply	Source	Treatment	Storage (m^3)	Pump stations	Pump Sets	Reticulation (km)	Valves	Hydrants	Replacement Value
Ōamaru	15,561	U & R	WR	F, Cl_2, O_3	23,050	12	14	843	1,770	1,166	180,834,742
Kurow	330	U	B	UV, Cl_2	360	1	1	16	81	58	6,252,867
Lake Ōhau	36	U	G	N	180	-	-	4	9	15	1,720,068
Ōmārama	270	U	B	F, UV, Cl_2	940	1	1	16	89	43	9,297,913
Ōtematatā	195	U	G	170m	220	1	1	17	124	78	9,703,978
Waihemo	1,357	U & R	B	F, Cl2, UV	1,750	2	2	257	309	84	23,355,151
Awahokomo	21	R	G	N	97	-	-	9	-	-	715,149
Awamoko	399	R	WR	F, Cl2	97	2	4	76	16	-	4,368,780
Duntroon	81	R	B	F, UV, Cl_2	90	1	1	7	16	9	973,389
Kauru Hill	197	R	G	Cl_2	180	1	1	83	31	1	3,825,072
Lower Waitaki	778	R	B	Cl_2, UV	180	2	2	100	126	2	5,450,076
Bushy Creek	29	R	C	N	13	-	-	28	8	-	800,400
Stoneburn	86	R	G	Cl_2	180	2	2	96	32	1	7,421,456
Tokarahi	573	R	G	Cl_2	430	2	3	295	208	4	14,532,984
Windsor	137	R	R	Cl_2	180	-	1	54	26	1	2,790,474
Water Total	**20,050**				**27,947**	**20**	**23**	**1,901**	**2,845**	**1,462**	**$272,042,499**

Type of Supply:
U = Urban (on demand)
R = Restricted

Source – *Population – Taumata Arowai Registered Pop. (July 2022)*

Source:
B = Bore
C = Creek
G = Gallery
R = River:
WR = Water Race

Treatment:
Cl_2 = Chlorine
F = Filtration
N = No treatment/disinfection
O_3 = Ozone
UV = Ultraviolet Irradiation

It is estimated that 90% of Waitaki's usually resident population are supplied water from Council's reticulated water supplies.

Divestment

From time-to-time Council receives applications from water supply consumers to privatise their water supply. This is possible subject to meeting the conditions under Sections 131 and 135 of the Local Government Act 2002 and the Water Services Act 2021.

Specific management issues related to privatisation of public supplies include but are not limited to:

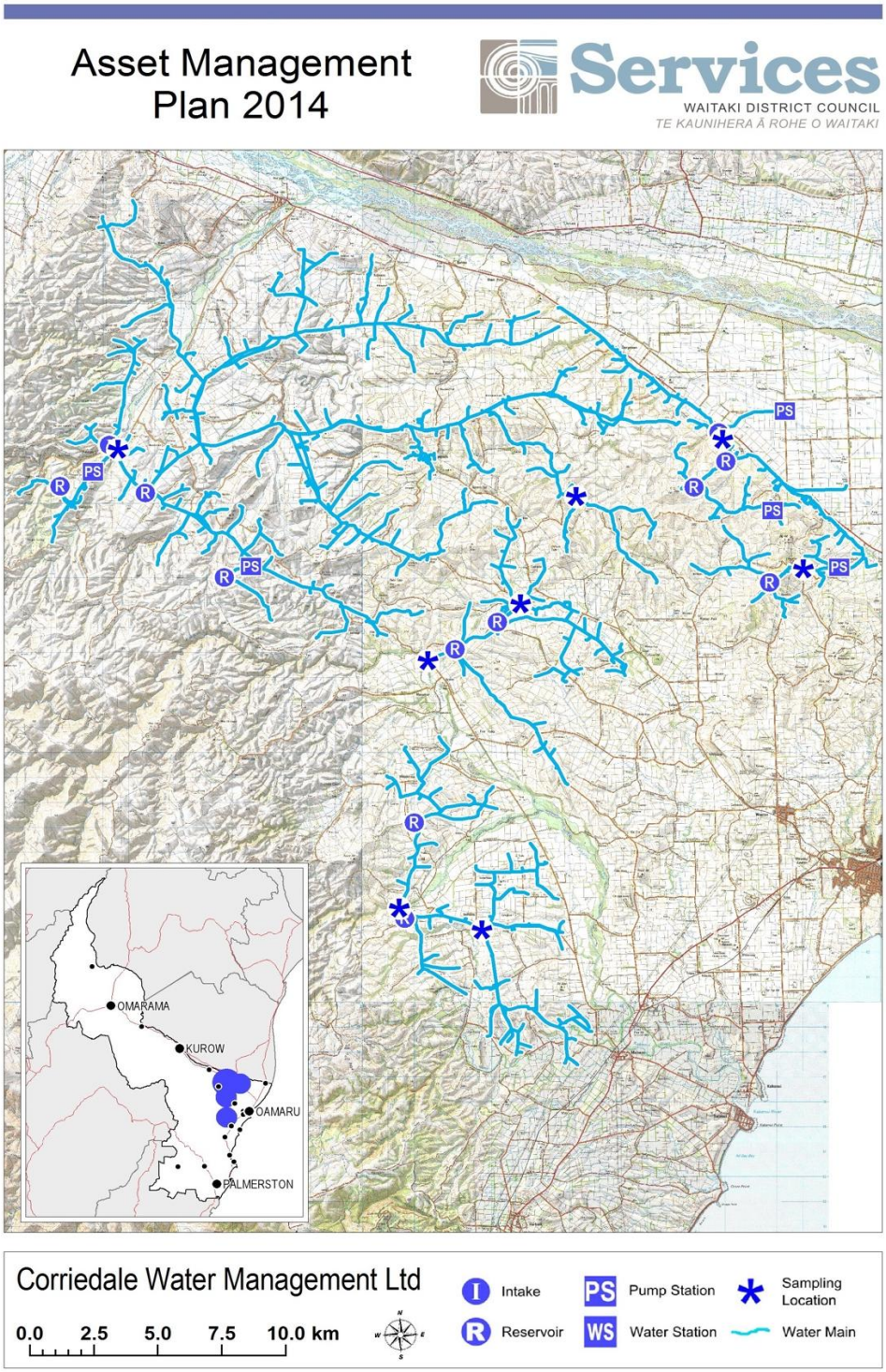
- Ensuring compliance with the Health Act and the DWSNZ and Water Services Act
- Designated properties – procedure to terminate/transfer
- Public utilities on private properties have a measure of protection under the LGA 2002. Private utilities may require easements or formal agreements
- Service Level Agreement to manage, regulate and protect private infrastructure (replacing the Council Bylaw)
- Ownership and associated responsibilities

Corriedale Water Supplies

The operational management of the Awamoko, Kauru Hill, Tokarahi and Windsor water supplies is undertaken by Corriedale Water Management Limited (CWML). The arrangement was established in December 2013 and is currently administered by a Memorandum of Understanding. Two formal reviews and a risk assessment have been carried out to determine CWML's performance against the MoU and highlighted several areas for improvement. In June 2017 Council resolved (AC 17/022) for CWML to action the required improvements within set timeframes.

A review of the current management arrangements is currently underway and is expected to be resolved by the commencement of this plan.

Figure 3.1-2: Corriedale Water Management



In 2016, the Dunrobin water supply was privatised in accordance with the LGA requirements. The supply is now owned and managed by Dunrobin Water Supply Inc.

Council and the Awahokomo Operational Liaison Group have discussed an intention to privatise the Awahokomo water supply and this is expected to occur in the life of this plan.

Other Waitaki supplies

Council also owns five campground water supplies in Waitaki, which will be detailed in a separate Parks Activity Management Plan.

In addition to those areas served by public supplies, private water supplies serve some areas.

Section 6, Schedule 10 of the LGA requires Council to identify any variations between the Water and Sanitary Assessments (WSSA) and the Long Term Plan 2025-34.

Within the Three Waters services supplied by Council there have been significant changes and improvements to the infrastructure and consequently a reduction in risks for the community.

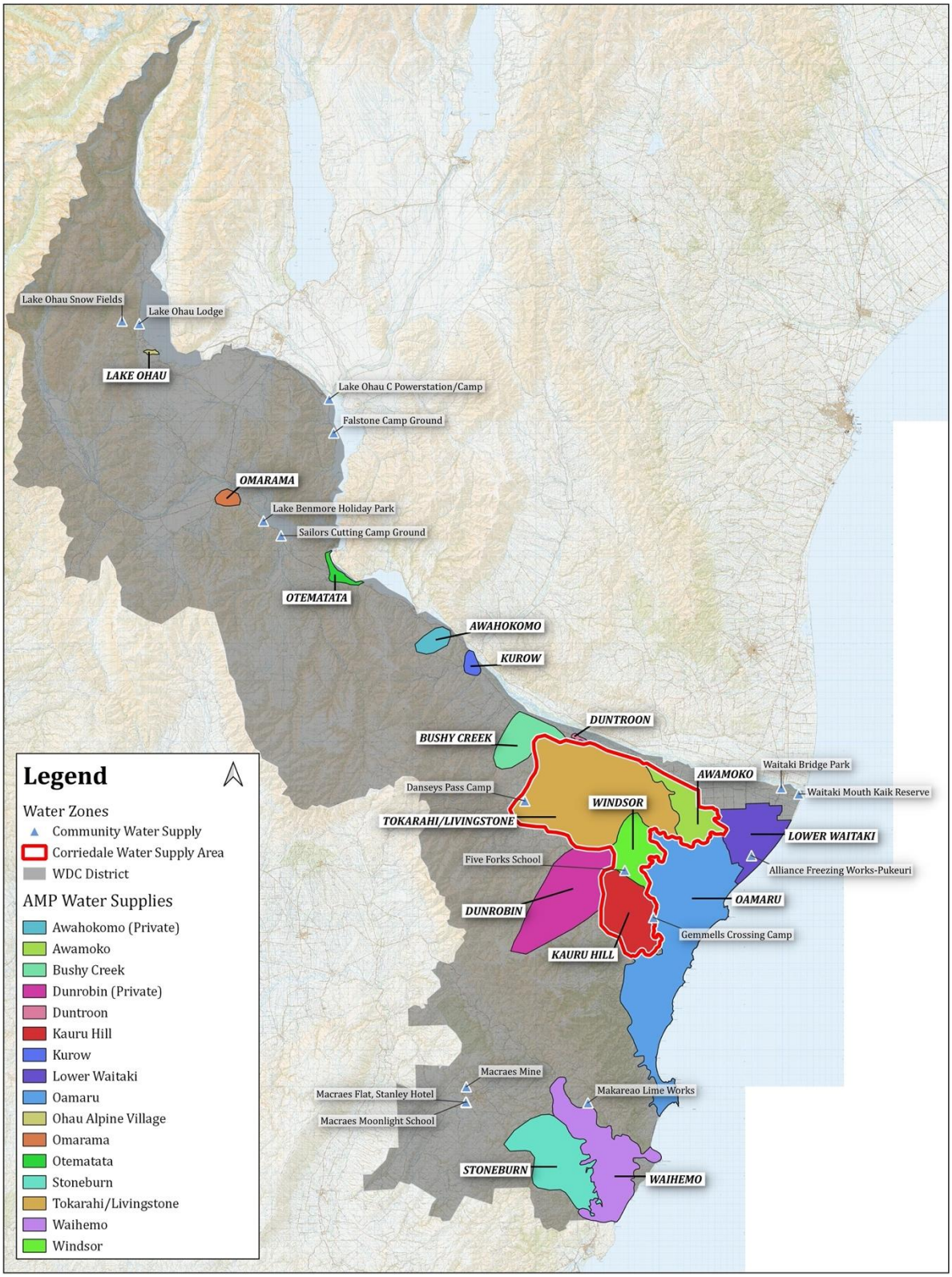
Since the 2005 Sanitary Assessment, the only known significant change within the communities identified as not being served by Council infrastructure is the transfer of the Reidston and Maheno water supplies to Council ownership and management. Additionally, Lock Laird Campground, Parson Rock Campground, and Wildlife Reserve Campground were connected to the Ōtematatā Water Supply (public) during 2022.

The remaining private water supply systems and campgrounds water supplies within the Waitaki District are tabled below.

Table 3.1-3: Private water systems

Community/Area Name	Community Type	Population	Water Supply Type	Management	Maintenance & Operation
Alliance Freezing Works – Pukeuri	Commercial Enterprise		On Demand	Private	Private
Danseys Pass Holiday Park	Campground/Park		On Demand	Private	Private
Dunrobin	Township	75	Restricted	Private	Private
Falstone Campground	Campground		On Demand	Council	*CC
Five Forks School	School	50	On Demand	Private	Private
Gemmells Crossing Camp	Community	0	On Demand	Private	Private
Lake Benmore Holiday Park	Campground/Park		On Demand	Private	Private
Macraes Mine (Oceana Gold)	Commercial Enterprise	100	On Demand	Private	Private
Ohau Lodge	Commercial Enterprise	80	On Demand	Private	Private
Ohau Ski field	Commercial Enterprise		On Demand	Private	Private
Otekaieke Water Race	Stock Water supply			Private	Private
Sailors Cutting Campground	Campground		On Demand	Council	CC
Waitaki Bridge Park	Community	10	On Demand	Private	Private
Waitaki Mouth Motor Camp	Campground/Park		On Demand	Private	Private

*CC = Council Contractor


Lake Ohau Snow Fields
Lake Ohau Lodge
LAKE OHAU
Lake Ohau C Powerstation/Camp
Falstone Camp Ground
OMARAMA
Lake Benmore Holiday Park
Sailors Cutting Camp Ground
OTEMATATA
AWAHOKOMO
KUROW
DUNTROON
BUSHY CREEK
Waitaki Bridge Park
AWAMOKO
Waitaki Mouth Kaik Reserve
Danseys Pass Camp
WINDSOR
TOKARAHI/LIVINGSTONE
LOWER WAITAKI
Five Forks School
Alliance Freezing Works-Pukeuri
DUNROBIN
OAMARU
Gemmells Crossing Camp
KAURU HILL
Macraes Mine
Macraes Flat, Stanley Hotel
Makareao Lime Works
Macraes Moonlight School
STONEBURN
WAIHEMO
Legend
Water Zones
Community Water Supply
Corriedale Water Supply Area
WDC District
AMP Water Supplies
Awahokomo (Private)
Awamoko
Bushy Creek
Dunrobin (Private)
Duntroon
Kauru Hill
Kurow
Lower Waitaki
Oamaru
Ohau Alpine Village
Omarama
Otematata
Stoneburn
Tokarahi/Livingstone
Waihemo
Windsor
Waitaki
DISTRICT COUNCIL
TE KAUNIHERA Ā ROHE O WAITAKI
Growing strong communities.
Asset Management Plan 2024
Community Water Supplies in the Waitaki Distirct

Supply types

Supply Type	Definition	Application
On demand	A supply of water which is available on demand directly from the point of supply subject to an agreed level of service Water is supplied at pressure to the property boundary and is sufficient for domestic and industrial use Water is supplied at pressure and flows sufficient for firefighting where possible Supply is for domestic, business and industrial purposes	Urban Supplies
Metered	Where Council considers water use is unusually high for any property on an On-Demand supply, it may install a meter at the property owner's cost and charge for any extra water used	Urban on-demand supplies (with some exceptions)
Restricted	A small continuous flow of water supplied by a flow control device/restrictor across an air gap separation Supply is an agreed volume of water over a 24-hour period to a storage facility Supply is for domestic and stock purposes	Mainly Rural Supplies, but also zones within or on the fringes of Urban Supplies

Supply assets

Overall, there are 15 water intakes, 40 storage facilities (reservoirs) and 13 pump stations. The total length of the reticulation network is 1,626km, varying from 15mm to 600mm in diameter.

Total operating costs are budgeted at $5.9 million and this budget will remain until 2027 when the new service delivery model for three waters is confirmed as part of delivering on the Government's Local Water Done Well reforms. Replacement value of treatment plants, pump stations and reticulation is approximately $272,042,498 as at September 2024.

Supply changes

Over the past ten years the water supply activity underwent significant changes as Council took all practicable steps to comply with the Drinking Water Standards New Zealand 2008 in accordance with the requirements of the Water Services Act 2021 and associated legislation.

This and compliance with the requirements of resource consent conditions is still a key focus for the water supply activity – however, there is now also greater focus on supply resilience. Significant changes to our water supplies over the past 10 years include:

- Improved resilience of the Ōamaru Water Supply through increased treated water storage at Ōamaru Water Supply (new 8,700m^3 reservoir).
- Mandatory fluoridation of the Ōamaru Water Supply in 2024.
- Improved security of treated water storage at Ōmārama storage, and new bores and water treatment plant for Ōmārama Water Supply.
- Upgrades of the following water supplies:
    - A programme of works was undertaken in Kakanui to upgrade the watermains.
    - Weston service level upgrade to an on-demand supply with firefighting capacity
    - Improvements to the Ōtematata Water Supply network including installation of four new supply storage tanks and pipe renewals in the township

- Significant investment in watermain renewals in township areas, including Ōtematata and Palmerston
- A significant increase in SCADA and monitoring sites

Management and operation

The management, maintenance and operation of our water supplies is undertaken by Council and our contractor, except for the following supplies:

- The four Corriedale rural supplies (Awamoko, Kauru Hill, Tokarahi, Windsor) – these are currently managed by Corriedale Water Management Ltd under a Memorandum of Understanding established in 2013
- Stoneburn Water Supply – reactive repairs are undertaken by a supply caretaker
- Awahokomo – community-operated
- Bushy Creek – reactive work undertaken by the Liaison Group with assistance from Council's maintenance contractor.

3.2 Water reticulation

Urban

In most areas of Council's urban supplies, an 'on demand' service is provided to consumers, and provision is made for firefighting from some water supply mains.

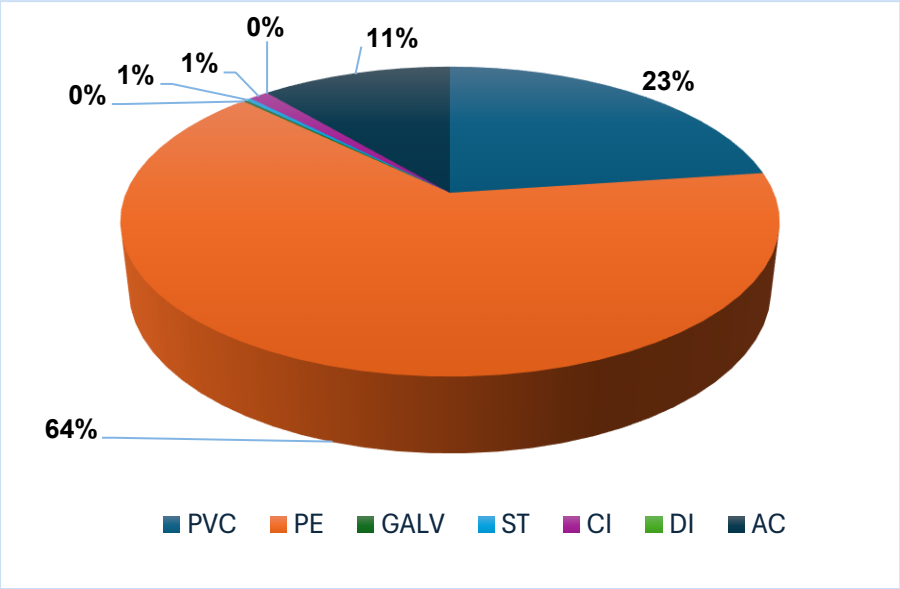
Rural

Rural supplies are intended to supply water for stock and domestic use on a continuous but restricted supply basis. The restricted supplies rely on small diameter pipes providing a continuous supply to consumer's point of supply and on consumers having enough storage to satisfy peak domestic and stock water demand. Normal firefighting is not possible from rural water scheme mains.

Council's water reticulation network can be divided into three separate groups:

Trunk mains	Mains that connect water source to treatment plants, treatment plants to reservoirs, and reservoirs to demand areas. Trunk mains rarely have customer connections on them and often do not have fire hydrants. Pumping mains are also classed as trunk mains. Trunk mains are part of the supply and primary distribution.
Reticulation mains	Mains, fire and rider mains, that distribute water from the trunk mains, and in some cases service reservoirs, to the consumer. Fire mains are fitted with fire hydrants and are a minimum of 100mm diameter. Rider mains are usually 50mm or 80mm diameter and normally serve less than twenty (20) properties.
Service connections	The pipes connecting the consumer to the reticulation mains. Service connections are residential connections, commercial/industrial connections and fire connections. Residential connections are mainly 20mm in diameter, with commercial/industrial connections ranging from 20mm to very large, depending on the requirements from the consumer. Fire connections provide fire flows to automatic sprinkler systems or similar fire protection systems.

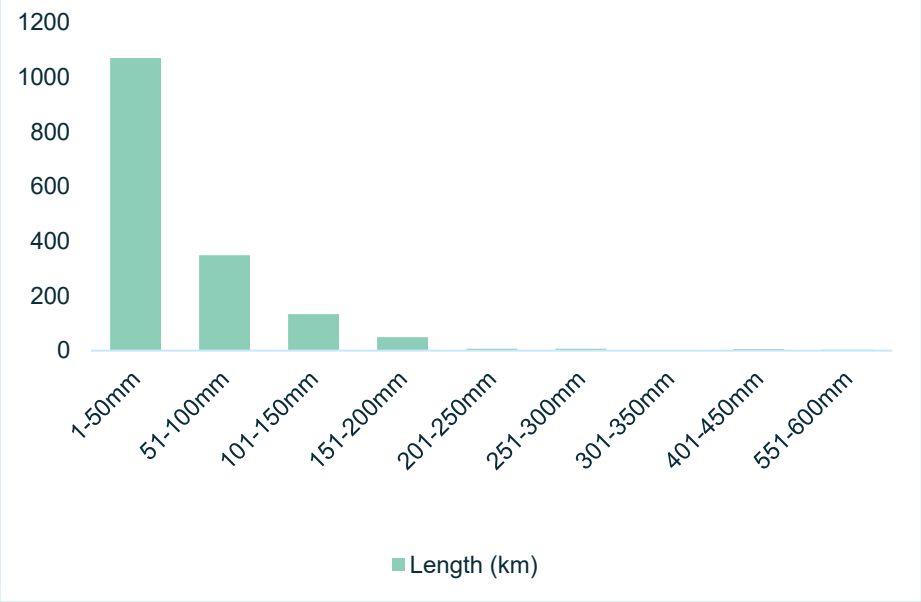
Figure 3.2-1: District wide water main material distribution



Polyethylene (PE) pipes continue to make up most of the water reticulation material (64%) across the district.

There has been a 2% reduction in the proportion of Asbestos Cement pipe since the last AMP reflecting the mains upgrade programme underway across rural areas of Waitaki.

Figure 3.2-2: District wide water main size distribution



66% of the reticulation is 50mm diameter and smaller

There has been a slight reduction (1.4%) in the percentage of 15-50mm diameter pipe since the last AMP, reflecting upgrades to pipe sizes in some areas as part of renewal programmes to improve service levels.

Further detailed information relating to pipe composition, age and replacement is included in the Waitaki DC IDS-Wai Water Supply Modelling report (March 2024) which can be viewed here: Waitaki DC IDS Wai Water Supply Modelling Report RevC Final.pdf

Fire fighting

Council is guided by SNZ PAS 4509:2008 New Zealand Fire Service Firefighting Water Supplies Code of Practice for all Urban Fire Districts. Adoption of the Code of Practice is not mandatory, but Council use it as a best practice guide and identifies and promotes, where applicable, improvements to comply with the code.

Ultimately, however, the statutory onus on the adequacy of water supply for firefighting lies with Fire and Emergency New Zealand (FENZ). FENZ advises Council on where water supply is adequate for firefighting and where it expects Council to take action. It also factors in its own ability to respond in time, the potential severity of fire, the existence of on and off-site solutions other than fire hydrants, fire risk and fire cell size.

Ōamaru town and Weston urban areas are the only gazetted (published) Urban Fire Districts within the Waitaki District. Palmerston has had some mains upgraded to cater for firefighting, and a decision was made by Council that a service level improvement be made to the Palmerston Zone of the Waihemo Water Supply by designing for firefighting capacity in network upgrades scheduled to be undertaken as part of Council's 3 Waters Investment Programme 2022-24 (resolution **WDC 2022/138**)

FENZ has limited resources, with the Ōamaru Fire Service being a volunteer Fire Brigade and the rural towns even more limited in human and firefighting appliances. Therefore, it is estimated that the current supply of firefighting water is sufficient to meet the demand that the existing available Fire Service may require.

Hydrant Performance

In the past the FENZ performed flow tests on all urban supply fire hydrants and supplied the results to Council. This was then recorded within the Asset Management System (AMS). There are no records of hydrant testing since 2011 within the asset register and Council plans to undertake this as part of its network operations and maintenance programme.

Mains Flushing

System cleanliness is maintained through an annual mains flushing programme, budgeted through the Long Term Plan. This programme specifically targets low flow (dead end) areas of the reticulation system to ensure system cleanliness and maintain the quality of drinking water supplied to customers.

Water service lines

Urban

All urban water supplies have a service line which connects the property to the public water supply. However, for some rural restricted supplies (e.g. Duntroon, Kakanui), there are mains and service lines due to the urban nature of the township. Weston and Kakanui are now zones within the Ōamaru water supply. Water service lines in Waitaki are mainly Polyethylene (PE) and nearly all are smaller than 50mm in diameter.

Rural Restricted

Water is delivered through a restrictor, which may be located at the tank or at the property boundary.

3.3 Water treatment plants

Council owns 13 water treatment plants around Waitaki. Four of these are operated by Corriedale Water Management Limited (Awamoko, Kauru Hill, Tokarahi and Windsor), and Stoneburn is maintained by an operational liaison group comprising ex-committee representatives. Lake Ohau Village was commissioned in Q1 2025. Bushy Creek and Awahokomo supplies currently have no form of treatment plant or treatment.

Since the Health Amendment Act 2007 and the DWSNZ 2005, Council-operated water treatment plants have been progressively upgraded to comply with the legislation and associated standards.

The subsequent introduction of the Water Services Act 2021 and new Drinking Water Compliance Rules has further strengthened the drinking water quality framework and requirements. This includes more emphasis on Drinking Water Safety Plans, a multi-barrier approach to drinking water safety, identifying and managing risks, source protection, treatment and reticulation, maintaining disinfection residuals in the reticulation.

Council has been progressively upgrading treatment plants around the district, with only a handful of smaller rural supplies awaiting completion of upgrades:

- Bushy Creek
- Stoneburn
- Corriedale Supplies (Awamoko, Kauru Hill, Tokarahi and Windsor)

These upgrades commenced during the 2024/25 financial year. Awahokomo supply will likely transfer to community ownership during the term of this plan.

Table 3.3-1: Remaining Water Treatment Plant Upgrades

Water Supply	LTP (IBIS)	Treatment Upgrade Programmed for	Water Supply Category
Awamoko	**1043**	2024/25	Small
Kauru Hill	**2457**		
Windsor	**2470**		
Tokarahi	**1069**	2024/25	Large
Stoneburn	**4554**	2024-26	Small
Bushy Creek	**1046**	2024-26	Very small

Ōamaru Water Treatment Plant

Background

The old Ōamaru Treatment Plant had an E grading in the Ministry of Health's Register of Community Drinking-Water Supplies in New Zealand, which was completely unsatisfactory. The water was of low quality with associated taste and odour problems. Due to the water quality issues a large number of consumers installed private filtration systems.

To improve the water quality and meet the New Zealand Drinking Water Standards the plant was extensively upgraded during 2005/07, with the installation of a 19 Megalitre per day (MLD) Membrane Filtration Plant and Ozone Treatment Facility. The Treatment Plant was officially regraded and achieved an A grading ('completely satisfactory, extremely low level of risk'). The plant's capacity was increased during 2016 with the reconfiguration of filters to 20.5 Megalitres per day.

During December 2018, the Ōamaru Water Supply was under significant demand pressure as a prolonged rain period created high turbidity levels in the raw water, which could not be treated without compromising the plant. This required urgent water restriction measures to retain sufficient storage capacity until source water turbidity levels returned to normal. As a result of this event, Council increased storage at the Ōamaru Water Treatment Plant by constructing a new 8,700m^3 reservoir, completed at the end of 2021.

To further improve supply resilience, another new 3,400m^3 reservoir has recently been constructed alongside the existing reservoir on Ōamaru's South Hill.

How the plant currently operates

Water passes from the Ardgowan earth dam through a strainer, to one of two membrane filtration cells. From the membrane filtration cells the water passes through the ozone contact tank with pH correction (Sodium hydroxide) done prior to the ozone treatment. From the ozone tank the water flows to the two 8,700m^3 treated water reservoirs and is lastly chlorinated as it passes from the reservoir to the network.

The Ōamaru water treatment plant struggles to satisfy the existing peak demand, largely due to poor performance of the membrane treatment process. Other ongoing improvements to treatment processes are being undertaken so that we can maintain levels of service through to the completion of any upgrades identified through the Ōamaru Water Strategy. The short-term improvements are being designed to be sensitive to the long-term direction.

Future plans

The Ōamaru Water Strategy to year 2070 identified a water demand of 64 MLD, of which some 42 MLD will need to be sourced from Oamaru or near surrounds. 42 MLD is around a doubling of the capacity of the existing abstraction and treatment processes. Developing the necessary infrastructure will take several years to complete.

3.4 Water quality

Council's 15 drinking water supplies comprise nine river/creek/water-race intakes; and six bore takes. The river/creek/water-race sources provide unsecure water – that is, water that can contain bacteria, protozoa and silt from time to time. Drinking Water Safety Plans, Source Water Risk Management Plans and associated water supply treatment plant upgrades are all intended to address these relatively poor water quality issues.

The Ōamaru Water Supply consists of multiple zones, including rural restricted zones more than 30 kilometres from the Ōamaru Water Treatment Plant. To maintain supply quality through the network, Council ensures appropriate and consistent disinfection residuals are present throughout the reticulation and the extremities of the network.

3.5 Pump Stations

In general, the water supplies rely on pumped systems to take ground/surface water either direct into the network and/or to surface reservoirs. Pumping capacity is limited to the rate (litres per second) specific in the water supply resource consent (take and use). In addition, booster pumps are installed where required to raise water pressure and ensure flow into network storage reservoirs and elevated parts of the network.

Council has a focus on making the most efficient match of pumps and pumping systems to the community's needs. Variable speed drive systems are used where appropriate to:

1) reduce the pump start up energy load on the mainline network
2) minimise the energy used to meet customers water needs

Table 3.5-1: Pump stations (designated)

Ōamaru	There are 12 pump stations containing 14 pump sets in the Ōamaru Water Supply. Water is lifted from the water settling basin at the Redcastle Road Pump Station to Ardgowan Dam on Reservoir Road.
	
	From Ardgowan Dam, water passes through the water treatment plant and reservoirs before:
	
	• Flowing by gravity into the North End and Central zones, from where it is lifted by the King George Park Booster Pump Station lifting water to the South Hill Reservoir. From the South Hill Reservoir:
	  ○ **The Microzone** pumps increase the pressure for the properties immediately surrounding the reservoir.
	  ○ Water flows through South Hill and south towards Kakanui and the Hamnak zone (Herbert/Waianakarua and Hampden/Moeraki). There are two main pumpstations and three smaller pump stations in the Hamnak zone:
	  ▪ **Hamnak PS1** and **Hamnak PS2** which boost pressure along the main south water main.
	  ▪ **Troup Street** pumpstation in Herbert.
	  ▪ **Appelby Road** pumpstation in Hampden.

	▪ Pumps at the Moeraki wastewater plant to raise pressure into Moeraki and Horse Range Road. • Passing through one of three different pump sets, housed in the same pump shed, and providing water to various zones: ○ **Tower** zone ○ **Ardgowan** zone ○ **Weston-Enfield** zones. This pumps water to the Weston reservoir, from where water flows by gravity to the Weston urban and rural areas or is lifted by one of three pumps: ▪ **Robbs Crossing** towards Enfield Reservoir ▪ **Rosedale/Brockman's** pumpstation ▪ **Fortification Road (Bob Allan's)** pumpstation
Other urban	There are six bore or booster pump stations supplying water to urban areas: • **Omarama** bore pumps lift water through the treatment plant to the reservoirs where water flows by gravity into town. • **Kurow, Waihemo**, and **Duntroon** bore pumps lift water through the treatment plant and town to the reservoir. • **Otematata** bore pumps lift water to the treatment plant, and booster pumps lift water into town and the reservoir.
Rural	There are two designated pump stations on the **Tokarahi Water Supply**, and two on the **Awamoko Supply**. Both supplies are managed and operated by Corriedale Water Supply Management Ltd.

Except for Lake Ōhau, each of the urban water supplies has a pump station which pumps the water from the source to the storage facilities. The water from Lake Ōhau gravitates from the intake to the storage facilities.

Pump stations are situated at or close to the source, pumping the water from the source to the storage facility, or as required to boost pressure within the reticulation network.

3.6 Reservoirs

Table 3.6-1: Reservoirs

Ōamaru	Raw water is pumped from the Redcastle Road Pumping Station storage lagoon to the Ardgowan Reservoir. The dam was constructed in 1879 with an original volume of 409,000m³. The volume reduced over the years due to silt deposition from the water supply. Currently the earth dam has a capacity of approximately 183,000m³ which equates to approximately 10 days storage. The dam is situated in the relatively small Glen Creek catchment, which drains to the ocean through Ōamaru via Ōamaru Creek. From the dam, the water passes through a strainer, membrane filtration cells, ozone contact tank to two 8,700m³ treated water Reservoirs. To comply with the Building Act 2004 and new Building (Dam Safety) Regulations 2022, which came into effect this year, Council is developing a Dam Safety Assurance Programme (DSAP). To date, this has included completing and submitting of a potential impact classification (PIC) assessment for the dam. Council is working on developing and implementing an action plan, emergency management plan and other associated activities to ensure compliance with the regulations and 2025 DSAP deadline. In the past treated water was pumped to the water tower (68m^3) on Reservoir Road. Since the 2016 plant upgrade, the Tower Zone (residential area on Reservoir Road and across into upper Eden Street) is fed by the Hydrovars (VSD) at the treatment plant. As a result, the tower is only used for chlorine contact time and emergencies. Treated water is pumped from the Treatment Plant to the Weston Reservoir. From the Weston Reservoir water is gravity fed to the Weston reticulation and the original Weston/Enfield intake at Robb's Crossing. From here the treated water is pumped to the Enfield reservoir and network. In Ōamaru water passes through the King George Park Booster Pump Station from where it is pumped to the South Hill Reservoir. This reservoir has a capacity of 2,250m³ and supplies water to the surrounding area and the Kakanui zone. Construction of a second 3,400m^3 reservoir at the South Hill has recently been completed.

Other urban	Water storage facilities are mainly covered reinforced concrete reservoirs ranging in size between 180m³ to 1,300m³. The Ōmārama storage facility consists of 7 concrete tanks, 1 reservoir 670m^3, totalling 820m^3. The roof of the timber reservoir was replaced during August 2018.
Rural	Water storage facilities are mainly covered reinforced concrete reservoirs ranging in size between 13m³ to 590m³. The Moeraki supply storage was replaced with 8 x 30,000m^3 polyethylene tanks providing increased storage and resilience over peak demand periods. The Stoneburn reservoir is an earth dam of 27,400m³. This prevents disinfection of the water prior to the reservoir with the only alternative being disinfection post storage facility. The dam, should it remain in operation, will be required to meet the requirements of the Building Act 2004 and new Building (Dam Safety) Regulations 2022.

Reservoir risk management plans

Reservoir Risk Management Plans were developed for each of the water supplies in early 2024.

These can be viewed here: Reservoir Management Plans

3.7 Buildings

Maintenance of public buildings to a good standard throughout their lifecycle is essential to demonstrating a responsible and acceptable level of service.

Treatment facilities and larger pump stations are contained within above-ground buildings. These range from typical sheds to large purpose-built buildings. The buildings usually house pumps, control gear, telemetry and treatment equipment.

The buildings are recorded in the Infor Public Sector Asset Management Information System with their age and replacement value and are treated as a component of the facility i.e. similar to a pump at a pump station.

Housekeeping of buildings forms part of the Operations and Maintenance (O&M) Contract and O&M Manuals where these are available.

3.8 Critical assets

Critical assets are those assets in which failure would result in a major disruption to the supply of water or levels of service.

Criticality is best defined as assets that have a *high consequence* of failure (not necessarily a high probability of failure). The Criticality Assessment of the water assets resulted in compilation of High and Medium criticality assets for further analysis.

Criteria for considering criticality of water assets:

- Location of asset, e.g. under a railway
- Asset type, e.g. pump station
- Network configuration, e.g. single feed to town
- Customer numbers and type, e.g. business, hospital, etc.

To assess the severity of consequence of failure, a Criticality Assessment considers the failure against the four well-beings (social, economic, environmental and cultural), alignment with Council's objectives, and how important the asset is in delivering the water supply service to agreed Levels of Service.

During 2011/12 Council engineers completed a Criticality Assessment of water facilities and reticulation assets.

Another Criticality Assessment of the reticulation assets only was undertaken in 2024 by Infrastructure Decision Support (IDS) as part of a water supply pipe renewal forecast modelling project, which has since been used to inform network upgrade planning. A copy of the IDS assessment can be viewed here:

Assessment results

An important finding from the 2011/12 assessment is that 66% of equipment assets are highly critical.

It also found that, based on replacement value, the highest proportion of critical assets is within the water facilities where water is extracted, treated and stored.

Based on the 2024 assessment, asbestos cement (AC), polyethylene (PE) and polyvinyl chloride (PVC) water mains feature across all criticality brackets.

Pipes with high criticality (criticality value 5) are made of:

- AC (3.8km), PE (6.9km) and cast-iron (10.2km)

Pipes with a criticality value of 4) are made of:

- AC (4.1km), PE (6.3 km) and cast-iron CI (7.4km) along with PVC (77.8 km) and a small amount of ductile iron (33m)

Approach to managing critical assets

As part of our risk-based approach, critical assets are monitored, inspected, and maintained more regularly than non-critical assets to ensure Council gets the best life out of these assets, and they remain fit for purpose. This proactive management includes:

- Prioritising condition assessments
- Adjusting economic lives with respect to renewal profiles
- Prioritising/deferring renewals
- Prioritising expenditure
- Operation and maintenance planning

Knowing our water supply assets:

We do this by:

- Maintaining a robust asset condition profile.
- For water pipes - asset conditions being ascertained when carrying out repairs or renewals. Facility site visits are conducted at specified frequencies under the Operation and Maintenance Contracts.

Criticality Category	Condition Assessments	Renewal
Critical Assets - trunk mains, rising mains and large diameter mains supplying significant areas or key industries or businesses/customers	Condition assessments performed during connections and pipe repairs. Detailed analysis obtained as deemed necessary.	Renewal timing is based on conservative base life and actual condition assessments of assets and estimated future deterioration. Our Infrastructure Strategy states that critical assets will be replaced before the end of their design life.
Non-Critical Assets – distribution network of smaller diameter mains and property laterals	Sample inspections of material types and age bands during connections and pipe repairs. Greater proportion for assets nearing end of base life. Inspections of assets associated with major roading asset renewals to confirm condition.	Generally, 'run to failure' with renewals on a reactive basis. Our Infrastructure Strategy states that non-critical assets will be replaced when their condition becomes 'intolerable'. i.e. when repeated failures mean that the target levels of service are no longer met or when the cost of operation, maintenance and repair is higher than the cost of replacement.

4 Levels of service

Levels of service:

- Define explicitly the standards required from the water supply system
- Are an expansion of Council's Strategic Framework (as outlined in the previous section)
- Largely shape Council's detailed planning

In providing water services to the community, Council must balance the standard of service desired with the cost of providing the service. The Levels of Service are designed by Council to represent the best level of service possible for a cost that the community can afford and is willing to pay.

4.1 Determining levels of service

Levels of service for the Water Supply activity are determined by taking into consideration the needs of the community at both a general population level and an individual supply level.

Ultimately, determining levels of service goes beyond affordability. It is also about balancing the social, cultural and economic needs and aspirations of consumers with environmental sustainability, affordability and our ability to supply water for current and future generations in an equitable, safe and consistent manner.

The following inputs used as a basis for these considerations:

- Council's vision and community outcomes
- Supply areas and factors such as predominant land and water use, population and water availability
- Feedback from the community by way of consultation and engagement processes, and resident surveys
- The non-financial performance measures (Department of Internal Affairs), which came into force on 30 July 2014 following an amendment to the Local Government Act (noting that Performance measure 1 (safety of drinking water) has been updated to reflect the new Drinking Water Compliance Rules – outlined of page 59)

The Water Supply activity also takes guidance from documents such as *Developing Levels of Service & Performance Management Guidelines: Creating Customer Value from Community Assets* produced by the National Asset Management Steering Group. This manual develops methods for organisations providing local government infrastructure services to establish their levels of service and what their customers value. It explores balancing the levels of service provided against the associated costs and then benchmarking the service levels provided.

4.2 Supply types

Supply Type	Definition	Application
On demand	A supply of water which is available on demand directly from the point of supply subject to an agreed level of service Water is supplied at pressure to the property boundary and is sufficient for domestic and industrial use Water is supplied at pressure and flows sufficient for firefighting where possible Supply is for domestic, business and industrial purposes	Urban Supplies
On demand - metered	Council installs water meters on some properties that are on On-Demand supplies and charges for the actual volume of water used due to 'extraordinary use' of the supply. Examples of extraordinary use include business and commercial. This 'user pays' approach prevents the costs of higher water use being passed on to other consumers. In some cases, it is not appropriate to install a meter at a property on an On-Demand supply and a Restricted supply may be provided instead.	Urban supplies
Restricted	A small continuous flow of water supplied by a flow control device/restrictor across an air gap separation Supply is an agreed volume of water over a 24-hour period to a storage facility Supply is for domestic and stock purposes	Mainly Rural Supplies, but also zones within or on the fringes of Urban Supplies

4.3 Measuring and monitoring performance

In 2010 the Local Government Act 2002 was amended, requiring local authorities to use non-financial performance measures when reporting to their communities, with the aim of encouraging greater public participation in decision-making processes.

The performance measures do this through providing better information about the actual levels of service. The non-financial performance measures came into force on 30 July 2014 and Council has reported against these since the 2015/2016 Annual Report (noting that performance measure 1 has been updated and must be reported on from 1 July 2025).

Council had developed their own Performance Measures in the past, but because the mandatory measures cover key expectations in terms of service delivery, Council now only uses the Levels of Service statements aligned with the new mandatory performance measures.

To enable this, Council reviewed the customer service requests system to align it with the mandatory performance measures and ensured the Contractor reporting aligned with the 'tasks'. Council's AMIS and CRM database have been programmed to allow reporting aligned with the non-financial performance measures and to ensure consistency and accuracy of reporting.

Changes to performance measure and targets for 2025-2034:

Council currently reports on real water loss from the system and targets maintaining or reducing the amount of loss. To better monitor the effectiveness of our investment into leak detection and pipe maintenance and renewals, this target has been amended to be an "*annual reduction in the percentage of real water loss from our networked reticulation system*".

Longer term, we plan to change the way we calculate leakage from the network (including installation of meters) to provide a more accurate picture of what is actually being lost from the network that cannot be accounted for by larger overnight water users, such as hotels/motels.

Levels of service	Performance measures	Performance targets
Council will take all practicable measures to supply water that is safe to drink and compliant with relevant legislation	Compliance with Drinking Water Quality Assurance Rules 2022	Specific targets for supplies as specified in the Drinking Water Quality Assurance Rules (refer Drinking Water Quality, page 59)
Avoiding wastage within the reticulation system Reducing water consumption where necessary and appropriate through education and enforcement	Real water losses from the reticulation (percentage of real water loss from our networked reticulation system) Average consumption of drinking water **New measure**: Compliance with water take consents	**New target:** annual reduction in the percentage of real water loss from our networked reticulation system) Average consumption of drinking water (on average, less than 500 litres per person per day) **New target:** 100% compliance with water take consent conditions
Council responds to service requests and system failures in a timely manner The community experiences a consistently good standard of water quality	Response to urgent callouts Resolution of urgent callouts Response to non-urgent callouts Resolution of non-urgent callouts Water quality complaints	1 hour 24 hours 2 working days 5 working days Fewer than 25 complaints per 1,000 connections
Council's planning for water supply infrastructure and treatment provides for current and future needs	**New measure:** Council's planning for water supply infrastructure and treatment provides for current and future needs	**New target:** Design basis work, capacity studies, asset planning, financial and other planning are undertaken in accordance with industry best practice (design basis studies for each supply are reviewed annually)

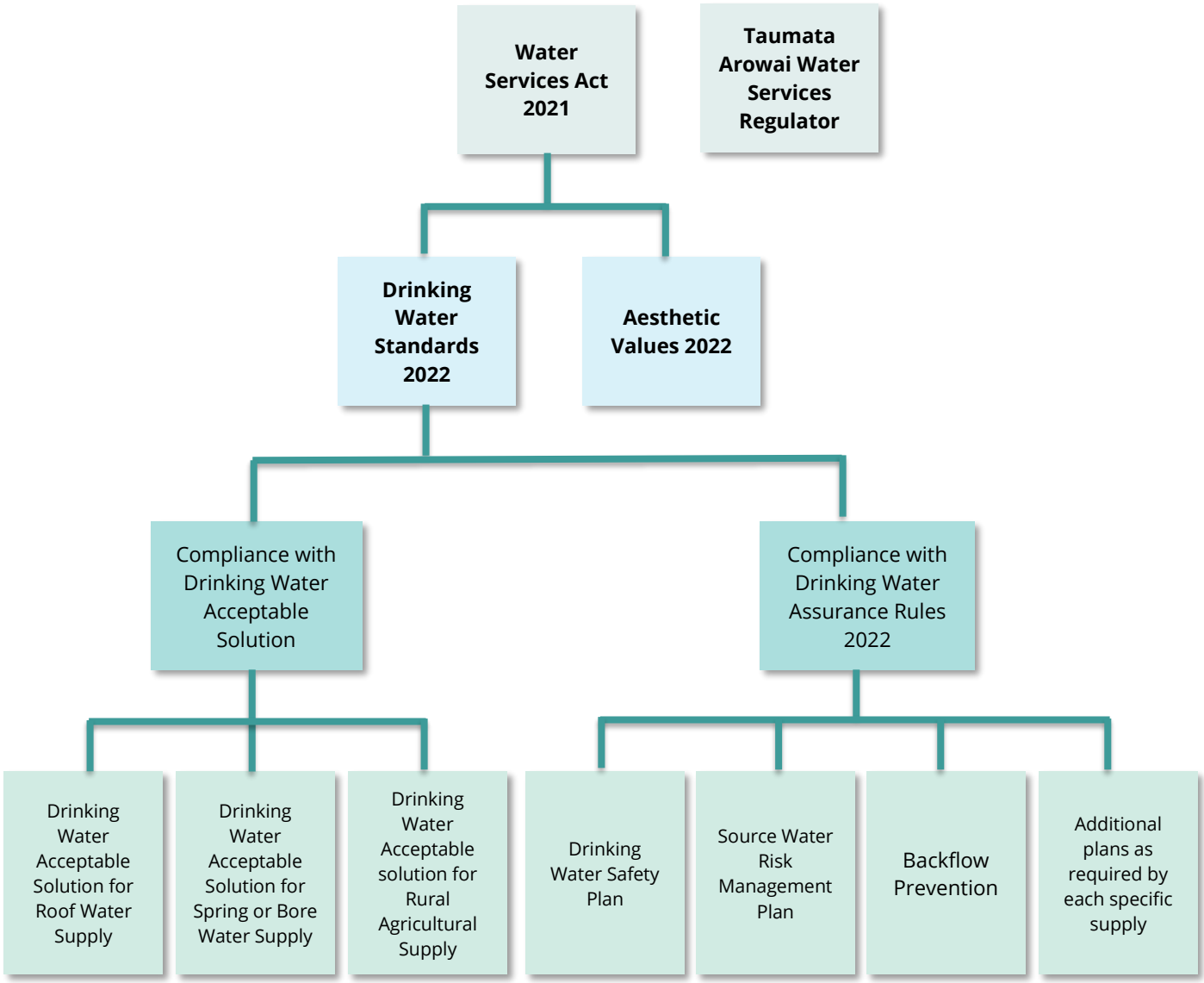
4.4 Drinking water quality

The new water services regulatory framework makes the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and Drinking Water Quality Assurance Rules compulsory.

Since 15 November 2022, councils must report against the Drinking Water Quality Assurance Rules as they relate to bacteria and protozoa.

The new Drinking Water Quality Assurance Rules have similar standards to the former Drinking Water Standards for New Zealand 2005 provided by the Ministry of Health.

Overview of the regulatory framework for drinking water safety and quality



Key aspects of regulatory framework for water quality

The Water Services Act 2021

The Act provides a comprehensive set of regulatory tools that will be used to ensure that good outcomes are achieved for drinking water safety. Directions and compliance orders are intended to ensure that unacceptable risks to public health are resolved in a timely way.

New Drinking Water Standards for New Zealand 2022

The DWSNZ set the Maximum Acceptable Values (MAVs) for a range of contaminants which can affect the safety and quality of drinking water. They are based on guideline values set by the World Health Organisation. These new DWSNZ have been largely carried over from the existing standards, however the Aesthetic Values have been separated and Taumata Arowai is consulting on the minor changes. The changes make the Aesthetic Values easier to use and more suitable for each supply type and size.

New Drinking Water Quality Assurance Rules 2022

The rules inform drinking water suppliers on what they need to do to demonstrate compliance with the DWSNZ. Taumata Arowai is currently preparing guidance to assist water suppliers to understand and interpret the rules. Some of the key differences from the old DWSNZ is that the new rules have:

- Different levels of complexity to match the complexity of supplies.
- A new format, grouping rules into modules to make it easier for suppliers to find the rules that apply to their supplies.
- A greater emphasis on testing to identify and reduce risks.
- New requirements for source water testing and distribution system monitoring.
- New rules for very small (<25 people), small (26-100people), medium (101-500 people) and large (>500 people) supplies.
- Discontinued the DWSNZ secure bore water criteria. All water supplies need some form of treatment unless an exemption is granted by Taumata Arowai,
- A new chemical compliance section for large (>500 people) supplies.

New Drinking Water Acceptable Solutions

The rules provide drinking water suppliers with readymade options to meet their compliance obligations under the Act. They apply to particular supply types and situations and must be implemented in their entirety. A supplier can choose to either develop a solution that complies with the rules or adopt one of the Acceptable Solutions:

- Drinking Water Acceptable Solution for Roof Water Supplies.
- Drinking Water Acceptable Solution for Spring and Bore Water Supplies.
- Drinking Water Acceptable Solution for Rural Agricultural Water Suppliers.
- More acceptable solutions will be developed to cover other types of supplies.

Drinking Water Compliance Rules – changes to reporting

Performance measure 1 (safety of drinking water) currently requires councils to report "the extent to which the local authority's drinking water supplies comply with:

(a) part 4 of the drinking-water standards (bacteria compliance criteria), and
(b) part 5 of the drinking-water standards (protozoal compliance criteria)."

The drinking-water standards referred to in this measure are the Drinking-water Standards for New Zealand 2005. These standards were repealed and replaced by a suite of new regulations in 2022, following the transfer of regulatory responsibilities to Taumata Arowai.

In accordance with section 38 of the Legislation Act 2019 and section 261F of the Local Government Act 2002, the new drinking water standards and rules can be incorporated by reference into the current rules without amendment. However, to be able to provide as much clarity as possible to councils on their planning and reporting responsibilities, the Secretary of Local Government initiated a process of updating the Rules to clearly replace the reference to 2005 drinking water standards with the new standards and rules.

The intention of the changes was to remove references to the revoked standards and replace them with the equivalent measures in the new regulatory framework. The initial timing proposed for these changes was around mid-June 2024, however, but this was extended to mid-June 2025 due to their complexity.

Assessment of compliance in Waitaki's water supplies

Council's water supplies were independently assessed for compliance with the new standards by an independent assessor from Wai Comply. The following report outlines the detailed finding of that assessment: 2024-09_Waitaki DC Annual Report on DWQ Performance 2023-2024_FINAL_V1.pdf

The tables below summarise the findings of Wai Comply's independent assessment.

Performance measures	Service targets	2023-24 (Year 3)	Comment
10.1 The extent to which Council's water supplies comply with: a. Part 4 of the Drinking Water Standards (*bacteria compliance* criteria). b. Part 5 of the Drinking Water Standards (*protozoa compliance* criteria).	Compliance required: Kauru Hill, Kurow, Lake Ōhau, Lower Waitaki, Ōamaru*, Ōmārama, Ōtematatā, Tokarahi, Waihemo, Windsor. No compliance required (classified rural / agricultural water supplies): Bushy Creek, Stoneburn. No compliance required (Council has elected to comply with Section 10): Duntroon. **Ōamaru includes Hampden-Moeraki and Herbert-Waianakarua.*	***a. Bacteria compliance:*** *DWQAR 2022:* *Compliant: Duntroon, Waihemo.* *Achieved* *Non-compliant: Awahokomo, Awamoko, Bushy Creek, Kauru Hill, Kurow, Lake Ōhau, Lower Waitaki, Ōamaru, Ōmārama, Ōtematatā, Stoneburn, Tokarahi, Windsor.* *Not achieved* ***b. Protozoa compliance:*** *DWQAR 2022:* *Compliant: Duntroon, Ōamaru, Waihemo* *Non-compliant: Awahokomo, Awamoko, Bushy Creek, Kauru Hill, Kurow, Lake Ōhau, Lower Waitaki, Ōamaru, Ōmārama, Ōtematatā, Stoneburn, Tokarahi, Waihemo, Windsor.* *Not achieved* *Note the Awamoko, Kauru Hill, Tokarahi, and Windsor water supplies are managed by Corriedale Water Management Ltd.*	The move to the new Drinking Water Quality Assurance Rules 2022 (DWQAR) places higher requirements on drinking water suppliers and as such there are supplies that were previously compliant which are now non-compliant. The results were determined by an independent assessor from WaiComply. WaiComply completes these assessments for numerous Councils. They have identified areas that will need improvement in order to achieve compliance going forward. These include treatment upgrades and additional data collections.

A summary of performance for the supplies assessed is included in the table below.

Water Supply	Component	Rule Module	Rule Set(s)	Outcome
Lower Waitaki, Rural	Lower Waitaki Pumps WTP	T3 Bacterial	General Rules	**Not Met**
			UV Disinfection	**Not Met**
		T3 Protozoa	General Rules	**Not Met**
			Protozoal Rules, UV Disinfection	**Not Met**
	Lower Waitaki Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
Oamaru	Oamaru WTP	T3 Bacterial	General Rules	**Not Met**
			Chlorine	Met
		T3 Protozoa	General Rules	Met
			Protozoal Rules, Membrane Filtration [up to 4.0-Log]	Met
	Ardgowan Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Central Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Hampden Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Herbert Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Kakanui Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Moeraki Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	North End Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	Met
	Old Mill Road Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	South Hill Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Weston – Enfield Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
Stoneburn	Stoneburn Pumps WTP	T1	Treatment	**Not Met**
	Stoneburn Zone	D1	Microbiological	Met
Waihemo	Waihemo WTP	T3 Bacterial	General Rules	Met
			UV Disinfection	Met
		T3 Protozoa	General Rules	Met
			Protozoal Rules, UV Disinfection AND Cartridge Filtration [2.0-Log]	Met
	Dunback Rural Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Goodwood Rural Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
	Palmerston Town Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
Awahokomo	Awahokomo Zone	VSC	Microbiological	Met

Bushy Creek	Bushy Creek WTP	T1	Treatment	**Not Met**
	Bushy Creek Rural Zone	D1	Microbiological	Met
Duntroon	Duntroon WTP	T1	Treatment	Met
	Duntroon Zone	D1	Microbiological	Met
Kurow	Kurow WTP	T2	Treatment Monitoring	Met
			Filtration	**Not Met**
			UV	Met
			Chorine	Met
	Kurow Township Zone	D2	Residual Disinfection	Met
			Microbiological	**Not Met**
Ohau Alpine Village	Ohau Alpine Village WTP	T1	Treatment	**Not Met**
	Ohau Alpine Village Zone	D1	Microbiological	**Not Met**
Omarama	Omarama Pumps WTP	T3 Bacterial	General Rules	**Not Met**
			UV Disinfection	**Not Met**
		T3 Protozoa	General Rules	**Not Met**
			Protozoal Rules, UV Disinfection	**Not Met**
	Omarama Town Zone	D2	Residual Disinfection	Met
			Microbiological	**Not Met**
Otematata	Otematata WTP	T2	Treatment Monitoring	Met
			Filtration	**Not Met**
			UV	Met
			Chorine	Met
	Otematata Town Zone	D2	Residual Disinfection	Met
			Microbiological	**Not Met**
Awamoko (Corriedale WML)	Awamoko Pumps WTP	T2	Treatment Monitoring	**Not Met**
			Filtration	Met
			UV	**Not Met**
			Chorine	Met
	Awamoko Zone	D2	Residual Disinfection	Met
			Microbiological	**Not Met**
Kauru Hill (Corriedale WML)	Kauru Hill Pumps WTP	T2	Treatment Monitoring	**Not Met**
			Filtration	**Not Met**
			UV	**Not Met**
			Chorine	**Not Met**
	Kauru Hill Zone	D2	Residual Disinfection	**Not Met**
			Microbiological	**Not Met**
Windsor (Corriedale WML)	Windsor Pumps WTP	T2	Treatment Monitoring	**Not Met**
			Filtration	**Not Met**
			UV	**Not Met**
			Chorine	**Not Met**
	Windsor Zone	D2	Residual Disinfection	Met
			Microbiological	**Not Met**
Tokarahi/ Livingstone (Corriedale WML)	Tokarahi/ Livingstone WTP	T3 Bacterial	General Rules	**Not Met**
			Chlorine	**Not Met**
		T3 Protozoa	Protozoal Rules	**Not Met**
	Tokarahi/Livingstone Zone	D3	Residual Disinfection	**Not Met**
			Microbiological	Met

The following tables provide summarised information relating to findings where the Rule Module or Rule Set(s) were assessed as “Not Met”.

Outcomes based on infrastructure requirements

- Lower Waitaki WTP is recorded as requiring 4-Log protozoal removal. WDC reported that the UV disinfection was only programmed to achieve 3-Log protozoal removal during the period.
- Tokarahi/Livingstone WTP (Corriedale WML) – a protozoa barrier as required by the T3 rules was not in place for the period. Chlorination is in place but a bacterial compliance reporting option (C.t value, UV Disinfection etc) was not in place. Corriedale WML reported that plans are in progress to upgrade treatment plants.
- Awamoko Pumps WTP (Corriedale WML), Kauru Hill Pumps WTP (Corriedale WML), Windsor Pumps WTP (Corriedale WML) - UV disinfection as required by the T2 rules was not in place during the period. Corriedale WML reported that plans are in progress to upgrade treatment plants.
- Omarama pumps WTP upgrades were completed in December 2023. UV disinfection for T3 bacterial and protozoal DWQAR demonstration was elected but monitoring and/or reporting was not in place prior to the upgrade. Chlorination and cartridge filtration are also in place. Suitable monitoring and reporting were in place from January 2024 onwards.
- Kauru Hill Pumps WTP (Corriedale WML), Windsor Pumps WTP (Corriedale WML), Kurow WTP, Otematata WTP – filtration as required by the T2 rules was not in place during the period.
- Bushy Creek WTP, Ohau Alpine Village WTP, Stoneburn Pumps WTP - No T1 treatment barriers were in place during the assessment period. Chlorine dosing is in place at Stoneburn Pumps WTP.

Outcomes based on WTP performance requirements

- Lower Waitaki WTP – during the period there were several days where low UV dose events were reported. Low UVT and high turbidity events were reported on some days. In some instances, insufficient information was provided to determine the likely cause, which limited the ability for WDC to determine whether the reported events were actually true events.
- Kauru Hill Pumps WTP (Corriedale WML) - during the period there were two results where FAC was less than
- 0.5 mg/L (0.14 mg/L and 0.17 mg/L).
- Windsor Pumps WTP (Corriedale WML) - During the period there were eight results where FAC was less than
- 0.5 mg/L (all greater than 0.4 mg/L). During the period there were three turbidity results greater than 5 NTU (5.4, 6.9 and 5.7 NTU).

Outcomes based on monitoring requirements

- All D3 zones had at least one instance where the maximum interval for FAC samples was exceeded (five days when four is the maximum) in December 2023. Ardgowan, Central, Hampden and Tokarahi/Livingstone Zone (Corriedale WML) each had one additional instance where the maximum interval for FAC samples was exceeded (five days or six days when four is the maximum).
- All D3 zones (except Tokarahi/Livingstone Zone (Corriedale WML)) had at least one instance where the maximum interval for weekly *E. coli* and total coliform samples was exceeded (10 days when nine is the maximum). Hampden Zone, Herbert Zone, Kakanui Zone, Moeraki Zone, Dunback Rural Zone, Goodwood Rural Zone and Palmerston Town Zone had one additional instance where the maximum interval for weekly
- *E. coli* and total coliform samples was exceeded (14 days when nine is the maximum).
- Oamaru WTP - for July and August 2023 the chlorine data reporting was not at the correct 1-minute interval. This was resolved from September 2023 onwards.
- Lower Waitaki Pumps WTP (multiple days during the period) and Oamaru WTP (three days during the period) where continuous monitoring data was reported as missing. In most instances insufficient information was provided to determine the likely cause, which limited the ability for WDC to determine whether the reported events were actually true events.
- Awamoko Pumps WTP (Corriedale WML), Kauru Hill Pumps WTP (Corriedale WML) and Windsor Pumps WTP (Corriedale WML) – at least one week where only one sample was reported for either FAC, pH and turbidity (where twice weekly sampling is the requirement). Awamoko Pumps WTP (Corriedale WML) had six weeks where only one sample was reported for turbidity (where twice weekly sampling is the requirement).
- Kauru Hill Zone (Corriedale WML - one week where only one sample was reported for FAC (where twice weekly sampling is the requirement).
- All D2 zones had multiple weeks during the period where sample dates occurred on consecutive weekdays.
- Ohau Alpine Village Zone – too few *E. coli*, total coliform and turbidity samples were reported for the period.

4.5 Level of service changes

Council reviews its levels of service every three years, as part of the Long Term Plan process. While we have not formally explored service level options with the wider community as part of this AMP, it considered that we generally have a good understanding of the community's needs through a variety of consultation processes and feedback and have a good understanding of industry standards and expectations.

For this reason, the Levels of Service from the previous Long Term Plan have been retained. However, as noted earlier, three minor additions have been made that are consistent with other service levels and both reflect Council's strategic response to impending challenges over the next decade and align with the aspirations within Council's strategic framework. These are:

- *Asset planning in accordance with industry best practice (design basis studies for each supply are reviewed annually).* This supports the community outcome of a 'prosperous district' that is 'attractive to new opportunities' and 'supports local businesses'.
- *Percentage of real water loss from our networked reticulation system (an annual reduction).* This supports the community outcome of a 'valued environment' by 'protecting our diverse landscapes and water bodies' and meeting environmental and climate change challenges'
- *Compliance with water take consent conditions (100% compliance).* This supports the community outcome of a 'valued environment' by 'protecting our diverse landscapes and water bodies' and meeting environmental and climate change challenges'

The new water services regulator Taumata Arowai and the Water Quality Assurance Rules have also generally increased the level of compliance and requirements relating to reporting of performance measures. Taumata Arowai has introduced the requirement for Protozoa treatment.

These additional requirements will be integrated into existing levels of service and will result in increased operational cost, and additional capital expenditure to implement the required treatment upgrades, for example, to meet the protozoa treatment mandate.

As part of Council's Transformation project, further changes to service levels, performance measures and targets may be made over the life of this plan.

4.6 Service level improvements

Balancing the need to maintain or improve service levels with affordability is a key issue for our community over the coming nine years. Council plans to undertake a range of projects over this period driven by the need to ensure we can meet all Level of Service targets in the short and longer terms. These projects are included in Appendix 2: Water supply projects.

Council is focused on investment to maintain or meet current service levels over the next 9 years. Only one service level improvement is planned:

Provide firefighting capacity:	Waihemo urban watermain upgrades (IBIS#2467)

4.7 Monitoring of service levels

Council undertakes specific activities and monitoring protocols in place to ensure levels of service can be measured and reported on:

Levels of service	Related activities	Monitoring tools
Council will take all practicable measures to supply water that is safe to drink and compliant with relevant legislation	Treatment and delivery of water in accordance with Drinking Water Safety Plans Programming water quality testing to confirm compliance with maximum allowable values	Hinekorako Database Sampling and laboratory testing Real time testing and process control
Reducing water loss from the reticulation system Reducing water consumption where necessary and appropriate	Demand modelling and analysis Water conservation education Leak detection programmes	Hydraulic model calibrated and maintained SCADA reports Metering records and connection records
Council responds to service requests and system failures in a timely manner The community experiences a consistently good standard of water quality	Response and completion times specified in the Operations and Maintenance contract are met	Contract performance monitoring CRM database
Council's planning for water supply infrastructure and treatment provides for current and future needs	Maintain resource consents for abstraction of adequate water Undertake demand modelling and analysis Monitor population and economic development trends	Resource consents are current and no abatement notices Growth projections incorporated in hydraulic model SCADA and logger reports Metering records and connection records

5 Demand and planning for the future

The ability to predict future demand for services enables the Council to plan and identify the best ways of meeting that demand. That may be through a combination of demand management and investing in developing or improving the supply network.

This section provides an overview of key drivers of demand and what demand management measures the Council has planned to implement.

5.1 Demand Drivers

The future demand for Water Supply services will change over time in response to a wide range of influences, including:

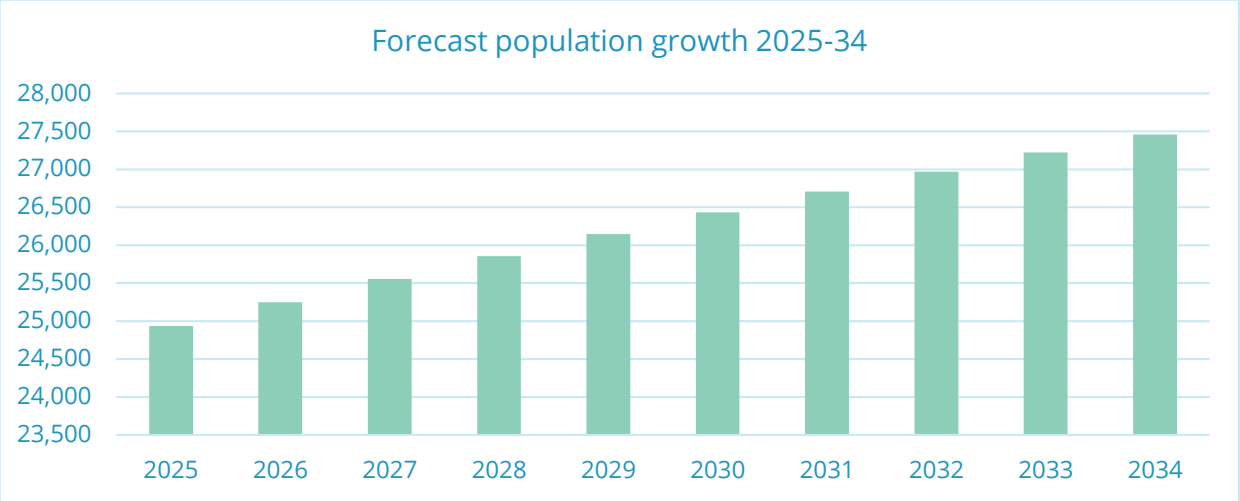
- population growth
- changes in demographics
- climate change
- local economic factors, including industrial and commercial demand
- seasonal factors (tourism)
- land use change
- changing technologies
- changing legislative requirements
- changing regional and district planning requirements
- environmental awareness.

Increasing demand for a service may generate a requirement for the development of additional infrastructure. Expenditure programmes need to be planned to fund the capital works and associated on-going operational expenditure. Alternately, it may be possible to manage demand within the existing system capacity.

Where a reduced demand is forecast it may be appropriate to renew assets with a lesser capacity, operation expenses may decrease, or an asset may become surplus to requirements.

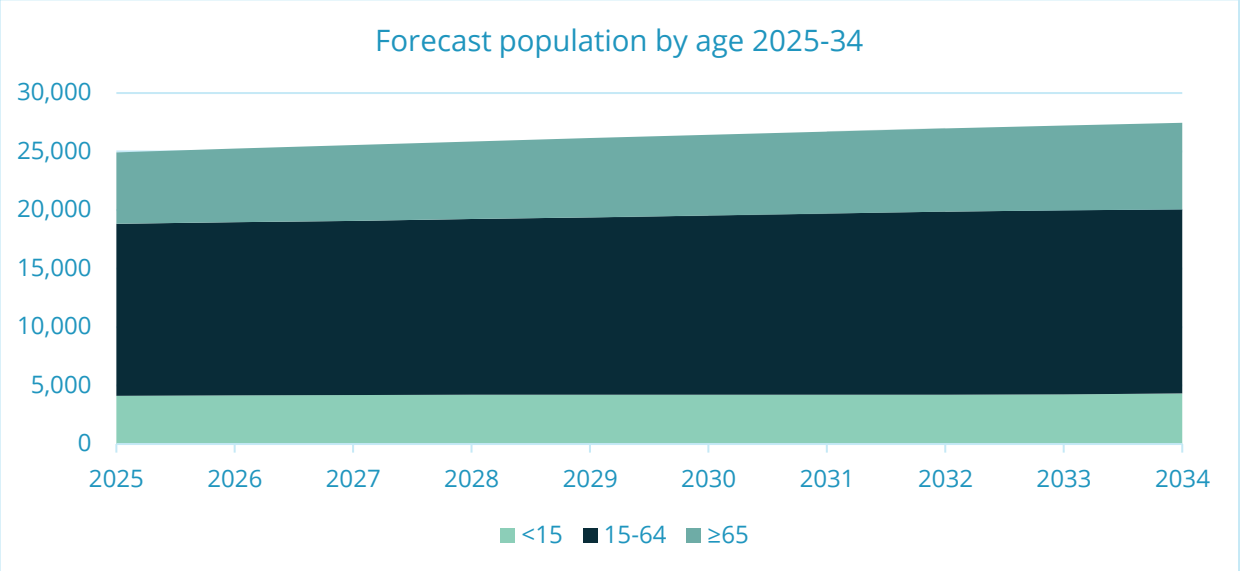
Population Growth

Waitaki's total population is forecast to increase by 10.1% by 2034 and by 22.1% by 2054. These estimates are based on high growth-rate forecasts prepared for Council by Infometrics in 2024.



High growth-rate forecasts prepared for Council by Infometrics in 2024 indicate Waitaki will continue to be an ageing population over the next 10-30 years, with increasing numbers of individuals aged 65 years and above (≥65), and relatively stable numbers of individuals aged under 15 years (<15).

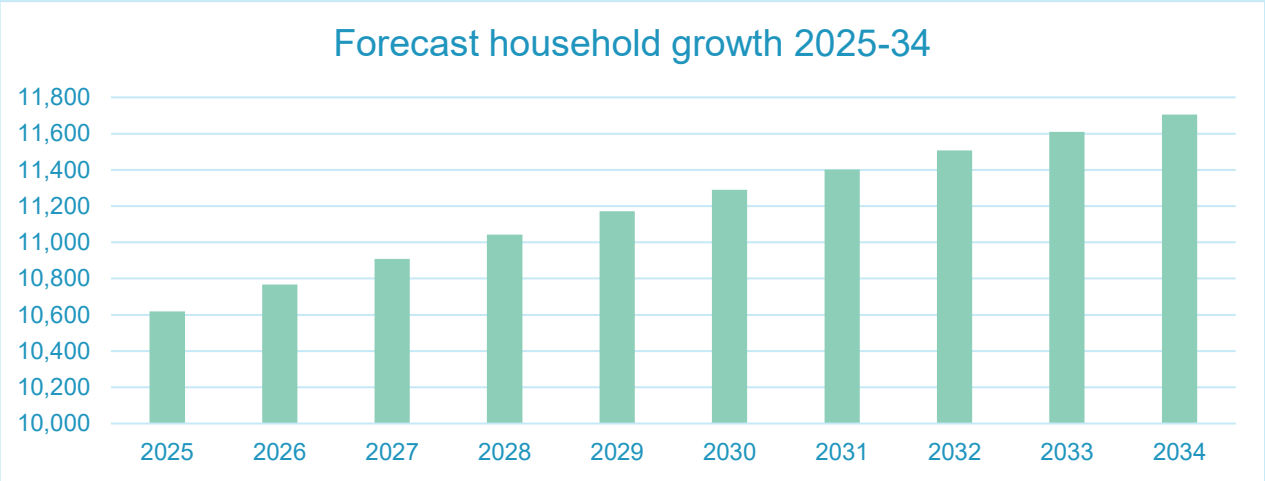
- The total number of individuals aged under 15 years in the Waitaki District is forecast to increase by 4.6% by 2034 (to form 15.7% of Waitaki's total forecast population in 2034)
- The total number of individuals aged between 15 and 64 years in the Waitaki District is forecast to increase by 7.1% by 2034 (to form 57.3% of Waitaki's total forecast population)
- The total number of individuals aged 65 years and above in the Waitaki District is forecast to increase by 21.1% by 2034 (to form 26.9% of Waitaki's total forecast population in 2034)



Increasing numbers of individuals aged 65 and above in the district, and relatively stable numbers of individuals aged under 15 years, mean a high proportion of the district will likely be on fixed incomes. This will make affordability of services such as water supply a more pressing issue.

Residential growth

The total number of household units in Waitaki District is estimated to increase by 11.9% by 2034 (1,242 household units). These estimates are also based on high growth-rate forecasts prepared for Council by Infometrics in 2024.

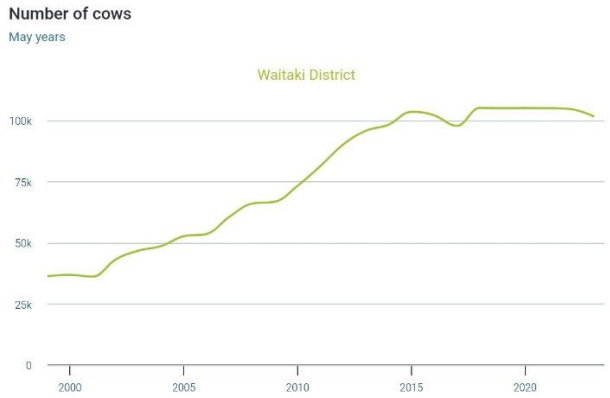


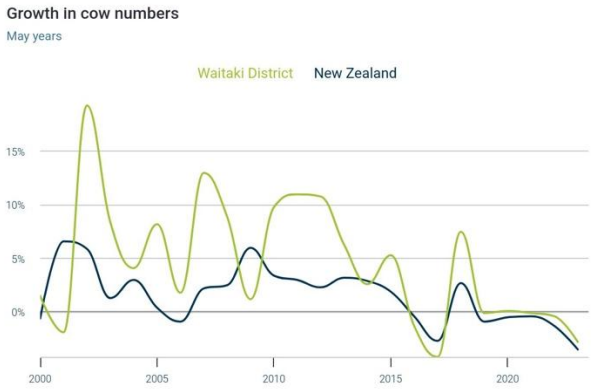
Household growth does not necessarily equate to high household occupancy rates, especially in an ageing population like Waitaki where a large percentage of household units are child-free and/or inhabited by just one or two individuals.

Over-estimating demand for infrastructure and services based on household growth could therefore lead to over-investment in infrastructure and services which are not needed, but with a limited ability for the usual resident population to pay for it, limiting Council's ability to set rates at affordable levels.

Economic growth and impacts of water use

The majority of the district is farmland. The two decades from 2000 onwards had seen a significant change from traditional sheep farming to dairy farming, resulting in changing water use within the rural restricted supplies. The growth in dairy cow numbers has plateaued in recent years and is not expected to continue at the levels previously seen – meaning demand on these supplies is likely to remain relatively stable over the next nine years.





Source: Infometrics

Hydroelectric generation and mineral extraction continue to be key activities within the district.

The demand for lifestyle development increases but, unlike its traditional form of hobby farms and relative self-sufficiency, the modern form has been for large executive housing set in expansive grounds around the fringes of the main urban centres, mainly Ōamaru. The result is customers expecting a level of service equal to urban standards in a rural environment.

Industrial/Commercial Use

The district is growing and with it comes an increasing demand for water from industrial and commercial users. Generally, the industry type and process use will determine the amount of the water these users will consume.

Table 5.1-1

Large industrial consumers	Other large users
Lean Meats Oamaru	Retirement villages
Oamaru Wool Spinners	Aquatic Centre
Rainbow Confectionery	Secondary schools with swimming pools/hostels)
Whitestone Cheese	Hotels and motels

Although the industrial/commercial sector is small in proportion to other users, it is growing. Large industrial users are metered and billed on a volumetric rate, and their pricing structures provide incentive to use water efficiently.

Climate change

The Waitaki district, like many other places, will be experiencing the threat of a changing climate. Increasing significant weather events, prolonged drought, rising sea-levels and coastal erosion will put pressure on our infrastructure and we need to adapt and find sustainable solutions. The way we build our infrastructure and cater for demand will need to reflect this new reality.

Climatic factors including rainfall, temperature and evaporation will affect water supply and demand. The implications of climate change will likely increase the uncertainty in security of supply.

Increases in evaporation have implications for water resources: the amount of freshwater available for abstraction diminishes (in rivers and aquifers) and the amount of water that needs to be abstracted to irrigate a given area of land, or to produce a given crop yield, increases. Higher rates of evaporation also contribute to more frequent, more intense, or longer droughts.

Given the increasing challenges posed by climate change, we anticipate that Council will need to invest heavily in resilience measures. This could include infrastructure upgrades to withstand extreme weather events, moving infrastructure away from the coast, and initiatives to mitigate the impacts of flooding.

Tourism

Waitaki is a popular destination for holiday makers and tourists and there is an increased seasonal demand for water due to an influx of visitors during peak summer periods. The Waitaki Valley Lakes areas of Kurow, Otematata and Omarama, in particular, experience significant increases in demand because of the number of visitors to holiday homes and camping grounds during the summer months.

Technology

Over the coming years, technology will provide new opportunities that have strong potential to positively affect the management of water supply infrastructure. Technology may make water treatment and network inspections and monitoring easier, quicker and cheaper, and enable us to address supply issues more efficiently.

Environmental Awareness

There is growing awareness that water resources are increasingly precious. Consumers are becoming more aware of water efficiency methods and technology such as water-saving/low flow devices, rainwater harvesting, grey water and stormwater re-use. These changes in attitudes and behaviours may have a gradual effect on water demand and help to reduce average water consumption over the longer term.

5.2 Monitoring demand for water supply

Monitoring tools

The following tools are used to assess and analyse current demand and demand trends over time:

Table 5.2-1

Water use	Monitoring method
Bulk water abstraction and production	Abstraction volumes are derived from data flowmeters and production flow is derived from meters at Water Treatment Plants.
Daily/weekly water use	Council uses SCADA and data loggers through the network where possible to calculate and monitor demand flows. *
Consumption data (large users)	Council monitors metering records for the larger industrial customers

Leakage from the network and unaccounted for water loss	Council undertakes a leak detection programme and estimates the percentage of real water loss from our on-demand networked reticulation system*. This is being done for audit purposes and to report on the DIA mandatory measures as part of our annual reporting. We calculate the percentage of real water loss from our networked reticulation system in accordance with Water New Zealand's Water Loss Guidelines Minimum Night Flow Analysis**.

*In terms of assessing water use across the network, it is important to note that Council's estimates are primarily based on water production volumes, rather than actual water use per property. This is because most properties connected to Council's supply network are either on restricted or on-demand supplies (as defined here) – that is, they are not individually metered. Council generally only meters connections deemed to use an 'extraordinary' supply of water. The only fully metred Council water supply in Waitaki is the Kurow Water Supply. For asset planning purposes and for reporting to Taumata Arowai, we use the Network Environmental Performance Measures (NEPM).

**For Council's overnight water loss measurements, we do not allow for legitimate overnight consumption by businesses with 24 hour per day operations. Additionally, we use a value of 2 litres per connection, per hour for calculating our estimates, which does not allow things like hotel use, which would be far more use per connection – e.g. a hotel where there may be 20 toilets for one connection. For this reason, overnight water loss measurements are more useful as an indication of trends over time rather than actual demand at any one point in time.

5.3 Water supply demand data and trends

The following tables show data trends for water supply demand [production] over the last five years, based on the measurement tools outlined in 5.2.

Unaccounted for water loss

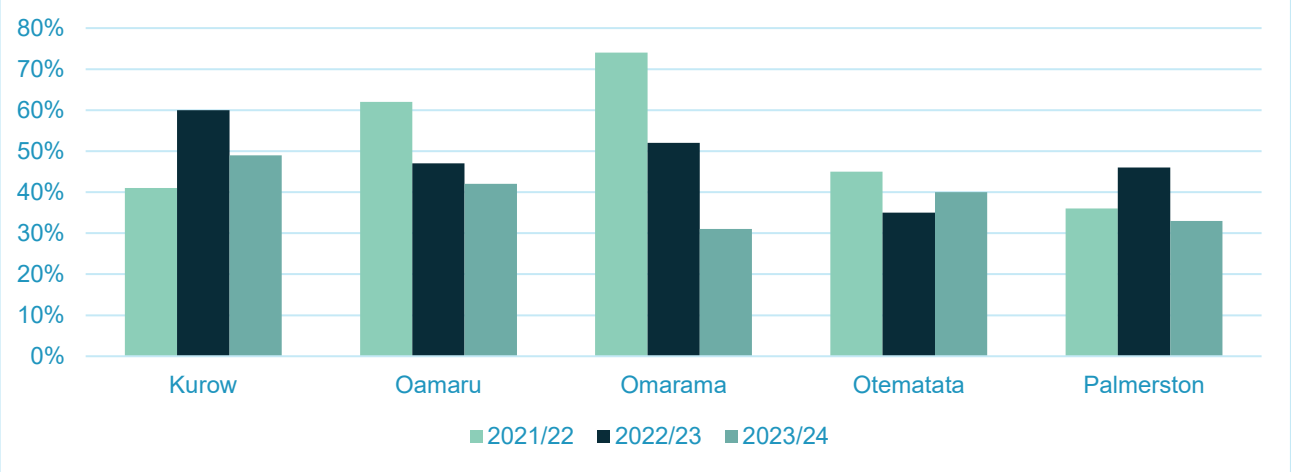
We measure the percentage of real water loss from our networked reticulation system, which is calculated in accordance with Water New Zealand's *Water Loss Guidelines* and as outlined in Table 5.3-1.

To help address water loss across the network that may be a result of leaks, Council has developed a leak detection programme and increased annual budgets to $250k per across the life of the Long Term Plan (**IBIS# 4490**).

Table 5.3-1: Water loss estimates (overnight unaccounted for water loss)

2021/22	2022/23	2023/24		Trend
Kurow: 41% *Ōamaru:* 62% *Ōmārama:* 74% *Ōtematatā:* 45% *Palmerston:* 36% *Not achieved*	*Kurow:* 60% *Ōamaru:* 47% *Ōmārama:* 52% *Ōtematatā:* 35% *Palmerston:* 46% *Not achieved*	*Kurow: 49%* *Ōamaru: 42%* *Ōmārama: 31%* *Ōtematatā: 40%* *Palmerston: 33%*	Achieved for all in 2023/24 except Otematata	Some of the declines in water loss could be attributed to a leak detection programme that has been undertaken in several townships around the district. In particular, considerable progress was made in Ōmārama, where major leaks were identified and repaired, and we are now following up with leaks on private property. Leaks and losses have declined by about 50 per cent in Ōmārama as a result.

Figure 5.3-2: Water loss estimates (overnight unaccounted for water loss)



As previously noted in this AMP, the Kurow, Otematata and Omarama supplies have historically had a higher number of network leaks. This is is expected to improve as Council's leak detection programme and network renewals take effect.

Estimated water demand across Waitaki supplies

The NZS 4404: 2010 Land Development and Subdivision Infrastructure Standard specifies for design purposes the daily consumption of 250 litres/person/day.

The Ministry of Health suggests a base requirement of 300 litres/person/day of water supply as appropriate for personal consumption, cleaning and washing.

As noted in table 8.6.1 most supplies in Waitaki are either restricted or on-demand. Council therefore uses existing data sources (i.e. SCADA or data loggers) to calculate the average daily demand per person based on water production to meet demand. The following estimates therefore do not necessarily reflect what is being consumed at a property level but do show trends over time.

Table 5.3-3: Average daily consumption per person across all water supplies

Based on demand, the following estimates were made for average daily water consumption per person across all Waitaki Supplies (restricted and unrestricted):

Target	2021/22	2022/23	2023/24	Notes
Fewer than 500 litres per day average consumption of drinking water per resident within the Waitaki District.	522 litres per day average. *Not achieved*	524 litres per day average. *Not achieved*	532 litres per day average. *Not achieved*	There was a small increase (less than 2% overall) in drinking water consumption between 2021 and 2024. Consumption on the Waitaki Valley supplies is higher than others and the recent leak detection programme has identified high leakage in private property. Messaging to the community around water usage and the impact a potential change in water billing could help to change behaviour.

Estimated water demand across Waitaki supplies - UNRESTRICTED

Figure 5.3-4: Unrestricted supplies - average daily consumption per person (trend)

These are based on the figures and calculations used to report on the DIA's Non-Financial Performance Measures. They are based on overall water supplied for each supply (demand) and based on usually resident population, with allowance made for visitors.

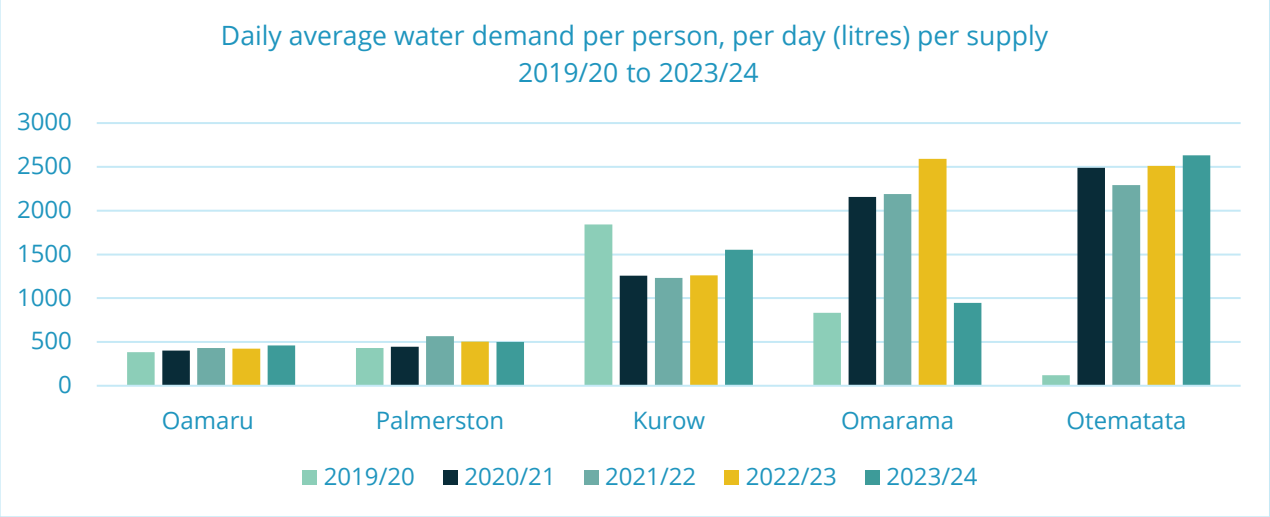


Figure 5.3-5: Unrestricted supplies - average daily consumption per person (5-year average)

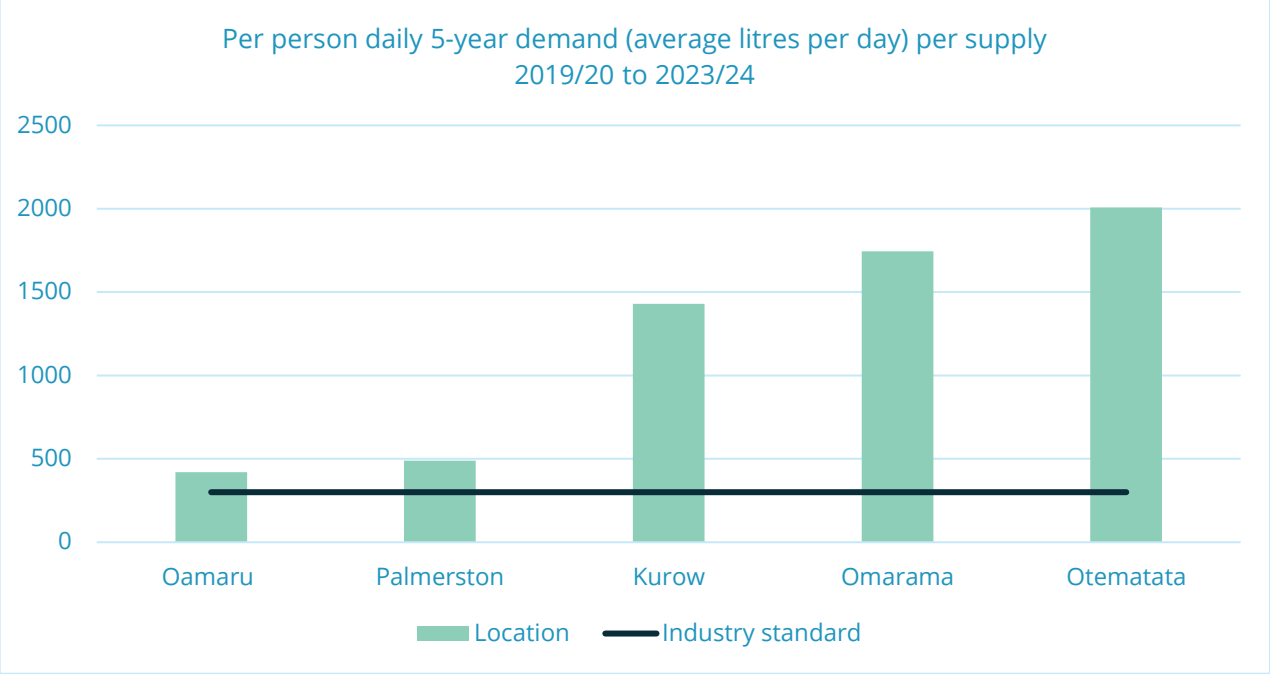


Figure 5.3-6: Unrestricted supplies - average daily consumption per connection

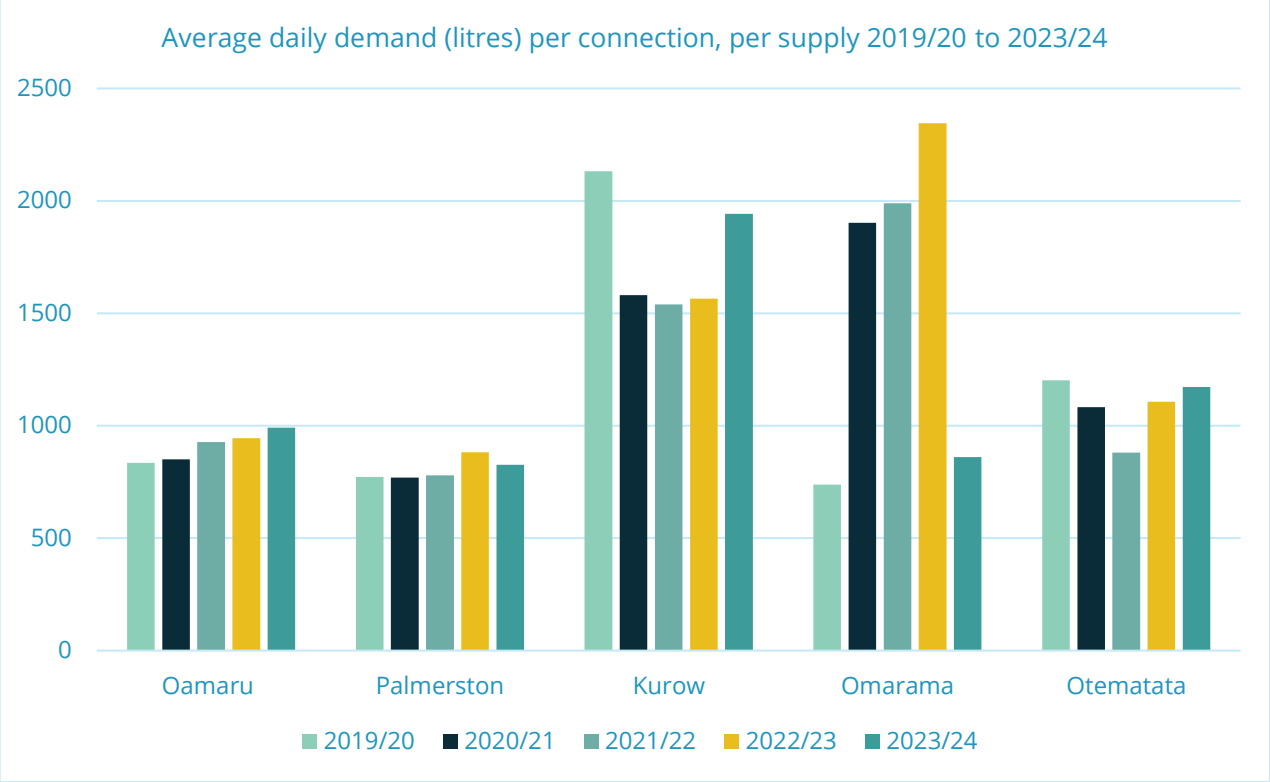
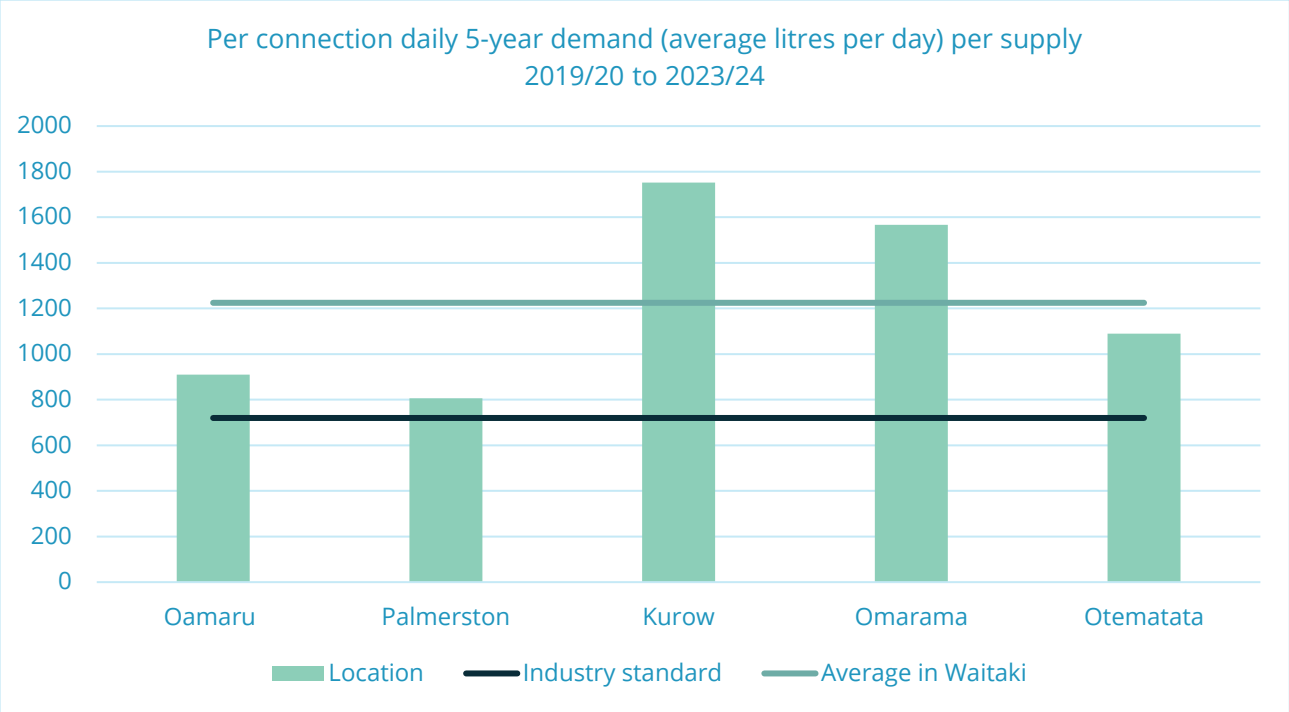


Figure 5.3-7: Unrestricted supplies - average daily consumption per connection



Summary of unrestricted demand

The charts above indicates relatively consistent water demand per person and per connection for Oamaru and Palmerston over the past five years, and for Kurow and Otematata over the past four years – however, it should be noted that the average per person demand for Oamaru has increased from the 5-year by more than 200 litres per day and now exceeds the industry standard. Palmerston's average daily demand per person over the past five years has meanwhile decreased but is still above the industry standard. Demand in Omarama dropped significantly in 2023/24 and likely refects the leak detection and leak repair work done following the water treatment plant upgrade in late 2023.

While demand trends are fairly consistent across unrestricted supplies, daily per person demand in the townships located within the Waitaki Valley is well above the industry standard – as is daily demand per connection for Kurow and Omarama. It should be noted that Omarama's demand per connection did drop to 860 litres in 2023/24.

Some of this higher demand in the Waitaki Valley can be attributed to the historically higher number of leaks on these supply networks, however, there are other significant factors at play.

Overall, according to the 2023 Census, Waitaki has a higher proportion of unoccupied private dwelling than New Zealand overall (and Otago).

According to Infometrics, the proportion of unoccupied dwelling in Waitaki is 18 percent (compared to a New Zealand average of 10.9 percent and Otago average of 14.9 percent). In particular, most of the properties in Ōtematatā are purchased as holiday homes and do not increase the resident population but have a significant effect on the peak tourist population capacity. Anecdotal evidence suggests that holiday home property owners leave taps running

during winter to prevent private plumbing pipes bursting. Add to that the irrigation of sports facilities such as a golf course and sports grounds and the demand for water is significantly increased. This additional demand causes a skewed average daily demand as shown above.

There were 9,855 occupied dwelling in Waitaki 2023 (Infometrics), with an average of three bedrooms per dwelling. Data shows an occupancy rate of nearly 2.4 people/dwelling for the Waitaki District. Based the industry standard of 300l/person/day, this would equate to an average daily household use of 720 litres/dwelling (2.4 x 300).

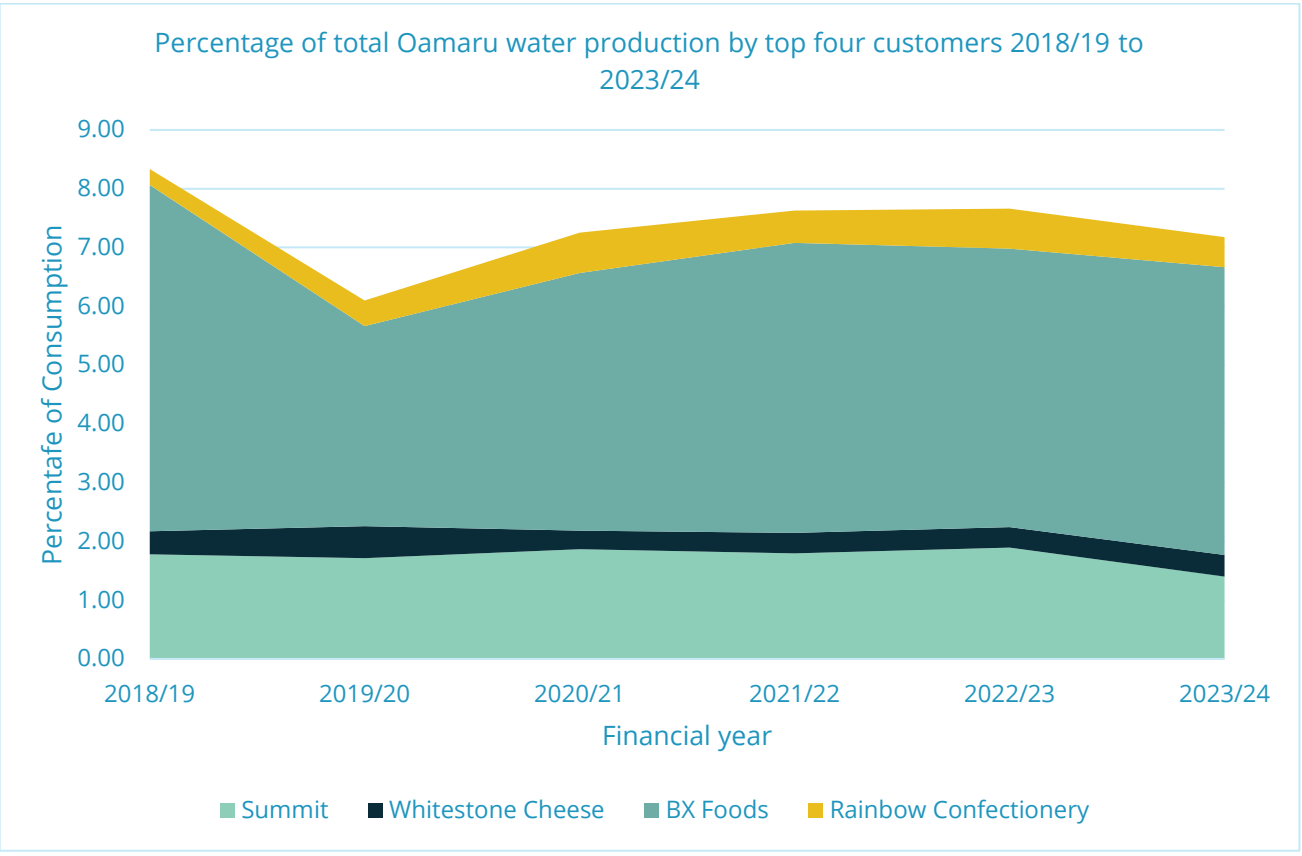
There are opportunities to reduce demand on these supplies through both improved demand management interventions, and leak detection and management. This is reflected in Council's capital works programme over the next nine years to 2034, which includes higher budgets for leak detection and likely implementation of universal metering.

Large water users (metered) – Oamaru

Due to the large volumes of water used by these customers, they are deemed 'extraordinary' users of the water supply and are therefore metered. The following graphs shows actual percentage of consumption based on metered water used per annum.

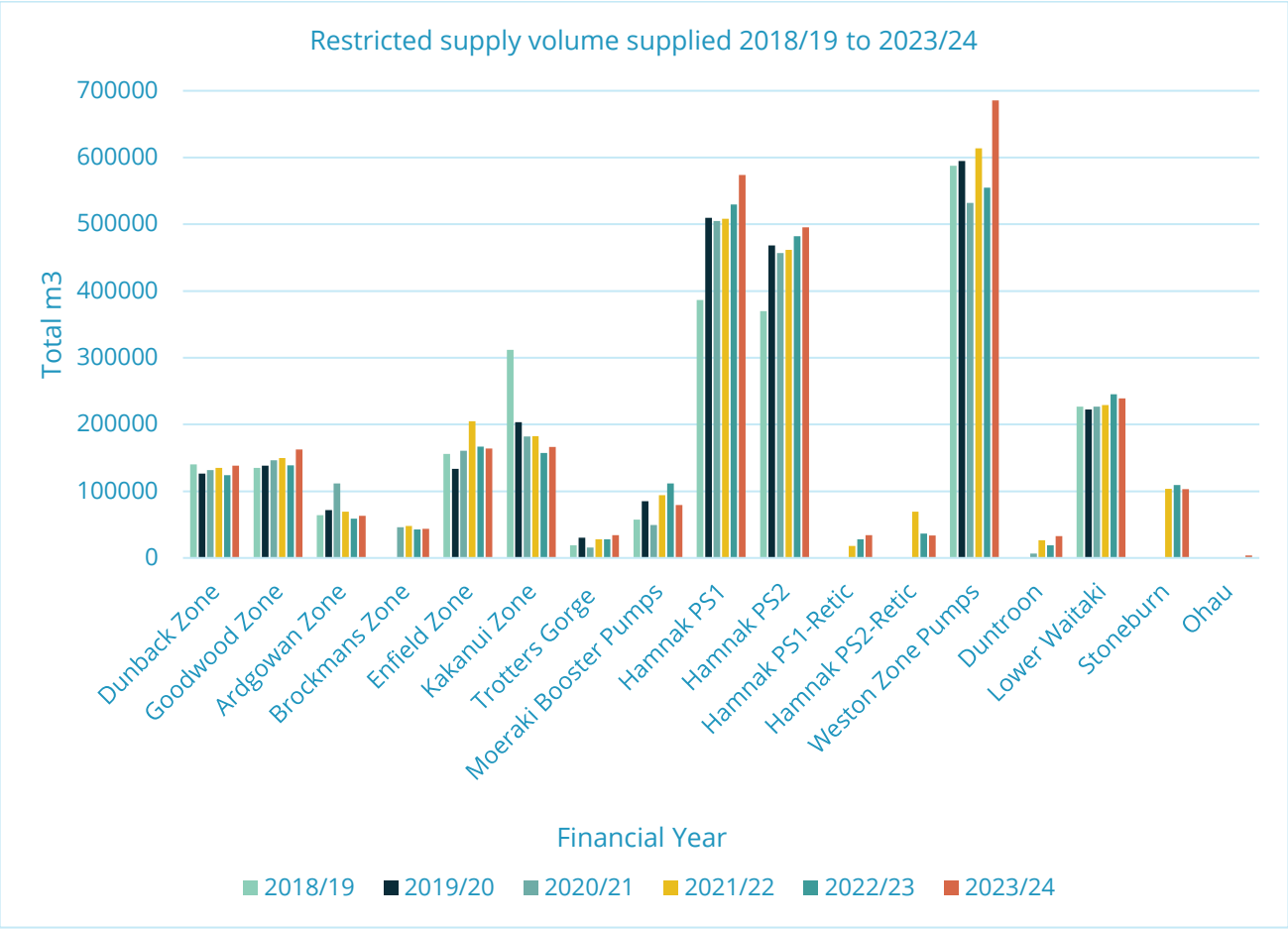
The graph shows our biggest user is BX Foods (sometimes referred to as Lean Meats Oamaru). Water use by these businesses has been relatively stable over the past five years and is not expected to increase significantly over the term of this plan.

Figure 5.3-8: Large water user consumption



Estimated water demand across Waitaki supplies - RESTRICTED

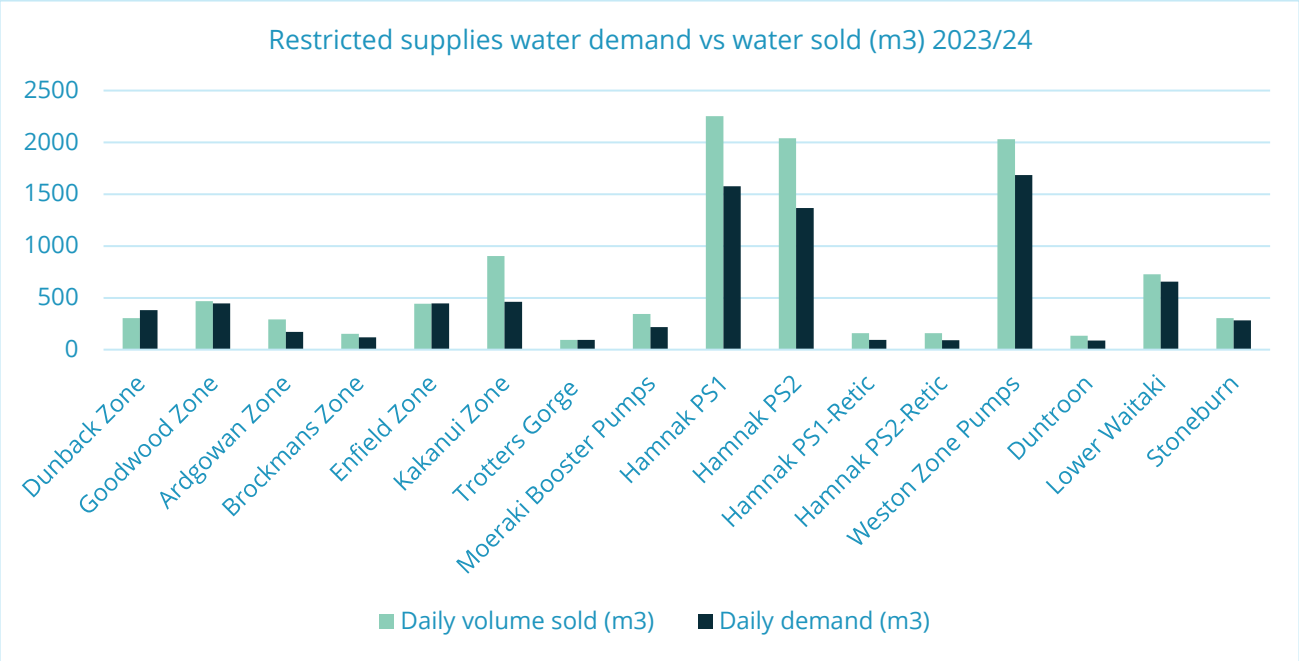
Figure 5.3-9: Restricted supplies – water supplied per annum (m^3) by restricted zone area



The most notable change in supply volumes over the past six years is for the Weston zone of the Oamaru Water Supply. This reflects an upgrade to the supply in 2023 which enabled properties within the urban area of the Weston zone to go from restricted to on-demand supply.

Supply demand also increased for the Hamnak PS1 zone of the Oamaru Water Supply, reflecting the transfer and connection of the community-owned Maheno supply to Council in 2023.

Figure 5.3-10: Restricted supplies water demand vs water sold



This shows that, with the exception of Dunback and Enfield, the demand (usage) in all other supplies within the rural restricted water supplies or zones (Kakanui, Weston, Enfield, Dunback and Goodwood) is well within the available units sold.

Dunback and Enfield supplies tend to have a greater number of network leaks and there may also be a higher ratio of illegal connections or restrictor tampering. Council has a programme for restrictor checks and leak detection over the next nine years, with higher annual budgets set aside for these. A programme for rural network watermain renewals is also included.

5.4 Influencing and managing demand

Council has several tools available that influence demand - including metering and pricing, restrictors on rural supplies, consent conditions, restrictions, and conservation education programmes when needed.

Council monitors and manages the District's water resource and when conditions are dry and treatment plant and/or storage capacity is under pressure, restrictions can be considered.

Water use by larger consumers can be monitored through metering and charging is a method which generally results in water consumption decreases.

Demand management includes both asset and non-asset strategies to manage demand across the Water Supply activity. The objective of demand management is to actively seek to modify customer demands for services to:

- optimise utilisation/performance of existing assets.
- reduce or defer the need for new assets.
- meet the Council's strategic objectives.
- deliver a more resilient and sustainable service; and
- respond to customer needs.

Examples of asset strategies include response times, renewals programmes, codes of practice, technical standards, use of approved standards materials and quality assurance measures.

Non-asset strategies include education materials/campaigns, promotion of new technologies and efficiencies, leak detection, metering, and property inspection.

Prudent management includes managing water demand by best using the water that is available. Water demand management involves the adoption of policies to control consumer demand or investment to achieve efficient water use by all members of the community.

Council will consider all options for demand management as appropriate.

Notably a project to investigate universal metering has been included in the 2028/29 financial year of the Long Term Plan to "assess the drivers/benefits for universal water metering against the costs of installation, amending financial policies and ongoing reading, administration/billing, fielding enquiries/complaints and depreciation and renewal".

Demand management measures

Water demand management options can be categorised into two key areas: measures and instruments:

- **Measures –** describe 'what to do' to achieve a reduction in water use
- **Instruments** – describe how to ensure that the chosen measures are put into place or taken up

The following table provides a summary of demand management measures, including those already undertaken, and potential or future measures that could be considered for adoption.

Table 5.4-1: Range of available demand management measures and instruments

Demand management measures and instruments	Currently used	Potential to be used in the future
Measures		
Active leakage control programme	√	
Reactive leakage repair	√	
Restrictor checks on rural restricted supplies	√	
Bulk metering on parts of the rural supplies to improve understanding of demands	√	
Bulk metering on reservoir outlets	√	
Metered customers meter testing and replacement programme	√	

Demand management measures and instruments	Currently used	Potential to be used in the future
Investigating new sources of water	√	
Ongoing capital upgrades and renewals programme	√	
Building new drinking water supply infrastructure	√	
Asset renewal planning programme to prioritise infrastructure replacement	√	
Network efficiencies		
Water modelling to improve system performance and reduce leakage	√	
Pressure management (pressure zone in urban areas)	√	
Measures – community engagement		
Passive education programme with information on the Council website	√	
Community education programme	√ **(minimal, ad hoc)**	
Targeted education programmes for specific users (rural properties)	√ **(minimal, ad hoc)**	
Advice for residential water efficiency methods	√ **(Waihemo only)**	
Water advisory service		√
Conserve water notices (incidents/emergencies)	√	
Instruments – regulatory control		
Restricted connections (trickle feed to rural properties and some urban)	√	
Water restrictions during peak summer periods including developing water restriction protocols to guide Council decision-making and to provide customers with information	√ **(limited to Waihemo)**	√
Active enforcement of water restrictions		√

Demand management measures and instruments	Currently used	Potential to be used in the future
Proposing district plan changes or resource consents to require mandatory water efficient fixtures in new construction – e.g. grey water, rainwater tanks, mandatory dual flush toilets in all new toilet installations etc		√
Requirement for large customers to prepare demand management plans		√
Water Supply Bylaw 2023	√	
Enforcement action for cases of illegal connections /use	**√ (limited)**	
Preparing a general water policy or demand management policy		√
Metering, pricing and other financial initiatives		
Metering and charging (volumetric pricing) for urban supplies	**√ (Kurow only)**	√
Metering and charging (volumetric pricing) for known high water users of urban supplies	√	
Universal metering on all supplies		√
Introducing seasonal volumetric charges for metered customers		√
Measures – water capture, reuse and recycling		
Rainwater tank rebate or subsidy programme		√

Metering

In general, residential domestic connections are not metered, with only business and industrial connections metered. The exceptions are properties deemed to be 'extraordinary use' (as defined under the Waitaki Water Supply Bylaw 2023) and Kurow, where all connections are metered.

A new report - *Valuing water: sustainable water services and the role of volumetric charging* released in 2024 by the New Zealand Infrastructure Commission, shows that charging for metered water can significantly reduce a community's water needs through both reduced consumption and leak detection, and ultimately defer the need for expensive upgrades. Further reductions are achievable though information campaigns that are tied to customers' metered usage.

Key findings of the report:

- New Zealanders are one of the world's highest per-capita water users. The 40% of Kiwis who don't have metered water likely contribute to these high consumption statistics.
- Auckland has volumetric water charges and a per-capita use similar to the UK, Ireland and Switzerland. While Wellington and Hamilton have unmetered water supply and residents use over a third more water.
- When Kāpiti Coast District Council introduced water metering, 75% of its ratepayers ended up paying less than they would have under the previous fixed-charge system. While in Tauranga water metering decreased the average cost of water by 40% when compared with their projected cost increases.
- Water supply and security is a growing issue in many of New Zealand's towns and cities. Key causes are poorly maintained assets (leaky pipes), population changes and climate change. On top of this, fresh water is a finite resource and only a certain amount can be taken from a stream or river before there are environmental consequences – so wastage through leaks and excessive household use could undermine social license for future water takes.
- Recent research found that 72% of New Zealanders see volumetric charging as the fairest way to pay for mains water services; and volumetric charges can be progressive and reduce costs for many low-income ratepayers. Many local authorities that have introduced water meters set up working groups to specifically consider and address the equity issues around volumetric charging in their communities.

The direct costs of implementing universal metering for urban supplies in Waitaki are significant and estimated to be in the order of $5M. In addition, the annual operating costs will place a further burden on consumers and at this time Council Engineers considers universal metering not to be a viable option. Although the direct costs of implementing universal metering could outweigh the direct benefits, it should be noted that there are benefits to the environmental, social and cultural wellbeings of the District.

With this in mind, Council has included a project in 2025/26 to assess the drivers and benefits for universal water metering against costs of installation, amending financial policies and ongoing reading, administration and billing, fielding enquiries and complaints, and depreciation and renewal.

Drought and Water Shortage Management Plan

The likelihood of droughts impacting on water supply resilience is a possible outcome of climate change. Council has accordingly developed a plan to provide a guide to reducing water usage in periods of drought or water shortage. A copy of the plan can be viewed here.

5.5 Forecasting and planning to meet demand

General assumptions

Demographic

The population projections provide insight into the future demand and may have a significant effect on how we deliver water services. It is also important to note that people are generally healthier than 40 years ago and are more active and likely to travel. This may place further demand and changes on how we deliver water services.

An ageing population may result in demand for additional smaller properties (units)/retirement villages and an increase in single person households. As a result, the demand for individual connections is likely to increase. Single person households also have a higher per capita water consumption as economies of scale are lost. As a result, demand (volume) is likely to increase. Ageing populations are also more susceptible to disease and require better water quality.

Economic

The key demographic assumptions affecting future demand include that:

- Agriculture will continue to be a key economic driver for demand in Waitaki, although a plateauing in new dairy conversions in recent years suggests that demand for water from agriculture will remain relatively stable.
- Demand from high water users is not expected to grow significantly, although the development of new industry in the district – most likely to occur in the Oamaru supply areas – could increase demand. The Oamaru Water Supply Design Basis, Capacity and Strategy will address this.

Water availability

The Waitaki District has an arid climate and demand for water is very high, with availability of water is closely associated with development. Industrial, agricultural, business and residential development all depend on the availability, quantity and quality of water. Development in one sector ultimately has a flow on effect onto the other sectors.

It is anticipated that the effects of climate change will result in increased frequency and intensity of severe events such as severe droughts and floods. It is therefore essential that Council are aware of the effects of climate change and integrate these into the standard considerations to ensure the water activity in the district is sustainable for the future.

The sustainable and efficient management, distribution and protection of water in the District is expected to become increasingly important to ensure this resource is available for human consumption, economic activity and stock habitation over the longer term.

Due to this demand for water, investigations are being undertaken into the longer-term capacity and distribution of existing water sources, such as Ōamaru Water Supply.

The Ōamaru Water Supply Design Basis, Capacity Study and Ōamaru Water Strategy work undertaken to date is outlined further in the following section (5.6). Other supplies are addressed, which are yet to have this detailed work undertaken, are addressed in section 5.7.

5.6 Ōamaru Water Supply future use and capacity

The Ōamaru Water Supply currently supplies about 65 percent of Waitaki's population, so is the most significant single source of safe drinking water for the district. Understandably, this has been the focus on most future demand and capacity work to date.

Design basis work

During 2018, Council started a new project to provide a considered basis for the future analysis of development and renewal scenarios for the Ōamaru Water Supply, including conceptualised, indicatively costed solutions aligned with predicted stakeholder and community needs. The project was staged, with Stage One considering:

- Why systems are needed
- Projection period
- Who are we serving?
- Where will we serve?
- When is it needed?

Stage Two of the Capacity Study sought to identify areas where the existing networks cannot meet the 'needs' identified in Stage One and develop conceptual solutions for improvement.

Stage Three consisted of developing conceptual solutions to identify gaps between current capability and projected future need.

Summary design basis outcome

Stage Two found that the total area of land assessed was vast - around 352,000ha considered for Water Supply. Around 103,000ha of that is serviced by Council and encompasses around 10,000 dwellings, with around 9,400 of those serviced Council.

At that time, it was noted that there was potential for significant dairy expansion, with around 36,000ha potentially available as either currently irrigated but not in dairy farm or proposed dairy irrigation areas. This is an approximate doubling of the existing dairy land area. Infrastructure assessments sought to identify a suitable basis for theorising un-accounted for use and network expansion.

Stage Three completed the final analysis component by identifying and considering the relative Volume and Flow (weighting) to be applied against the base demands, allowing the development of the design volume and flows for calculation purposes.

The study was Ōamaru network centric and held as a base premise that reasonable extension of services from the Ōamaru township were feasible, and probably likely.

The inputs from all stages of the study were used to complete preliminary design scenarios calculations and allow the broad estimation of the Ōamaru network asset set value for differing service levels. Elected member input was sought and a design basis for water was developed.

This work enabled the Ōamaru Capacity Study (what we need to be able to deliver to the stated level) and development of an Ōamaru Water Supply Strategy (how we will be able to deliver this).

Design basis work and capacity studies will be undertaken for other Waitaki water supplies over the next ten years as part of asset planning.

Future use and capacity

The Ōamaru Water Supply services the Ōamaru township and the surrounding smaller townships and associated rural areas extending from the Pacific Ocean west to the Enfield area and from the Ōamaru township south to Moeraki. Around 16,000 people and 34,000ha are serviced by the supply.

The Ōamaru Water Supply sources water from the Lower Waitaki Irrigation Company (LWIC) as a customer with volume aligned to Council's shareholding in the company. This source water is delivered by LWIC to Council's pumping station at Redcastle by open irrigation channel. From there, Council pumps the water to a substantial open storage pond for treatment and distribution.

Current water supply system

There has been an ongoing deficit in membrane production that is most likely being satisfied by operating the membranes at a production rate that will result in a dramatic shortening of the membrane life. Current peak demand is around 16MLD and is above the sustainable production of the membranes.

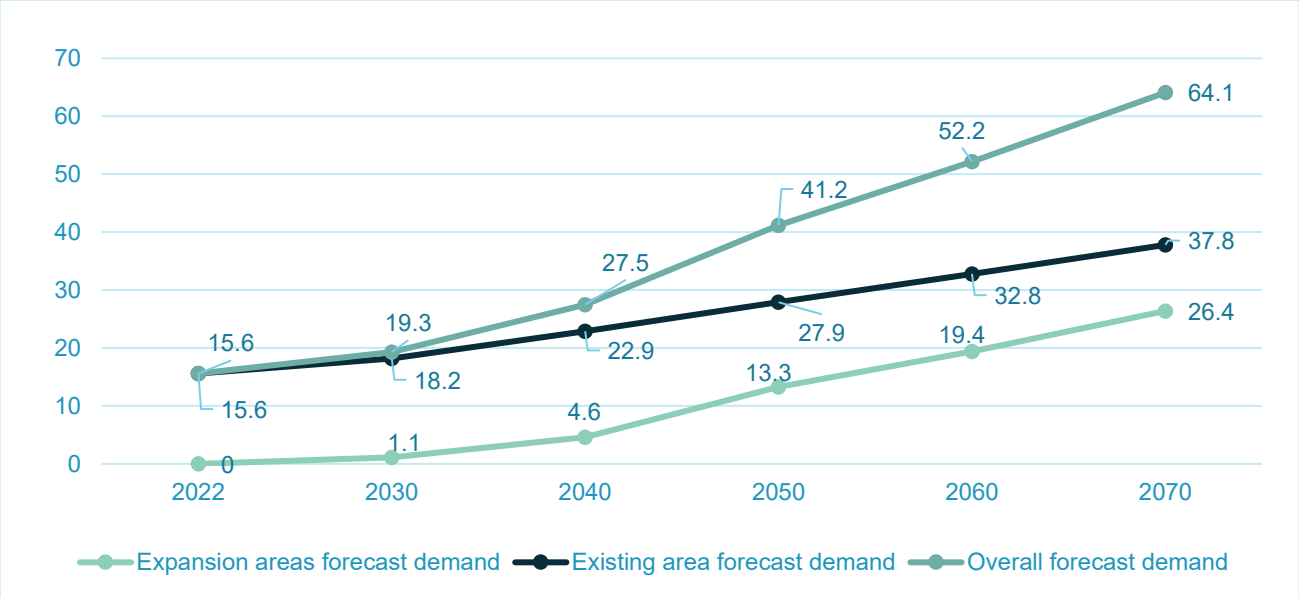
The current water system is considered to have quite low resilience in source and raw water, and water treatment, owing to some concerns around infrastructure robustness and a general absence of system redundancy. The treatment process, while satisfactory in terms of bacteria and protozoa, lacks the ability to effectively manage cyano-toxin risk and has limited futureproofing to address nitrogen and other potentially emerging contaminants, although these are considered unlikely.

Demand forecast and impact

Future demand is expected to be drawn from two primary drivers:

- growth within the current service area; and
- expansion into adjacent areas.

Figure 5.6-1: Ōamaru forecast demand by decade in megalitres per day (MLD)



By 2030 demand is predicted to be around 18.3 to 19.3 MLD, with the 1 MLD difference being related to the expansion into Lower Waitaki.

The 50-year demand is forecast to be some 64 MLD where the entire expansion area is serviced. The forecast demand for the existing service area is linear over the period while the expansion area demand is predicted to occur in distinct steps as expansion occurs and is thus subject to a high level of control.

The forecast increase in demand from the existing area plus the expansion area shows that:

- **Source Water** capacity will be met or exceeded in the early 2030's for permitted take from the LWIC
- **Raw water** harvesting capacity will be met or exceeded by 2030 for pumps and the Redcastle falling main, and the Redcastle rising main will be over design pressure, increasing the risk of failure
- **Treatment capacity** will be met or exceeded by 2030 for treatment feed to the WTP at times where the Ardgowan Dam is low. Membranes will be able to sustainably supply only around half of the forecast demand.
- **Capacity** of all infrastructure components will be exhausted by 2040, although the average water race yield to Redcastle will be sufficient until closer to 2050

Additional source, raw water and treatment capacity will be required in the 2030-2040 period irrespective of supply to the expanded service area, although the quantity of additional capacity will vary. Additional membrane capacity is needed now and being addressed through investment into membrane and plant resilience improvements.

Distribution capacity is likely satisfactory until the 2050s where service is retained to the existing supply area. However, additional South Hill capacity will be required in the 2030s and both the HamNak (south to Moeraki) and Weston pipelines will need upgraded in the 2040s to meet the forecast demand of the existing supply plus expansion areas.

Satisfying the forecast demand

The forecast demand is substantial and only two non-saline water sources are considered viable; Waitaki River and the Lower Waitaki Aquifer.

The Waitaki River, via the Lower Waitaki Irrigation Company (LWIC) race system, is the current water source. It can be accessed in multiple alternative locations along its length. The Lower Waitaki Aquifer is restricted to the Lower Waitaki Plains area.

For the purpose of assessing network development, investigation works considered source locations at the Lower Waitaki Pond on Ferry Rd, Neighbouring Irrigation Systems (NIS), and the Waitaki River direct at around Ferry Rd. Where appropriate to the solution, the Redcastle intake was retained in considering options.

A range of solution scenarios were developed ranging from sole sourcing from NIS to dual sourcing from NIS and LWIC to sole sourcing from the Waitaki River at Ferry Rd. The extent to which each source was used, in scenarios where dual sources were employed, also varied. This produced a large and complex array of potential solutions that were reduced to four representative solution scenarios that were considered in greater depth:

Table 5.6-2: Four scenarios considered for meeting future demand

NIS supplies all	NIS source developed to serve all the study area
Ōamaru supplies all	Ōamaru source developed to serve all the study area
Ōamaru supplies minor coastal expansion	Ōamaru supply area retained with minor increase to those areas along the HamNak pipeline and Lower Waitaki. NIS supply extends inland from the NIS source and coastally to Awamoko in the north and Kauru Hill in the south
Ōamaru supplies Township and Lower Waitaki only	Ōamaru supply area is reduced to Ōamaru but expanded north to include Lower Waitaki. NIS supply extends as far as Weston and connects to the HamNak pipeline which in-turn supplies Kakanui

A significant issue identified during this work was the cost risk Council is exposed to as a consumer of the LWIC.

Council holds around 10 percent of the LWIC shares and would be reasonably expected to contribute in the order of 10 percent of any development works LWIC may undertake.

The four scenarios for meeting demand have since been further analysed with consideration to affordability, debt limits and other key criteria as part of developing the Oamaru Water Strategy.

This assumes that Council will likely be staying with Lower Waitaki Irrigation Company, and we have therefore budgeted a contribution to their upgrades in the Long Term Plan, starting in 2030/31.

Scaled back budgets have been included in the Long Term Plan for implementing the Strategy, based on ensuring progress is balanced with debt limits and what is affordable for the community. These are:

- **2025/-2034:** Oamaru Water Treatment Plant Renewals (IBIS 4548)
- **2025-28:** Phase 1 (Build); Phase 2-3 (Planning) $4.15m (IBIS 4547)
- **2030-34:** Oamaru Water Source Resilience $12m (IBIS 4597)

5.7 Demand and capacity issues for other supplies

Design basis and capacity study work, along with strategic planning, will be undertaken for all other Waitaki supplies over the next nine years, reflecting Council's improved asset planning capacity and capability.

In terms of demand pressures and or capacity issues, the following supplies are already known to have capacity issues and accordingly, budgets are included in the Long Term Plan.

Lower Waitaki

The Lower Waitaki water supply draws, treats and distributes water from the Lower Waitaki aquifer to a broad area in the Lower Waitaki plains.

The aquifer has abundant allocatable volume of generally clean, clear consistent water. Generally short-term turbidity events sometimes occur and occasionally result in the isolation of the supply.

The water has known nitrate contamination at moderately elevated, but compliant levels, with NO3-N typically sitting at around half the drinking water standards Maximum Acceptable Value.

The current groundwater bores, pumps and infrastructure capacity are insufficient to meet the vastly increased 2070-year forecast demand and additional water is required.

The potential to water the Awamoko supply and adjacent un-serviced areas results in multiple design scenarios for each potential solution. Solutions fall into two source water categories:

- Lower Waitaki Aquifer, and
- Ōamaru Water Treatment Plant

Both sources can provide adequate outcomes but have different key considerations:

Lower Waitaki Aquifer solutions considered retaining the separate bore field and treatment plant or alternatively combining both on the same site.

- Allows for staging better than pipeline solutions
- Provides the least cost solution where utilised without turbidity mitigation

- Potentially requires turbidity mitigation, most likely by way of storage which is a significant cost item
- Carries nitrate treatment risk which is a significant cost liability

Ōamaru Treatment Plant solutions considered several different pipe alignments and pumping arrangements

- Pipelines offer limited staging opportunity due to their very long lives
- Impacts of the additional consumptive demand on the Ōamaru bulk water system could be significant

At this stage a budget of $500,000 (IBIS 2458) has been included in the Long Term Plan in 2028/29 to provide scope for either option.

Stoneburn

The Stoneburn Water Supply serves a generally sparsely populated but relatively large geographical area inland of Palmerston township in East Otago.

Water is sourced from a shallow semi-direct gallery intake on the North Branch of the Waikouaiti River and pumped to a large, open reservoir prior to chlorination and distribution to consumers. Water quality is poor with frequent taste and odour issues, high likelihood of disinfection by-product formation and no protozoa barriers. Volumes are modest and primarily used as stock-water. Around 33 dwellings and a population of 90 are connected to the supply.

The supply does not meet the requirements of the Water Services Act and requires upgrading.

The East Otago area has typically relatively limited water resources resulting in two general upgrading approaches:

Utilise the existing source

The existing source is volume limited and does not have sufficient continuous yield to meet forecast demand without substantial buffer storage. The existing open reservoir is sufficient to provide the necessary storage volumes, and when cleaned and covered will likely produce stable, treatable water suitable for package treatment or End Point Treatment

Connect to an adjacent drinking water supply

The Waihemo supply lays within connectable distance, albeit at a noticeably lower elevation and provides treated water. Waihemo water could be used to supply the entirety of the Stoneburn supply or only those consumers at more modest elevations (low RL consumers). The low RL consumers account for around three-quarters of all dwellings yet only around one-third of volume.

The Waihemo supply draws from a moderately yield limited aquifer and will have difficulties satisfying the additional demand connection to Stoneburn would impose, irrespective of whether it is the full or low RL volume.

Multiple solution variations

Multiple solution variations were considered utilising either current source or Waihemo water. All represented acceptable risk across all of Councils risk measures.

Utilising the existing source to supply either fully treated water or partially treated water and End Point Treatment offer significant cost savings although they do carry slightly elevated, but medium to low, risk. Both require source and raw water improvements, and these could be carried out prior to committing to treatment process or the use of End Point Treatment allowing potential treatment optimisation.

At this stage, utilising the existing source is the preferred solution, and work is currently underway to determine the preferred upgrade method that will meet the requirements of the Drinking Water Standards.

Otematata Water Supply

The Drinking Water Safety Plan Risk Assessment identified there may be insufficient storage currently for this supply during an emergency event such as a natural disaster. Budget has been included in the Long Term Plan to undertake and issues and options and assessments for addressing this issue.

Other supplies

It is anticipated that within the next decades, several of the private supplies within the Waitaki District – or on the periphery – will want to connect to the Oamaru Supply given the increasing pressures of legislative requirements and costs associated with sourcing and treating water.

Council has budgeted $4.4 million in 2025-2026 to upgrade the treatment of the Awamoko, Tokarahi, Kauru Hill and Windsor schemes. This is in recognition of the fact that improvements to treatment quality are required now to meet Water Quality standards, while a connection to the Oamaru scheme could be years away. A further $500,000 in 2028-2029 to increase the quantity of the Lower Waitaki scheme, which could be achieved by connection to the Oamaru scheme.

5.8 Planned capacity upgrades

Capacity upgrades planned for the term of this Plan to improve or maintain service levels amount to $25.4 These include:

IBIS #	Project	Budget	Year/s
2458	Lower Waitaki Water Supply capacity upgrade	$500k	2028/29
2467	Waihemo urban and rural watermain upgrades to improve water supply and fire-fighting capacity	$3.5m	2026-34
4573	Appleby Street (Hampden) Suction Main Upgrade to maintain and improve supply capacity	$100k	2026/27
4588	Oamaru North End Falling Water Main Upgrade to enable provision of more water to the North End of Oamaru and future supply capacity	$6.1m	2026-28
4597	Oamaru Water Source Resilience	$12m	2030-34
4611	Watermain upgrades to provide capacity for future supply extensions (Oamaru Water Supply Strategy)	$3.2m	2031-34
	Total	**$25.4**	**2025-34**

6 Risk and resilience

6.1 Introduction

A systematic and consistent approach to risk assessment improves Council's ability to manage its assets within resource limitations and to prioritise expenditure and actions that can avoid or mitigate the effects of an identified event.

Risks can be grouped into financial, operational, or organisational categories. Their negative consequences can seriously impact public health and safety, incur financial loss or adversely affect public image. The risks identified might be relevant to many activities and be of concern at corporate level, or they might be localised, at an asset-specific level.

This section describes the risk management processes used for the water supply activity. Assessment and management of risk provides defensible tools for the communities and Council to develop prudent work programmes that support sustainable development.

6.2 Corporate risk management approach

Council adopted a new Risk Management Policy in February 2023. It recognises that sound risk management is a function that will support better decision-making, increase awareness of potential issues, and strengthen the organisation's capability and maturity. It was reviewed in December 2024.

The new policy is aligned to the principles of the ISO 31000:2018 Risk Management Standard. It contains details of the risk management approach to be followed by Council and details the methods used to identify, assess, manage, and report on risk. It references the different types of risk and details the differing approach to the management of each.

This policy applies to all employees and governing body members of Council.

WDC's Risk Management Framework comprises five main elements:

- Operational Risk Management
- Project Risk Management
- Key Risk Management
- Issue Management
- Operational Risk Event Management

Council aims to identify and manage all types of risk faced by the organisation. Risks are documented in one of three ways:

1. Key Risk Register
2. Operational Risk Register
3. Project RAIDD (Risks, Assumptions, Issues, Dependencies, Decisions) Log

Council will identify Operational Loss Events and report financial losses to the Performance, Audit, and Risk Committee.

Issues, whether because of a known risk crystalising, or identified through other means, will be managed appropriately through to resolution.

Risks are categorised and documented in the appropriate format, as show in the table below.

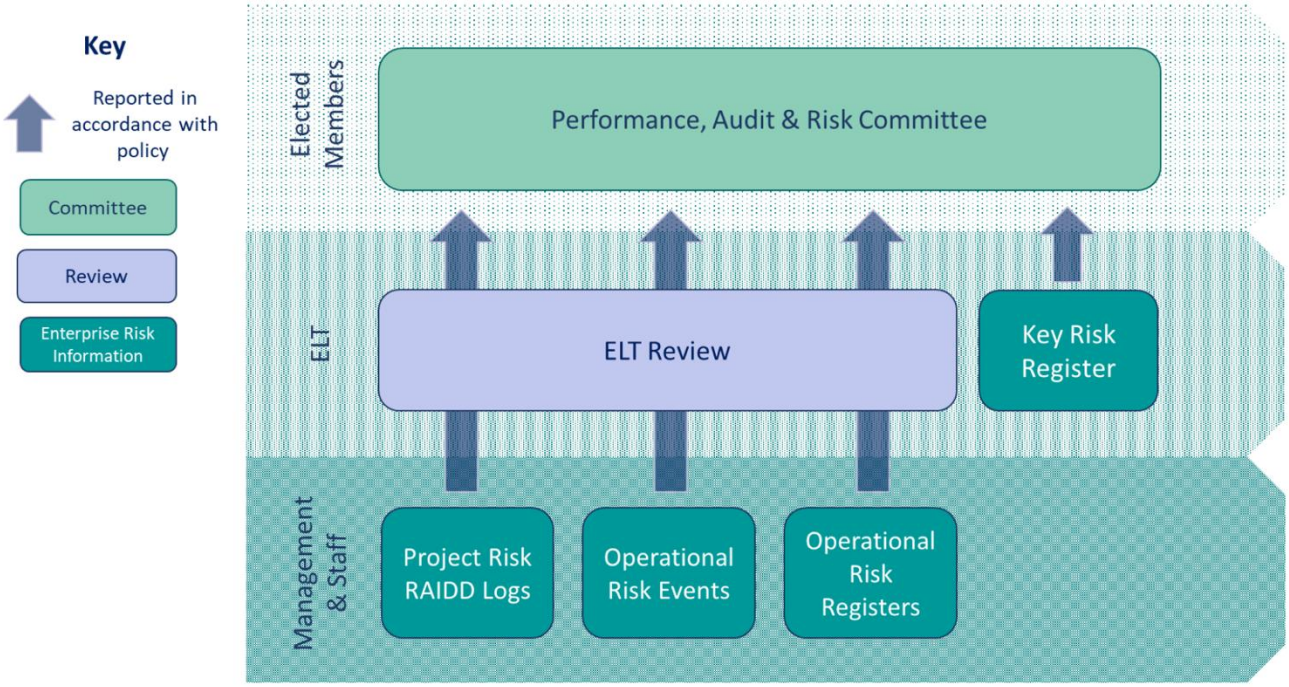
Risk categorisation

Risk Type	Sub-category	Description	Document
Financial	Credit	The risk that a counterparty may default of their obligations (a given financial claim is not paid in full) or have their credit rating downgraded.	Key Risk Register
	Liquidity	The risk that an organisation is unable to meet its financial liabilities as they fall due.	
	Market	The risks that arise due to fluctuations in the value of, or income from, the assets of an organisation.	
Operational	People	Loss resulting from inadequate or failed internal people.	Operational Risk Register or
	Process	Loss resulting from inadequate or failed internal processes	
	Systems	Loss resulting from inadequate or failed internal systems.	
	External	Loss resulting from an external event.	
Strategic	N/A	Risks that are created or affected by the chosen strategy of an organisation.	Key Risk Register
Project	N/A	Risks associated with the design, implementation, and delivery of a project. Most of these risks should close with the project, but some may be transferred to Business-as-Usual dependent on what is being delivered by the project.	Project RAIDD Log

Corporate risk management framework

The diagram below shows ownership of sources of risk information and how these are connected and reported to the Performance, Audit, and Risk Committee (PAR).

Risk Management Framework Diagram



6.3 Key strategic risk management documents for water

Council has developed the following key documents to guide and support risk management relevant to the water supply activity:

Type	Document	Purpose	Document links
Bylaws	Water Supply Bylaw 2021	The bylaw has been developed to ensure the district's water supplies are managed and regulated in a way that meets the needs of all consumers.	Water Supply Bylaw
Policies	Policy on Drinking Water Quality 2020	To set out Council's commitment to providing safe and secure drinking water to our communities and to guide decision-making and activities supporting that commitment.	Policy on Drinking Water Quality
	Backflow Prevention Policy 2021 and supporting programme	To outline how Council will protect the health of its water supply consumers through installing boundary (or point of supply) backflow prevention in accordance with legislative requirements.	Backflow Prevention Policy

Type	Document	Purpose	Document links
	Asbestos Cement Pipe Policy 2023 and supporting risk management plan	To clarify and confirm Council's approach to managing any Council-owned AC pipe in public or private land.	AC Pipe Policy
	Procurement Policy 2023	This policy defines Waitaki District Council's approach to the procurement of all works, goods or services to support the community in an affordable and efficient manner. It provides a standardised approach to procurement for all Council departments.	Procurement Policy
Plans	Drinking Water Safety Plans	The bylaw has been developed to ensure the district's water supplies are managed and regulated in a way that meets the needs of all consumers.	Drinking Water Safety Plans
	Risk management plans - general	These are outlined in the following pages	Links included in following pages

6.4 Key risks and management approaches for water supply

Council has identified the following strategic risks and control measures for water supply activities:

Strategic risk	Description	Controls/future controls
Affordability and financial sustainability	Risk that service needs outweigh available budget, due to ongoing external cost increases or increased regulatory requirements, resulting in rates becoming unaffordable, or Council's financial position becoming unsustainable.	Working together with other Councils and agencies to share knowledge and ideas. Prioritisation tool will focus resources when undertaking Annual and Long-Term Planning New Financial Strategy
Externally managed council water supplies	Risk that water supplies falling under Council responsibility but outside Council management do not meet required levels of compliance by the regulator's deadline, which may be due to lack of resource, skilled personnel, or planning. This could result in an inability to ensure water safety, legislative breach, Taumata Arowai enforcement action, potential financial loss via fines, and reputational damage.	Formalised agreement with external water supply management body, adopted by Governance Team and including key targets, such as meeting the Taumata Arowai expectations. Regular governance oversight meetings to be established Independent assessment of risk Timely understanding and sharing of any update from TA and central govt.

Strategic risk	Description	Controls/future controls
3 Waters Management	Risk that Council is unable to effectively deliver 3 Waters activity, due to increasing regulatory standards and changes or changes in central government expectations, resulting in increased financial outlay, reduction in service levels, significant rate increases, community dissatisfaction, and non-compliance with revised standards.	Multi-council potential responses being developed Engaging with other Councils to share information External resourcing to assist with Water Services Delivery Plan development Re-prioritising work programme to reflect changed environmental and financial regulatory environment
Political Uncertainty	Risk that Council's priorities and actions are not aligned with central government expectations or reform activity due to political uncertainty, or lack of external consideration in decision-making, resulting in inefficient use of time, resources, and funds, public dissatisfaction, and reputational damage.	• Central government decisions and updates are monitored and discussed as a standing agenda item at ELT meetings • When submitting Annual Plan Projects, managers must state where decisions and direction have the potential to be impacted by central government decisions and direction • Modelling of impacts of reforms • Membership of networks across regions and local government LTP forecasting assumptions
Climate Change	Risk that the negative impacts of Climate Change are more severe or difficult to manage because of Council inaction and lack of understanding or strategy, resulting in environmental harm, an inability of Council to effectively respond to weather events or coastal erosion, loss of key income streams for the district, breach of legislation, and increased financial burden.	• Newly created Climate Change role (this control will develop further as the role becomes more established) • Climate Change declaration agreed • Water sensitive urban design principles incorporated into District Plan (partially implemented) • Design/placement of new infrastructure considers climate change vulnerabilities
Critical Asset/Infrastructure Failure or Damage	Risk that a critical asset or infrastructure fails or is damaged, due to a one-off incident, failure to identify ongoing deterioration, or maintenance/ oversight processes not being followed or not being fit for purpose, resulting in critical services/infrastructure being unavailable to the community, financial loss, and potential reputational damage.	• Water maintenance contract in place and performance regularly monitored • Water assets managed via AMPs • Assets valued on a 3-yearly basis and insured as appropriate

6.5 Key operational risks and management approaches

Table 6.5-1: Operational risks and management approaches

Risk	Description	Management approach
Water supply quality	Risk that drinking water supply does not meet quality standards, due to procedural failings, or lack of oversight and monitoring, resulting in legislative breach, possibility or prosecution, reputational damage, financial loss, resident dissatisfaction, and potential harm.	• All action taken is in accordance with Council's Water Supply Bylaw, which is reviewed and updated every 5 years • All controls as listed in Drinking Water Safety Plans (documented for all areas) • All controls listed in Activity Management Plans detailing management of critical assets, their condition, and performance, updated as required • Audits or external reviews • Backflow programme currently being implemented • Delivery service for sample testing - review and improve (requires additional budget) • Reporting compliance software implementation • SCADA alert settings and critical control points • Staff and contractor training undertaken as required.
Resource consents	Risk that resource consent requirements are breached due to lack of knowledge or understanding, sites not performing to design standards, resulting in abatement notices, infringement fines, reputational damage, environmental harm, and damage to relationship with regional councils.	• Non-compliance is investigated and either resolved or a project proposal completed • Ongoing review of site performance against design and consent requirements • Relationship management with the regional council • Requirements documented to be referred to as necessary • Staff training on resource consents undertaken
Lack of formal agreement for Council owned assets on private property	Council's current approach to seeking agreement from private landowners to have Council owned assets installed on their property is via a brief signed written agreement as opposed to a legal easement or purchase of the land. While we have rights under the LGA, once the assets are installed ongoing efficient operation of the site and future upgrades are dependent upon a good relationship with the landowner.	• Consider land purchase or legal easements on a case-by-case basis • Legal review of current written agreements to ensure fit for purpose • Relationship management with landowners • Staff understanding of current agreements and terms

Risk	Description	Management approach
Ardgowan/ Stoneburn Dam Classification and New Requirements	The new building dam safety regulations 2022 became operative in May 2024. The regulations require dam owners to submit a potential impact classification (PIC) to the regional authority by August 2024. The PIC for the Ardgowan Dam has been submitted and is high. What this means is that should the dam fail, the impact will be catastrophic - potential for loss of life. Upgrades will be needed and until that happens the dam may also be classified as dangerous.	• Continue with cyclic expert assessments. • Expert - Initial Assessment • Follow up on recommendations/improvements following assessment (Projects have been submitted as part of LTP) • Working closely with ORC to manage communications
Health and Safety	Risk that a member of staff, the public, an on-site worker, or elected member has an accident or incident on Council premises or whilst conducting activities on behalf of Council, resulting in potential fine, breach of legislation, reputational damage, personal injury, illness, or death.	• All contracts state contractors must adhere to H&S requirements • Contractor risk assessments prior to activity being undertaken • Formalise agreements with external organisations • H&S meeting held weekly • Open bodies of water fenced (some locations - all wastewater) • H&S meeting held weekly • Site hazards identified and documented, signed by contractors on site
Resource Capacity	Risk that Waters Team resource staffing capacity is exceeded due to an inability to retain or recruit staff, leading to service degradation, loss of key knowledge and capabilities, staff dissatisfaction, and reputational damage.	• Flexible working to increase staff satisfaction and improve retention • Plan for 3 waters transition - staffing • Salary benchmarking to enable market-rate for new employees • Seconding consultant resource for operational work • staff pay reviews - internal benchmarking
Training and Development	Risk that Waters Team members are not able to adequately perform required duties due to a lack of training or development opportunities, resulting in service degradation, reputational damage, staff dissatisfaction.	• Attendance at regional and national forums/ conferences • Budget increase and/or review for appropriateness • Ongoing professional development undertaken • On-going training is available for staff involved in infrastructure asset management and contract management includes attendance workshops, seminars, and conferences • Regular open and transparent conversations around industry changes and the implications • Specific course or seminar attendance • Training needs identified in 1-1s with managers

Risk	Description	Management approach
Water Supply Failure	Risk that Council fails to supply water to part or all of the district, due to procedural failings, or lack of oversight and monitoring, resulting in legislative breach, reputational damage, financial loss, resident dissatisfaction, and potential harm.	• Asset Management Plans in place detailing management of critical assets, their condition, and performance, updated as required • Capacity awareness - study undertaken • Contract KPIs relating to resolution of leaks • Demand management - construction of new reservoir, increased resilience - Contract awarded • Emergency water sources established • Leak detection funds • Operational reporting on usage • Water Safety Plans documented for all areas, listing controls in place and updated as required (all in place, externally reviewed annually)
Water Supply - Private Water Supply	Risk that Council is unable to add additional infrastructure to join residences with private water supplies to the water network in a timely or efficient manner, due to the unplanned nature of these requests and budget constraints, resulting in customer harm, reputational damage, and impacts on planned activities.	• Identification of private water supplies • Infrastructure design accounts/allows for residences with private water supplies to be added to Council supply • Sanitary assessment of private water supplies • Upcoming water reforms - changes to align if/when this comes in
Systems – Data	Risk that information is inaccessible, compromised, or lost, due to system inadequacies or failures, resulting in breach of legislation, impacts on water supplies, potential fines, financial loss, reputational damage, customer harm, and public dissatisfaction.	• Data back-ups daily • Institutional knowledge held by staff • SCADA - support from Plunket / Q Tech • Support from IT and service providers
Systems availability	Risk that systems are unavailable or inaccessible, due to system failure or access issues, resulting in breach of legislation, impacts on water supplies, potential fines, financial loss, reputational damage, customer harm, and public dissatisfaction.	• Compliance software implementation • SCADA budget specifically allocated • security monitoring at water treatment facilities - Allied (site access) • Support from IT and service providers • Systems updates completed regularly
Contractor Management	Risk that contractor performance is unsatisfactory due to contract management activities not being effectively defined or undertaken, resulting in service degradation, inability to achieve value for ratepayers, consent non-compliance, and reputational damage.	• Contract / relationship owners in place • External consultant support • Formal escalation process in place • Improved contactor relationship • Performance report actioning • Performance reporting undertaken • QA / audits • Staff training on contract management • Weekly meetings with contractors

Risk	Description	Management approach
Contractor Capacity and Costs	Risk that contractors are unable to provide services within expected budgets due to capacity issues or cost increases, resulting in increased financial outlay, reduction in successful delivery of planned projects, and reputational damage.	• Alliancing • Continue building relationships with existing and potential contractors, to expand and retain contractor pool • Maintaining competition between local contracting firms to support achievement of best value • Situation reports to ELT and Council via Activity updates • Supplier Agreements/panels
Weather Events	Risk that drinking water, wastewater, or stormwater provisions or infrastructure are compromised due to a severe weather event, resulting in remediation requirements, reputational damage, financial loss, and breach of legislation.	• AMPs document measures in place to protect infrastructure • Checks completed on vulnerable infrastructure ahead of and following events • Completion of the wastewater overflow mitigation project, including upgrades • generators for water facilities and sewers • Relationship with Network Waitaki (in the event of lost power) • stormwater capacity study with follow-up actions e.g., S/W Doda pumps • Water Safety Plans documented with responses to events detailed • Water storage to allow for selective abstraction • Waters Business Continuity steps documented
Process Documentation	Risk that critical institutional knowledge is lost due to processes not being documented or documented inaccurately or securely, resulting in customer harm, financial loss, reputational damage, and staff dissatisfaction.	• Knowledge sharing/shadowing - institutional knowledge held • Processes Promapped • Succession planning in place
Budget Management	Budget holders not signing off invoices due to management line changes and Authority system restrictions for approval.	• To be addressed in the context of Council's Transformation organisational design changes.
Procurement Processes	Risk that inappropriate suppliers are awarded work because of procurement processes and practices not being aligned with policy or best practice, resulting in reputational damage, financial loss, and potential service delivery impacts.	• Audits of procurement activity • External support and resource • Institutional knowledge utilised • Procurement Policy compliance • Senior Team Review/approval of procurement approaches • Use of the non-standard procurement/policy exemption requests reviewed by GM

6.6 Risk management approaches for other key risks

In addition to the highest risks and management approaches outlined in table 6.5-1 in the previous section, Council also manages other key risks, including:

- Renewal of aging water assets

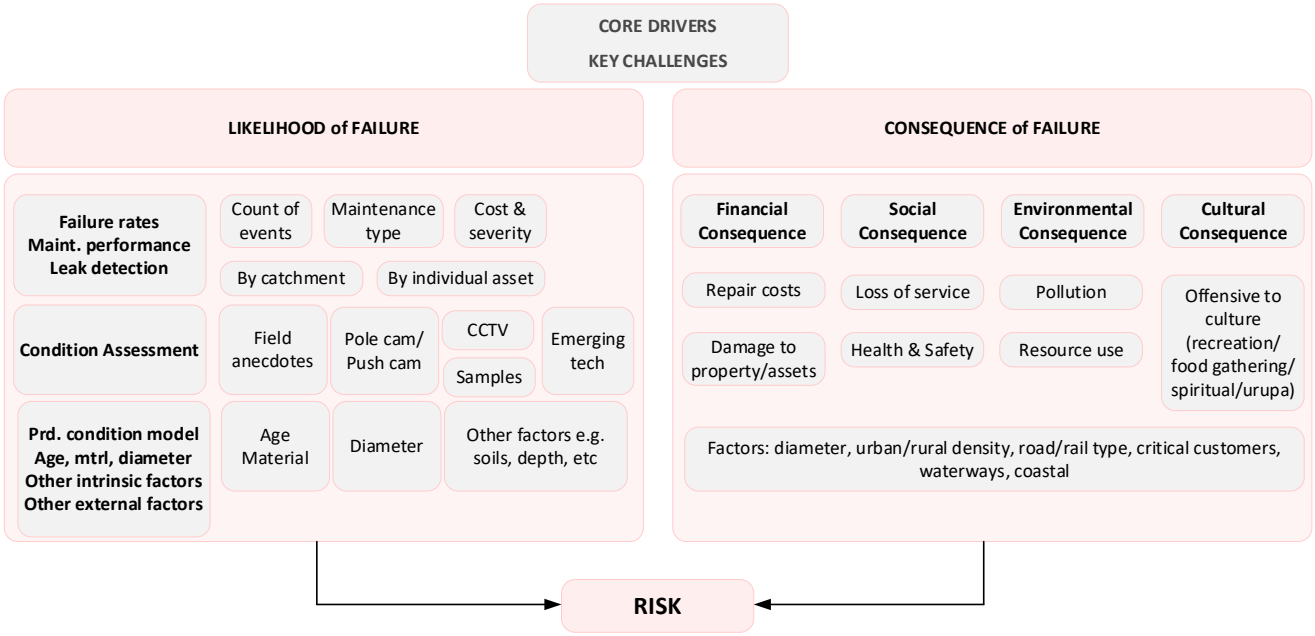
Renewal of aging water assets

Risk assessment for our water assets is the combination of:

- Likelihood
- Consequence

The following diagram provides a snapshot of the components considered under 'likelihood of failure' and 'consequence of failure' i.e. the renewals risk assessment.

Figure 6.6-1: Renewal risk assessment



This guides the intervention strategy of 'when to':

- Renew
- Assess condition
- Validate data

Criticality

The criticality of an asset reflects the consequence of the asset failing (not the probability). High criticality assets are best defined as assets which have a high consequence of failure (not necessarily a high probability of failure).
Criticality of assets is used within the water service to enable clear identification of critical assets, enabling these assets to be managed more proactively to mitigate the risk associated with their failure. This proactive management includes:

- Prioritising condition assessments
- Adjusting economic lives with respect to renewal profiles
- Prioritising/deferring renewals
- Prioritising expenditure
- Operation and maintenance planning
- Priorities for collecting asset information to the required level of confidence

Conditions assessments were previously performed on an ad-hoc basis due to lack of capacity within the Waters team. This has improved in recent years, with a more formalised an assessment programme and budget now in place.

Managing operation and maintenance contract risk

The Operation and Maintenance Contract (#613) records numerous risk management procedures including but not limited to:

- Prevention of contamination of treated water
- Minimum requirements for disinfection of existing water mains and fittings during planned and reactive maintenance
- Minimum requirements for disinfection of new water mains
- Best appropriate practices for staff including contractors and materials
- Illegal connections
- Critical consumers
- Shutdowns
- Health and Safety
- Asbestos handling
- Civil Defence Emergency expectations
    - Provide sufficient plant and personnel on site to enable the emergency work to be undertaken
    - Advise the engineer immediately if unable to either commission sufficient resources or undertake the emergency work
    - Co-operate with the appropriate authorities i.e. Police, Civil Defence

    - Carry out emergency work immediately if such work is essential to ensure the health and safety of the community or to protect the environment
    - Prioritise emergency work to reduce the risk to the community and environment to acceptable levels
    - Advise the engineer immediately of any situation where the emergency is likely to continue and affect the health and safety of the community and the environment
- Traffic control and management
- Overflows and clean up

Whitestone Contracting Limited (WCL) is a local entity owned by the Waitaki District Council and operates as a Council Controlled Organisation. There is a statement of intent between Council and WCL for WCL to assist Council during emergency events.

Drinking Water Safety Plans

Under Section 30 of the Water Services Act drinking water suppliers are required to prepare and implement a Drinking Water Safety Plan (WSP) for any water supply, except water supplies operating under 'acceptable solutions'.

Section 31 of the Water Services Act details the requirements of a WSP. Under the Act, the focus moved from a compliance document to risk identification and continued management, control, or elimination of identified risks - including a source water risk management plan. The Act also introduced new requirements e.g. all reticulated drinking water supplies must require and provide for the use of residual disinfection, unless an exemption has been granted.

The WSP must comply with Section 31, and any requirements must be set out in the compliance rules, which must be continually reviewed. Section 56 requires annual renewal of the drinking water supply registration. This includes confirmation that the WSP is still current and, if not, lodging a new or amended WSP. Historically, a WSP had to be reviewed every 5 years, but WSPs are now living documents and require continual revision and updating.

Council completed the first WSPs under the Act in November and December 2022 and reviews them annually, as required. Plans for the Corriedale supplies were completed by Corriedale Water Management Limited.

Backflow Prevention

Council is committed to providing safe, high quality drinking water to the residents, businesses and industries within the Waitaki district. Protecting drinking water quality is a top priority to achieve this.

Council employs strict criteria determining the conditions under which connections to the Waitaki District public water supplies are allowed. This includes the analysis of the various hazards to the safety of the water supply and ensuring there are sufficient barriers to control or eliminate the hazards present.

Source protection is enforced under the Building Act by the WDC Building Control Authority. Boundary protection is enforced by the Water Services Unit under the Section 27 of the Water

Services Act, which give water suppliers the powers to install backflow devices at the boundary and recover the costs from the property owner when there is a need to protect the public water supply from a risk present.

During 2021 a Backflow Prevention Policy and Plan was developed and adopted. Inspections to verify on-site hazards and determine the backflow risks have been undertaken in the Oamaru area and a programme for installing backflow devices is already underway. A further $1.4m is budgeted for this to continue during the first two years of the Long Term Plan **(IBIS #2448**).

6.7 Climate change

Projected changes

Climate change is an important consideration in the Council's Long Term Planning. Guidance from the New Zealand government based on the best available climate science is used to support the planning.

The Ministry for the Environment information on: https://www.mfe.govt.nz/climate-change/likely-impacts-of-climate-change/how-could-climate-change-affect-my-region/otago provides a summary of projected climate changes over the periods 2031–2050 (referred to as 2040) and 2081–2100 (2090) compared to the climate of 1986–2005 (1995).

Temperature - Compared to 1995, temperatures are likely to be 0.6˚C to 0.9˚C warmer by 2040 and 0.6˚C to 2.8˚C warmer by 2090. By 2090, Otago is projected to have from 4 to 25 extra days per year where maximum temperatures exceed 25˚C, with around 13 to 45 fewer frosts per year.

Rainfall - will vary locally within the region. The largest changes will be for particular seasons rather than annually. Otago is expected to become wetter, particularly in winter and spring.

According to the most recent projections, extreme rainy days are likely to become more frequent in Otago by 2090 under the highest emissions scenario.

Snowfall - the Otago region is likely to experience significant decreases in seasonal snow. By the end of the century, the number of snow days experienced annually could decrease by as much as 30-40 days in some parts of the region. The duration of snow cover is also likely to decrease, particularly at lower elevations.

Less winter snowfall and an earlier spring melt may cause marked changes in the annual cycle of river flow in the region. Places that currently receive snow are likely to see increasing rainfall as snowlines rise to higher elevations due to rising temperatures. For rivers where the winter precipitation currently falls mainly as snow and is stored until the snowmelt season, there is the possibility for larger winter floods.

Wind – the frequency of extremely windy days in Otago by 2090 is likely to increase by between 2 and 5 per cent. Changes in wind direction may lead to an increase in the frequency of westerly winds over the South Island, particularly in winter and spring.

Storms - future changes in the frequency of storms are likely to be small compared to natural inter-annual variability. Some increase in storm intensity, local wind extremes and thunderstorms is likely to occur.

Sea level rise - New Zealand tide records show an average rise in relative mean sea level of 1.7 mm per year over the 20th century. Globally, the rate of rise has increased, and further rise is expected in the future.

Climate change and water supply

The changing climate is having a notable impact on the Waitaki district. Consequently, the resilience of Council's key infrastructure is being increasingly challenged.

Climate change may mean that the lifespan of our assets is shorter than planned, or that maintenance costs increase. It may also mean that repairs are needed more frequently or that materials deteriorate more quickly.

Council's climate projections report (2023) provides a current summary of climate change risks the Waitaki District will be facing, now and into the future. Council's *Overview of Coastal Hazards Report 2024* provides evidence of the coastal hazards that the district faces, many of which will affect our water infrastructure.

We are anticipating advances in coastal erosion along the district's coastline – particularly in North Oamaru and south of Kakanui.

Storm events are anticipated to become more frequent and result in a higher magnitude of impact in the future.

We are also anticipating ongoing issues associated with increases in high intensity storm events in Kakanui, Otematata, Omarama, Kurow and Oamaru North - including Muddy Creek.

To provide appropriate solutions to the anticipated challenges, Council will need to address community concerns and expectations and clarify its role in the protection of private property. Additionally, it must have a clearer picture of the value of the assets at risk, determine the beneficiaries of any proposed solutions, and assess the cost and liability to Council.

Moeraki is subject to ongoing landslip issues primarily caused by large, slowly creeping movements in the underlying mudstone. This geological instability poses a high risk of damage to water network assets in certain parts of Moeraki.

Specifically for our drinking water supplies, we anticipate climate change will result in:

- A shift in demand profiles
- Increased pressure on water treatment and aquifers

Our response

In 2022, Waitaki District Council created a new role of Climate Change Advisor to bring a focus to ensuring that climate change and its implications are planned for and dealt with, and to lead the understanding and awareness of organisational and local climate risk and vulnerability.

Council's ongoing response to climate change is influenced by central and regional government direction. One challenge in this space is that the Waitaki district spans across two regional council boundaries – Canterbury and Otago.

Council is a partner to the Canterbury Climate Partnership Plan showing how councils will work together on specific climate actions to help minimise the impacts of climate change on Canterbury's communities and ecosystems. The plan includes ten primary actions focused on addressing key gaps, priority risks, and opportunities.

Otago Regional Council has also prepared an Otago Climate Change Risk Assessment summarising the key risks that the Otago region is facing due to climate change.

Council has developed high level climate change projections for the Waitaki District as part of phase 1 of its Climate Change Risk Framework.

Council has identified high risk coastal locations (Waitaki Coastal Hazard Strategy - High Risk Sites Options Assessment, September 2024) that are likely to need to be managed in the next 50-100 years. Sites relevant to water supply infrastructure include:

- Beach Road North - 2.8km from where Beach Road reaches the coast down to Gardiners Road
- Beach Road South - 2.5km along the coastline from the intersection of Seadown Road and Thousand Acre Road to 190m north of the intersection of Beach Road and Fortification Road
- Waianakarua Road - 3.5km from Bridge Point down to the northern end of Waianakarua River mouth
- Katiki Beach North - runs from the north of Katiki and extends to around 4.5km in the centre of the beach
- Katiki Beach South - extends around 3km from Squire Road along the south of Katiki Beach
- Shag Point Road.

Council's overall strategic direction

When responding to the effects of climate change, Council will prioritise the protection of Council assets over private assets and plans to:

- Build resilience into our core infrastructure to cater for future demand and other risks.
- Develop a Climate Change Strategy.

Approach to coastal erosion

Key options identified to address the coastal erosion issue in central Oamaru and on the Katiki coastline include:

- Status quo (emergency rock added on a needs basis)
- Managed retreat.

Council's preferred approach to is to co-operate with external agencies to support the ongoing erosion protection of their assets currently being undertaken by Kiwi Rail and NZTA to protect their assets.

Council's preferred approach for the remainder of the high-risk sites is to continue to monitor.

Water supply-specific response

Our strategic response to the impact of climate change on our water supply assets is:

- Preventing adverse effects of climate change and natural hazards through careful planning of future development areas - i.e. we do not locate new communities and supporting infrastructure in areas at significant risk from hazards
- Working with neighbouring councils on water initiatives where there are mutual benefits
- Factoring climate change (such as flooding and droughts) into water supply operations and capital project design
- Continuing to investigate and implement measures to ensure responsible water use through efficient delivery and demand management measures
- Encouraging a more holistic approach to water supply management, operation and maintenance

Drought and Water Shortage Management Plan

The likelihood of droughts impacting on water supply resilience is a possible outcome of climate change. Council has accordingly developed a plan to provide a guide to reducing water usage in periods of drought or water shortage. A copy of the plan can be viewed here.

6.8 Emergency management and business continuity

Note: Due to changes to the structure of the team and roles delivering Council's water supply through Council's Transformation Project, the following documents will require review and changes to align with the new structures and roles.

Business Continuity Plan – water supply

Since the last AMP, a Business Continuity Plan has been drafted for the Water Supply activity following the methodology detailed in AS/NZS Handbook 221:2004 – Business Continuity Management.

The plan aims to identify risks and impacts that cannot be managed as business as usual and require a corporate response to ensure that the risks and impacts on the affected customers are minimised.

The draft plan:

- Undertakes a risk management assessment of the water supplies operations.
- Defines and prioritises the critical business functions and incidents for water supplies.
- Details the immediate responses to a critical incident or disruptions.
- Details actions to be taken to enable the water supplies activity to continue to function during and after a critical incident or disruption.

- This disruption category includes Natural Disasters, Pandemics and drought
- Details actions to be taken to return water supplies to normal, pre-disruption service.

A copy of the draft plan can be viewed here.

Emergency response plan – water supply

Council drafted an Emergency Response Plan for Water Supply (Natural Disaster Management) in February 2024.

The triggers for the use of this plan are natural disasters which impact the Waitaki District Council Water Supplies, and which undermine the infrastructure and short to long term supply of water and safe drinking water.

The SAFER Framework will be activated by all South Island CDEM groups, their member local authorities, regional and national partner organisations immediately when any of the following triggers occur:

- A strongly felt earthquake with shaking continuing for longer than two minutes.
- Confirmation from GeoNet/GNS Science, MCDEM, or other sources that a severe Alpine Fault earthquake has occurred.
- Community-wide electricity or telecommunications failure following a severe earthquake.
- Reports of significant damage following a severe, long duration earthquake.

A copy of the draft plan can be viewed here.

Incident and Emergency Response Manual – water supply

An Incident and Emergency Response Manual was developed in early 2024 for use by all Waitaki District Council (WDC) Staff.

The manual contains a context of all events from incidents to emergencies, who these events apply to, and who must be involved in these situations – along with the key documents required to employ to manage these incidents.

This Manual is a 'how to' document which links to the existing internal documentation and plans in the Waitaki District Council Water Services document management systems.

Across the manual, all key documents are linked in Council's system to ensure there is good document management employed and 'one source of the truth'.

The manual can be viewed here.

Lifelines Management Plan – Civil Defence

The Civil Defence Emergency Management (CDEM) Act 2002 requires local authorities to coordinate Plans, Programmes and Activities related to CDEM across the areas of Reduction, Readiness, Response and Recovery, and encourages cooperation and joint action with regional groups. Activities required are Risk Reduction, Readiness, Response and Recovery.

The following table indicates the required activities for the Water Operations in the areas of Risk Reduction, Readiness, Response and Recovery.

Table 6.8-1: Risk Reduction, Readiness, Response and Recovery

Activities required	Description	Include
Risk Reduction	Identifying hazards, describing risks, and taking actions to reduce the probability or consequences of potential events	Identify hazards
		Describe risks
		Reduction or Consequences
Readiness	Planning and preparation required to equip agencies and communities to respond and recover	Planning
		Preparation
Response	Address immediate problems after an emergency	Address immediate problems
Recovery	Addressing the long-term rehabilitation of the community	Addressing long term rehabilitation of community

Activity management planning and contractual arrangements are in place to provide some measure of Risk reduction, Readiness, Response and Recovery.

A representative of Council meets with the Otago Lifelines Group monthly and keeps Council staff informed on key information. Organisations represented on the Lifelines include Otago Regional Council, Local Authorities, utility providers, fuel providers, etc.

Waitaki Civil Defence Emergency Management

Waitaki District Council is part of the Otago Civil Defence Emergency Management (CDEM) Group which includes four other local authorities within the Otago region.

For information on hazards, emergency planning advice and resources, including Community Response Guides please visit the Waitaki District page on the Otago Civil Defence and Emergency Management Group website.

Project AF 8

Project AF8 is a risk scenario-based earthquake response planning project, informed by thorough earthquake source, expression, and consequences science. The focus of the project is New Zealand's South Island Alpine Fault. Project AF8 commenced in July 2016 with funding from the Ministry of Civil Defence & Emergency Management's Resilience Fund and is managed by Emergency Management Southland on behalf of all South Island CDEM Groups.

Project AF8 has been initiated to introduce outline planning for response actions, resources, and overall coordination within and between CDEM Groups across the South Island.

The South Island Alpine Fault Earthquake Response (SAFER) Framework provides a concept for coordination of response and priority setting across all six South Island Civil Defence Emergency Management (CDEM) Groups and their partner organisations in the first seven days of response. It is not intended to replace existing plans within agencies but to provide a coordinated picture of response across the South Island.

The SAFER framework includes:

- Scenarios
- Response assumptions
- Secondary and compounding risks such as:
- Aftershocks
- Ongoing structural failure
- Cascading landscape effects
- Tsunami
- Severe weather
- Communicable human diseases
- Impacts on response operations
- Consolidated response framework

Council will keep a keen eye on the response actions and resources from the AF8 project and work with CDEM Groups.

6.9 Infrastructure resilience

Council customers have a high expectation of continuing functionality and service delivery. Resilience is based on a design philosophy which acknowledges that failure will occur. Resilience requires early detection and recovery, but not necessarily through re-establishing the failed system.

The Waitaki CDEM office has identified public education as the foundation for improving levels of community resilience. Some collaborative work has already occurred locally but lacks an overall strategy in conjunction with the Group. Recent high profile natural disasters have raised public awareness, but there is still a significant need to increase actual preparedness – both in general (e.g. household plans and emergency supplies) and for specific circumstances (e.g. tsunami preparedness in coastal communities).

However, resilience is not only applicable to natural hazards but also needs consideration at an operational level where an asset failure is not necessarily a service failure.

Redundancy (duplication) does not provide Resilience. Resilience requires early detection and recovery, but not necessarily through re-establishing the failed system. Robust systems are designed to prevent failure. Resilience is about the ability to plan and prepare for adverse events, the ability to absorb the impact and recover quickly, and the ability as a community to adapt to a new environment.

We need to consider managing and mitigating the risks to our infrastructure assets from natural disasters, as well as enhancing their resilience. Council acknowledges that resilience is not only about physical assets, but also about the people. It includes but is not limited to:

- Connecting people and communities (neighbour to neighbour, education, access to household resilience item, etc.)
- Supporting community organisations
- The built environment and asset systems which are robust

Adverse events/natural disasters/climate change and the related impacts cannot be avoided. As a result, Council has to factor this into Long Term Planning, civil defence planning, and in determining the infrastructure requirements moving forward to ensure the community's expectations are met with regard to safe and reliable services and general wellbeing.

To improve resilience, Councils approach will be to:

- Actively participate in CDEM planning and activities, at both regional and local levels
- Investigate options for alternative service provision and system redundancy
- Identify critical assets and ensure mitigation methods are developed
- Obtain insurance where this is deemed to be the most cost-effective approach

A part of Council's approach to improved resilience work has been to ensure appropriate spares and generators are available during emergencies to quickly and efficiently restore service interruptions.

6.10 Designations for facilities

In 2023, as part of Council's District Plan review, we reviewed current designations and developed proposals for new designations for sites where new water supply infrastructure has been located.

A designation is a planning instrument that provides long term authorisation under the District Plan for certain activities to occur at a designated site. Designations are recorded on the District Plan Maps. In the case of wastewater infrastructure, a designation enables the ongoing operation, installation, maintenance, replacement, alteration, upgrading and removal of infrastructure at the site without the need for a resource consent, provided the activity is consistent with the purpose and conditions of the designation.

A designation makes any work needed on the infrastructure more efficient and cost-effective, while also providing clarity to landowners around what activities relating to the infrastructure can be carried out by Council on their property, and exactly where. It also ensures adequate protection for the infrastructure under the Resource Management Act 1991.

6.11 Insurance

Council's Insurance Policy covers the following Water Infrastructural Assets:

- Buildings
- Reservoirs and storage facilities
- Intakes and bores

Policy exclusions include:

- Underground services i.e. reticulation and associated fittings
- Property located on or in ponds

All contractors undertaking work, including professional services or advice, for Council or on behalf of Council are required to produce evidence that they hold as a minimum adequate insurance covering:

- Public liability
- Professional indemnity
- Contract works

Local Authority Protection Programme Disaster Fund

Council is a member of the Local Authority Protection Programme Disaster Fund (LAPP), a cash accumulation mutual pool. Civic Assurance is the Fund's Administration Manager. The LAPP Fund was established in 1993, to help its New Zealand local authority members pay their share of infrastructure replacement costs for water, sewage and other uninsurable essential services damaged by natural disaster.

Central government's Disaster Recovery Plan states that beyond a threshold, central government will only pay 60% of restoration costs. Local government is responsible for the remaining 40% thus effectively moving part of the onus from the taxpayer to the ratepayer. Central government will only provide their 60% following a major catastrophe provided that the local authority can demonstrate it can meet the remaining 40% through:

- Proper maintenance
- The provision of reserve funds
- Effective insurance, or
- Participation in a mutual assistance scheme with other local authorities

Of the 78 local authorities in New Zealand, 22 are currently Fund members. Since the Canterbury earthquakes the Fund has rebuilt to more than $21m in reserves (2016) and provides protection (combined with Central Government funds) which caters for up to three events - at a value of up to $75M, $115M and $170M respectively. A third event will only be covered if one of the first two was an earthquake claim.

The number of members has reduced, resulting in less contributors, but it also means a lower reinsurance cost and the value of the Fund per member is higher.

The Fund is designed to cover local authority owned infrastructural assets which are considered generally uninsurable. These include:

- Water reticulation, treatment and storage.
- Sewage reticulation and treatment.
- Storm water drainage.
- Dams and canals.

- Flood protection schemes including stop banks, and
- Floodgates, seawalls and harbour risks such as buoys, beacons and uninsurable foreshore lighthouses.
- Roads and bridges are not covered by the Fund as local authorities have access to New Zealand Transport Agency subsidies.

The Fund is designed as catastrophe protection only, covering serious disruptive loss or damage caused by sudden events or situations which may or may not involve the declaration of a Civil Defence Emergency. Perils include but are not necessarily limited to earthquake, storms, floods, cyclones, tornados, volcanic eruption, tsunami and other disasters of a catastrophic nature such as a major gas explosion.

Risk Pool

Risk Pool is a mutual fund created by New Zealand Local Authorities to provide long term, affordable legal and professional liability protection. The Fund was founded on the premise that, historically, the insurance industry has demonstrated inconsistency with the scope of cover, pricing, claims handling and capacity. Risk Pool commenced in 1997 and currently has 78 local authority members. Membership of Risk Pool is open to all local authorities. Contributions are levied according to each member's actual risk profile, claims experience.

Insurance Summary

Council's insurance summary is tabled below:

	Risk Pool		LAPP	AON Insurance (Agent)	
Components / Items	**Public Liability**	**Professional Indemnity**		**Buildings & Contents**	**General Insurance**
Reticulation			✓		
Treatment Plants and Pump Stations					✓
Electrical					✓
Mechanical					✓
Structural					✓
Staff	✓	✓			
Council Vehicles				✓	✓
Private property damage related to Wastewater damage	✓				

7 Lifecyle management

7.1 Overview

Lifecycle asset management focuses on management options and strategies from initial planning through to disposal, while considering all relevant economic and physical consequences. Effectively applying asset management principles will ensure reliable service delivery, reduce long-term ownership costs, and consequently lower service costs. A well-structured lifecycle management plan will reduce the long-term costs of ownership and in so doing reduce the service cost.

The Lifecycle Management Programme covers five key categories of work necessary to achieve the required outcomes. These key categories and goals are:

Table 7.1-1: Lifecycle Categories

Key Lifecycle Categories	Goal
Management Plan	
Management functions required to support the other Programmes	
Operations and Maintenance Plan	**To maintain the service potential of the assets and ensure that the assets achieve that potential**
To ensure efficient operation and serviceability of the assets so that they achieve their service potential over their useful lives. This includes the day-to-day work to keep the assets operating	
Renewal Plan	
To provide for the progressive replacement of individual assets that have reached the end of their useful lives (restores the original capacity)	
Development Plan	
To improve parts of the system currently performing below target service standards and to allow development to meet future demand requirements	**Meeting future demand** **Closing service gaps**
Disposal Plan	
To better plan for disposal of assets through rationalisation of asset stock or when assets become uneconomic to own and operate	**Appropriate disposal of assets**

7.2 Management

Management and monitoring strategies set out the activities required to support the maintenance, operations, cyclic renewal and asset development programmes. These activities include:

- Strategic planning
- Data management and evaluation
- Business processes
- Monitoring
- Financial management.

The following management activities are used to achieve the desired outcomes.

Table 7.2-1: Management activities

Activity	Objective
Strategic Planning	
Strategic alignment	This AMP supports the achievement of the relevant Waitaki Community Outcomes
Service Levels	To develop Levels of Service aligned with Community Outcomes for community consultation
Human Resources	To develop the professional skills of the staff through adequate training and experiences
Data Management	
Asset Management	To optimise Asset Management Systems and develop functionality in line with business needs
Data Collection	Data collection programmes (condition, performance, asset registers) closely aligned with business needs and metadata standards implemented in accordance with documented quality processes
Quality Assurance	To ensure the GIS & AIMS data subject of defined quality assurance processes
Network Modelling	Development of computer-based hydraulic models of the water, and wastewater systems as required
Business Processes	
AMP Updates	To ensure the AMP is a strategic 'living' document through regular updating and 3 yearly reviews
Risk Management	Risk Management is an essential part of Asset Management and will be managed by the implementation of risk mitigation measures to maintain risk exposure at acceptable levels including but not limited to maintaining appropriate insurance cover, emergency response planning, condition monitoring of critical assets, preventative maintenance, use of telemetry, implementation of Water Safety Plans (WSP) and operations manuals and implementation of Council's standards
Asset Valuation	To lay the foundation for several key asset management processes including asset renewal modelling and financial risk assessments
Statutory compliance	To identify legal obligations and ensure compliance
Quality Assurance	To document, review and implement quality processes
Monitoring	
Performance Measures	To ensure monitoring of the Levels of Service and reporting on mandatory Non-Financial Performance Measures
Compliance	To ensure water takes and discharges are within consent limits
Financial	
Budgeting	To ensure all expenditure programmes are in accordance with Council funding and budget preparation policies and procedures
Sustainable funding	To ensure the systems are managed in a financially sustainable manner over the long term

7.3 Operations and maintenance

The objective of maintenance and operational strategies is to maintain existing assets economically to:

- Achieve their service potential through efficient operation
- Achieve customer levels of service
- Achieve health and safety standards
- Reduce Council's exposure to risk due to unforeseen failure of assets

The operations and maintenance expenditure for assets is a significant proportion of the total lifecycle cost. Therefore, efficiencies in these day-to-day activities must be identified and implemented to lower the overall lifecycle cost. Council is committed to optimising the operation, maintenance and management of these assets.

Strategies have been adopted which are classed as 'Non-Asset Strategies' that involve:

- Assessment of operation and maintenance vs replacement
- Review of service where it is more than the agreed Level of Service
- Demand management
- Policy
- Quality assurance
- Supervision
- Specifications
- Holding records

Maintenance work is defined as "all actions necessary for retaining an asset as near as practicable to its original condition but excluding rehabilitation or renewal". Maintenance strategies which apply to Council owned assets are classed as "Asset Strategies" and are divided into:

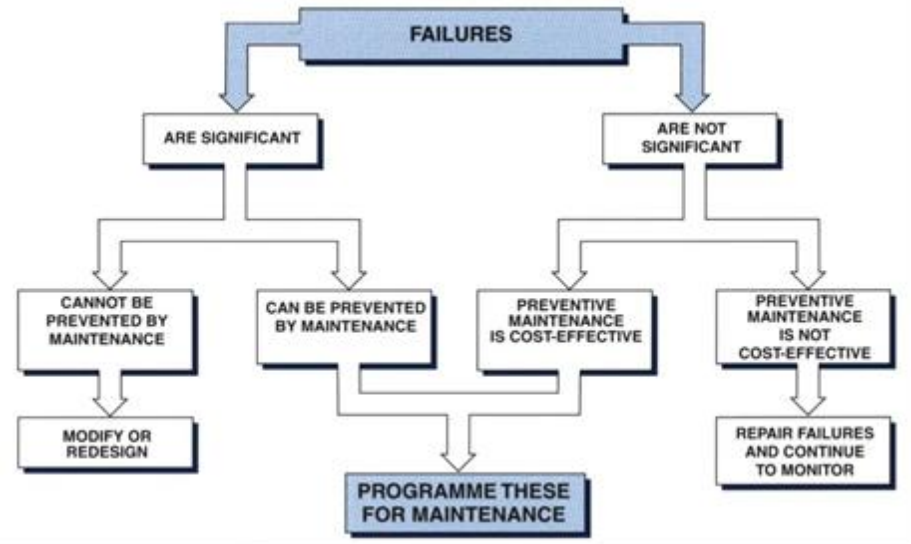
- Unplanned maintenance strategies
- Planned maintenance strategies

Unplanned maintenance includes all reactive maintenance such as repairs and modifications usually following a reported fault or failure reported by the public, or which is obvious through a water leak (in the instance of a water supply network).

Planned maintenance includes preventive maintenance, servicing and condition monitoring. Planned maintenance is usually carried out at a given frequency either at fixed intervals or 'on condition' to preserve the required levels of service at a minimum cost. 'On condition' means that once an asset has degraded to a certain condition (detected through condition monitoring) a decision as to the most appropriate maintenance must be made.

The process for the identification of whether planned maintenance strategies will be effective for an individual asset is as per the chart below (extracted from IIMM):

Figure 7.3-1: Maintenance Engineering Analysis Process



A recent development in maintenance planning is the Reliability Centred Maintenance approach which can be very effective for plant/equipment assets but not as effective for reticulation assets. Council is aware of this trend in maintenance planning and has applied this approach occasionally for facilities (reservoirs, treatment facilities, pump stations, and SCADA).

Management and Maintenance History

The day-to-day management of the Council water systems is carried out by staff under a new organisational structure developed as part of Council's Transformation project and Council approved groups (including Corriedale Water Management Ltd (CWML) and liaison groups. Management performance and performance of the water systems is monitored by Council and audited by Audit NZ.

Operations and maintenance are carried out by Council's appointed Contractor and Council-approved groups (CWML, Operational Liaison Groups).

Table 7.3-2: Management Responsibilities

Supplies	Headworks					Reticulation				
	Operation & Maintenance			Management		Operation & Maintenance			Management	
	Operational Liaison Group	CWML	WDC	CWML	WDC	Operational Liaison Group	CWML	WDC	CWML	WDC
Kurow[1]			√		√			√		√
Lake Ōhau[1]			√		√			√		√
Ōamaru[1]			√		√			√		√

[1] SouthRoads Ltd are appointed by WDC to carry out Operation & Maintenance

Supplies	Headworks					Reticulation				
	Operation & Maintenance			Management		Operation & Maintenance			Management	
	Operational Liaison Group	CWML	WDC	CWML	WDC	Operational Liaison Group	CWML	WDC	CWML	WDC
Ōmārama[1]			√		√			√		√
Ōtematatā[1]			√		√			√		√
Waihemo[1]			√		√			√		√
Awahokomo	√				√	√				√
Stoneburn	√				√	√				√
Duntroon[1]			√		√			√		√
Hampden/Moeraki[1]			√		√			√		√
Herbert/Waianakarua[1]	√				√	√				√
Lower Waitaki[1]			√		√			√		√
Bushy Creek	√				√	√				√
Kauru Hill		√		√			√		√	
Awamoko		√		√			√		√	
Tokarahi		√		√			√		√	
Windsor		√		√			√		√	

All maintenance data is recorded in the IPS AMIS database on supplies managed by Council (since March 2005 for Urban Supplies and March 2010 for Rural Supplies).

Maintenance and operational strategies

Table 7.3-3: Non-asset strategies

Strategy	Description
Alternative technologies	Alternative technologies are considered as appropriate
Approved materials	Only approved materials shall be used in the water supply to ensure the quality and longevity of the asset
Backflow prevention	A Backflow Prevention Policy was adopted in 2021 and a programme for installing backflow devices at higher risk properties is currently underway.
Energy efficiency	Energy savings and management carried out in a logical manner for the facilities e.g. night pumping, etc.
Health and safety audits	Audits undertaken randomly to ensure all work completed by Council and Contractor staff complies with the Health and Safety in Employment Act and Traffic Management Regulations

Leak detection	To proactively detect and repair leaks within the water supply, a leak detection programme an annual budget is in place for the life of this plan
Monitoring planned vs unplanned maintenance	The mix of planned vs unplanned maintenance will be analysed periodically to allow optimising of the activities
Network modelling	Network modelling is carried out to ensure renewal and capital works are programmed appropriately and assist in the identification of faults in the system when low pressures or flows are identified
Pressure monitoring	Pressure monitoring is carried out by Council staff to measure compliance with Levels of Service and calibrate network models
Supervision of facilities	Supervision of facilities is undertaken to ensure these buildings and critical assets are maintained appropriately
Telemetry system	The telemetry system will be utilised to assist in monitoring the water demand profile, controlling operations and increase the knowledge of the asset operation therefore enabling efficiencies to be introduced
Water meters	Water meters are installed on commercial/industrial and some residential connections to provide accurate consumption records. Water meters remain the property of the Council. Council is considering implementing universal water metering across this Waitaki District during the life of this plan
Water quality	Water supply to comply with Health (Drinking Water) Amendment Act 2007 and Drinking Water Standards Testing for FAC undertaken by the Contractor as per compliance requirements Testing for E. coli undertaken by Council as per compliance requirements
Water supply shutdown	All shutdowns to be managed by the Maintenance Contractor under Council engineer supervision, when needed, to protect the quality of the water and the asset

Table 7.3-4: Asset strategies (planned and unplanned)

Asset	Activity	Frequency	Comments
Facilities			
Headworks/Treatment	Inspection	Monthly	Or as appropriate
Reservoirs and Holding Tanks	Inspection	Annually	No formal programme exists for the cleaning and internal inspection of reservoirs and holding tanks. Cleaning and inspection is performed after WTP Upgrades.
Gutters and Sumps	Cleaned	6-monthly	
Pump Stations	Inspection	Weekly	
Pumps	Tested	Monthly	

Asset	Activity	Frequency	Comments
SCADA	Inspection	Annually	District wide SCADA renewals are programmed over the life of this plan **(IBIS# 2465)**
PRV/PSVs	Inspection	6-monthly	Ōamaru WTP
Turbidity Meters	Calibration	3-monthly	
Chlorine Lines	Replacement	Annually	
Backflow Preventers	Testing	Annually	As per the Backflow Prevention Policy 2021 and installation programme **(IBIS# 2448)**
Cathodic Protection	Inspection	Annually	
Safe Working Load on Lifting Gear	Certification/Inspection	Annually	
Switchboards	Inspection by Electrician	Annually	
Water Mains			
Critical Mains	Inspection	Annually	Includes associated fittings such as valves and hydrants etc.
Selected Mains	Condition Assessment by Pipe Sampling	As required	All sections of mains removed during repairs are kept for future analysis. In addition to this, selected mains are targeted by age/material etc. are to be sampled proactively
Dead End Mains and Low Points	Flushing	6-monthly	To follow up
Water Valves			
All Valves	Evaluation and exercise	5-yearly	
Special Valves			
PRV/PSVs	Inspection	6-monthly	Seven exist in District (Kakanui connection, HamNak connection)
Restrictors			
Restrictors	Inspection	5-yearly	Council has increased budgets for this to better manage demand from illegal water use **(IBIS# 4551**)
Fire Hydrants			
All Hydrants	Fire flow Testing	5-yearly	Historically by FENZ, but to be confirmed
Service Connections			
Flow/Pressure Tests		Reactively	Following complaint from customers (TBC)

Asset	Activity	Frequency	Comments
Unplanned Maintenance			
All	When a defect has been identified, remedial work is programmed before the risk and consequence of failure become unacceptable		
All	Priority is given to defects which are a safety hazard, likely to cause premature failure or severe economic deterioration		
All	Remain alert and prepared for emergency situations		
All	Respond to and repair failures by the most economic method available, making temporary repairs if major repairs or renewals are required		

Manuals and Procedures

Formal procedure manuals for headworks, treatment, reservoirs, and pump stations have been lacking in the past. These manuals are necessary to provide Council's engineers and contractors with appropriate documented emergency, operations, and maintenance procedures for Council's water assets.

Since the last AMP, work has been undertaken to improve documentation in collaboration with Council's contracted facility and network operators. The Drinking Water Safety Plans have helped identify high level issues and are guiding the creation of manuals.

To support Council's operational strategies, levels of service and assist with Council's succession planning by capturing institutional knowledge, a Network Operation Manual is being developed for water supply.

7.4 Current Performance

Performance data include but are not limited to:

- service quality (e.g. water quality, pressure, continuity)
- maintenance required

The maintenance performed is captured through the work order process. The service quality is captured through a range of methods

- water quality – monitoring as per DWSNZ
- pressure – customer complaints and pressure monitoring at specific sites
- continuity – customer complaints and SCADA

This information is continually monitored and recorded and provides the basis for evidence-based decision making.

Facility performance can be linked to resource consents and water quality results. Section 9.7 discusses environmental management. Individual system details are captured within the Network Operation Manual, currently under development.

Network reticulation performance

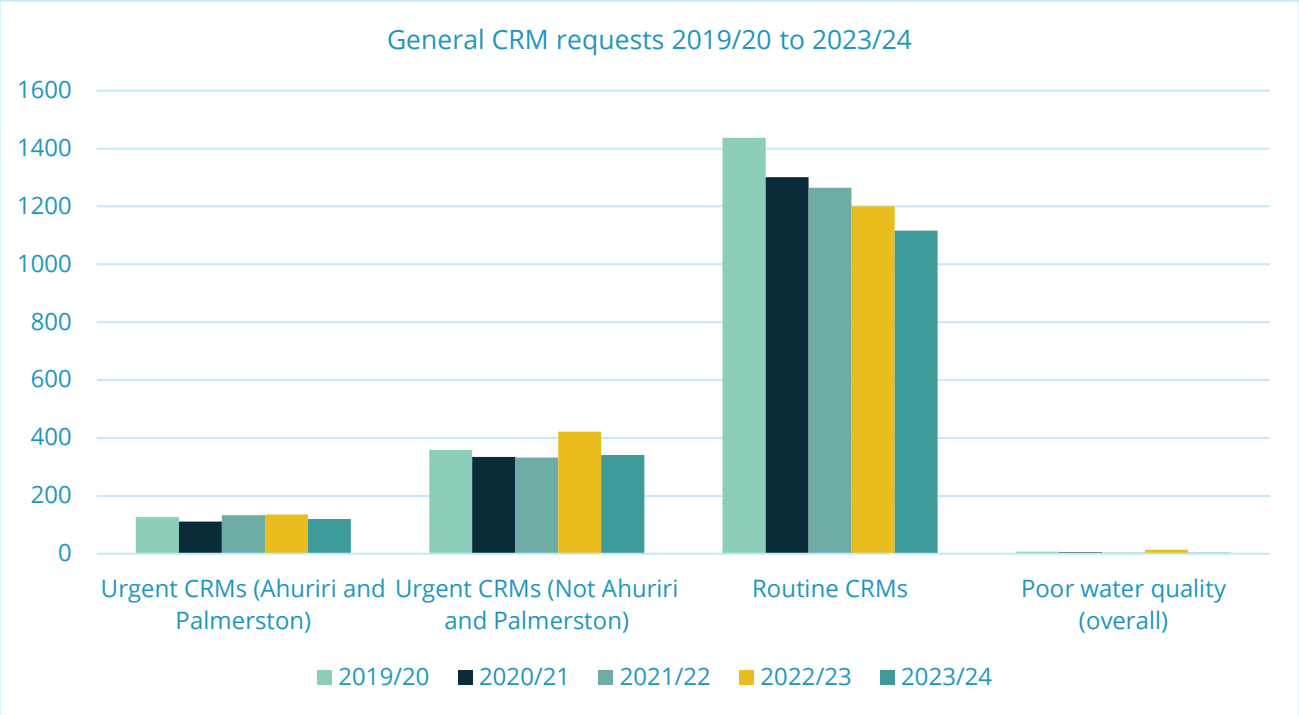
Following are graphs trending the performance of the Council in the water supply activity over the past five years and relate to performance of the reticulation mains.

They are drawn from information recorded through Council's Customer Request Management System (CRMs) for water supply related issues reticulation network issues such as water outages and leaks.

Figure 7.4-1: CRMs reported by area and urgency 2019/20 to 2023/24

This graph includes urban on-demand and rural restricted CRM requests. They are grouped into:

- Urgent water CRMs
  - Ahuriri or Palmerston
  - Not Ahuriri or Palmerston
- Routine water CRMs
- Poor water quality



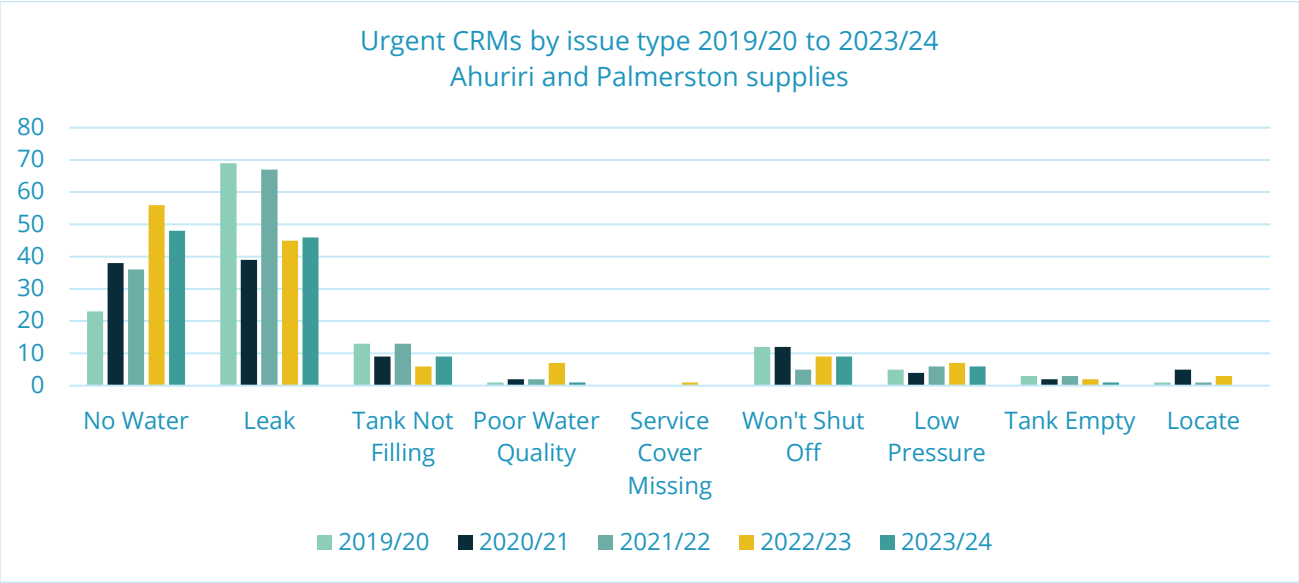
This shows that water quality complaints across the district are uncommon with very few recorded over the last five years.

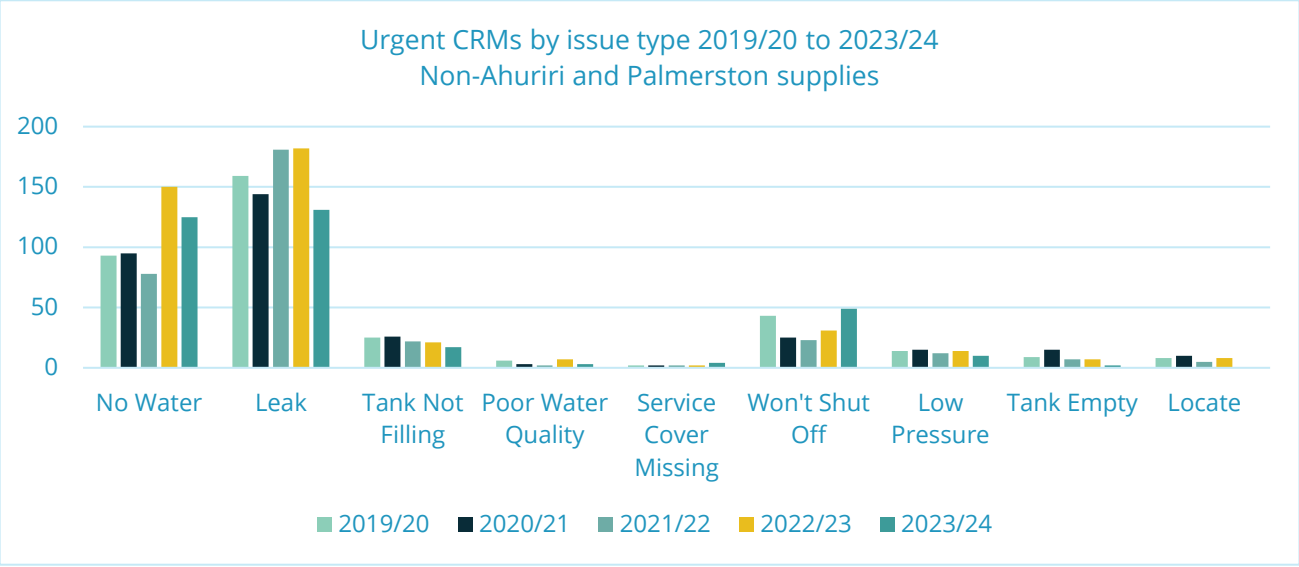
Urgent water CRMs over the past five years have stabilised following a downward trend record from 2016/17 to 2018/19. Routine water CRMs over the past five years have continued the downward trend that has been apparent since 2017/18.

This likely reflects renewal and upgrade work undertaken on the networks over that period.

Figure 7.4-2: Urgent water CRMs by issue type 2019/20 to 2023/24

This graph includes an overview of all urgent CRM requests and the specific issues they relate grouped by the Ahuriri and Palmerston supplies and the non- Ahuriri and Palmerston supplies.





Overall, issues relating to no water and leaks comprise the bulk of urgent CRMs. While leaks issues show no consistent trend over the past five years, there has been an increase in urgent CRMs pertaining to 'no water'. This could, to some extent, be attributable to some customers on restricted supplies not having the required 3 days' storage needed to supply their property during planned and unplanned water outages. It is also the result of other issues such as network leaks and breaks, and illegal water connections and use on restricted supplies.

Network performance monitoring

Council also records and monitors network performance through its asset information management database and GIS to ascertain parts of the network that are not performing as required.

Data recorded includes:

- The cost associated with each asset group (from the IPS work orders)
- Maintenance by failure mode – e.g. replace, repair, locate, flush
- Number of breaks by pipe material
- Location of work orders

Main repair hotspots

In recent years, Council GIS staff developed the 'main repair hotspots' tool which shows repairs completed on a main. A repair is attributed a pre-set radius (to account for variability in the quality of location information). The greater concentration of repairs in an area the 'hotter' the colours will show. This provides a visual representation of the density of repairs on a main, providing an excellent tool to identify those areas where there is significant density of main repairs to guide decision making around pipe renewals.

Figure 7.4-3: Water main repairs hotspots (example)

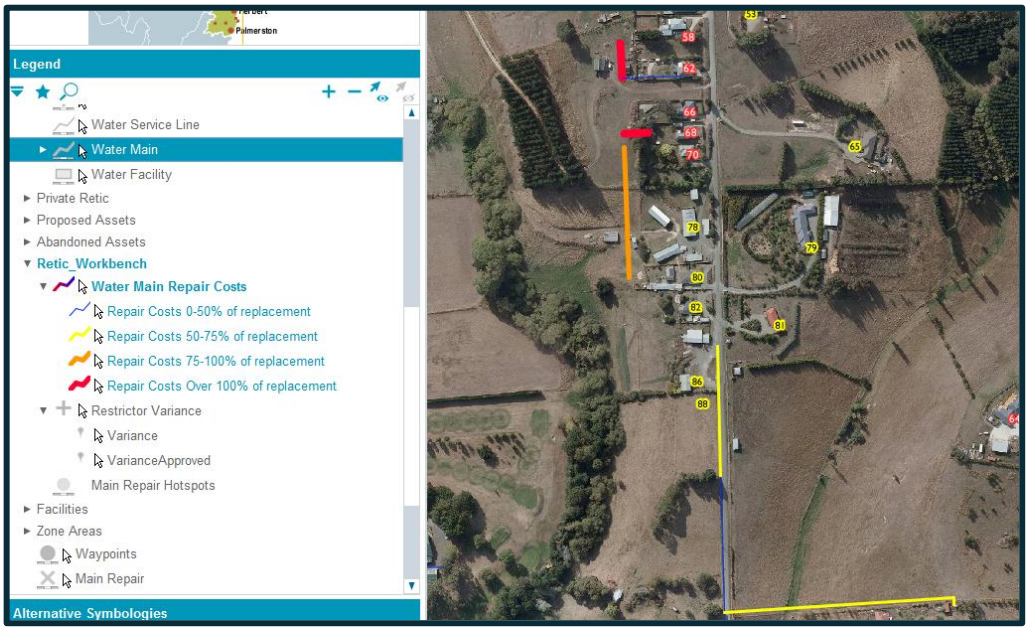


Reticulation workbench

The reticulation workbench provides analysis of water main repair costs. This shows within the GIS system whether and provides excellent guidance for repair and renewal work:

- the repair costs are 0-50% of replacement costs
- the repair costs are 50-75% of replacement costs
- the repair costs are 75-100% of replacement costs
- the repair costs are over 100% of replacement costs

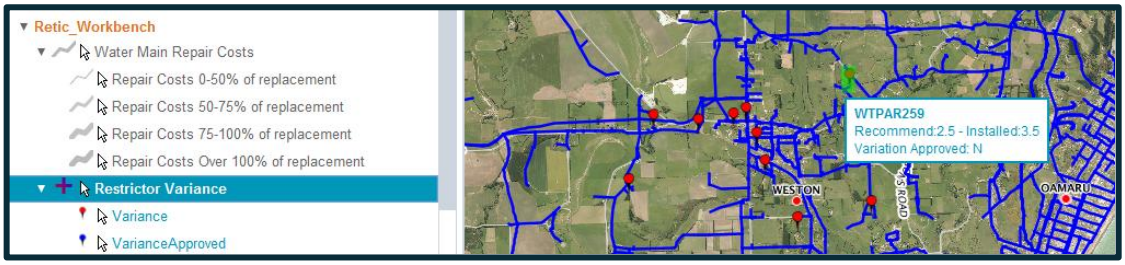
Figure 7.4-4: Water main repairs costs



Restrictor Variance

The restrictor variance tool within the GIS system provides the ability to check restrictor size against the allocated size. This identifies variances between system records and actual on-site information. The tool also allows sign off from the engineer where variances are approved e.g. pressure.

Figure 7.4-5: Restrictor variance



Hydraulic Modelling

Hydraulic modelling of reticulation has progressed to a more integrated and calibrated model of the complete systems since the last AMP. This has been used inform the current renewal programme and capital expenditure in the Long Term Plan 2025-34.

Facilities Condition

No formal condition assessment has been performed on facility assets. However, facility site visits are conducted at specified frequencies (routine, weekly, monthly, quarterly, six monthly, annually) under the Operation and Maintenance Contracts. These site visits include a visual assessment of facility asset components and all observations and actions taken documented in on site logbooks. This provides a repository of work performed and asset condition.

A condition assessment of all facilities is required to ensure that the renewal programme is:

- At an appropriate industry standard
- Complies with Audit requirements

An acoustic and electrical survey was carried out by a specialist contractor on all pumps and motors in 2005. This survey gives an early indication of wear and failure of bearings, motor winding and balance.

Due to the requirements of the HAA 2007, many facilities or components of facilities have been or will be upgraded as part of meeting the HAA 2007 compliance requirements.

7.5 Renewal and replacement

Renewal is defined as the group of activities which renew, restore, rehabilitate or replace an existing asset to extend its economic life or service potential, and which does not increase the design capacity of the asset. Work which increases the design capacity of the asset is upgrade/development work.

Renewal strategy

In the past Council's renewal approach for water mains has been performance based, not condition based, with a priority weighting for critical assets. Typically, this resulted in an asset only considered for renewal after failure, especially low criticality assets.

A more sophisticated Renewal Planning Process is now undertaken. This identifies the core drivers and key challenges while considering likelihood of failure and the consequence of failure to determine the risk of failure. This guides the intervention strategy of 'when to':

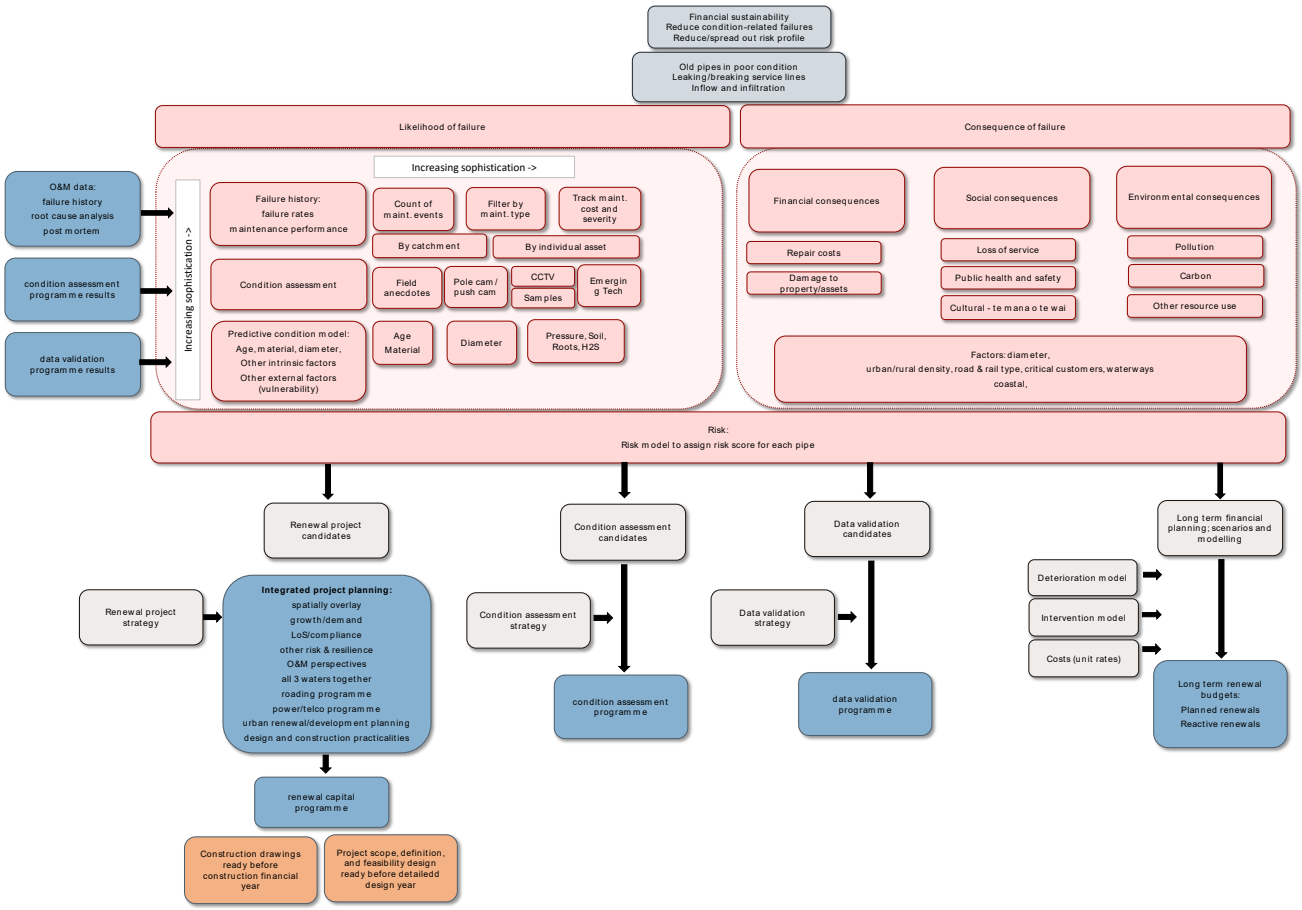
- Renew
- Assess condition
- Validate data
- Refer to Section 6.6 for the renewal risk assessment.

Mains identified for renewal will be assessed against:

- A spatial overlay of Three Waters assets
- Growth and demand
- Levels of service, risk and resilience
- Operations and maintenance perspectives
- Roading programme of works
- Utilities programme (Power/Telco)
- Land development planning
- Design and construction practicalities

This process enables the prioritisation and finalisation of the renewal programme. The Renewal Planning Process is graphically represented below.

Figure 7.5-1: Renewal Planning Process



7.6 Capital project scoping and prioritisation

Reticulation network modelling to inform capital expenditure

In early 2024, Council engaged Infrastructure Decision Support (IDS) to undertake water supply pipe renewal forecast modelling that forecasts network deterioration over the next 30 years and provides programme-level budgets for capital renewal.

The renewal forecast model showed how different CAPEX investment scenarios over the next 30 years affect the water supply network.

The renewal forecasts produced by the model confirm several expected renewal investment features:

- Renewal CAPEX investment leads to better network performance in terms of failure risk
- Renewal CAPEX also leads to lower failure rates
- 100% reactive operation does not provide long term remedies

- That Council's planned renewal projects are generally aligned with priority renewals predicted by the model

When compared to Council's current pipe renewal projects, the individual pipes prioritised by the model align well. 64% of the pipe assets that Council had already chosen for renewal will be renewed within the first five years according to the modelled replacement dates.

The model shows a reduction of the total OPEX spending across the 30-year period when there is higher CAPEX investment, which is expected. However, the impact on reducing OPEX is small compared to the increase in CAPEX required to see the reduction.

When CAPEX spending across investment scenarios is increased there is an associated reduction in the length of pipe at risk of failure. The model shows that an investment greater than $1.4M per year is needed to achieve a noticeable reduction in the length at risk of failure after 30 years.

Under most scenarios the model predicts that there will be an increase in break rate over time. This is because the network has a "baseline" break rate that is less affected by the small number of pipes being renewed each year, and more affected by the 50+ year old pipes elsewhere that are not renewed and edge closer to the end of their useful life.

Together, these observations are an argument in favour of the mid-range CAPEX scenarios (an annual renewal budget of $1.7m) where the increase in break rate is moderated compared to the no CAPEX investment option, and the length of pipes at risk of failure reduces.

This modelling work has informed the reticulation network CAPEX programme for the Long Term Plan 2025-34.

A copy of the full IDS report can be viewed here.

Asset development capital expenditure

Council has budgeted for expenditure on new assets and services in the capital works programme, but only to the extent that there is available funding. New assets require the consideration of factors such as risk, changing policy direction and legislative requirements, and to how to fund future operations, maintenance and renewal costs. Future depreciation costs must also be factored in when reviewing long term sustainability.

To comply with the Water Quality Assurance rules, new water treatment plants or upgrades to existing plants are required. These are planned for Stoneburn and Bushy Creek in the first year of the 2025-34 Long Term Plan.

Enabling growth is a priority for the Council. This has been considered in detail in developing the Oamaru Water Strategy and the projects for associated upgrades included in the Long Term Plan. There is also a project included to upgrade capacity for the Lower Waitaki Water Supply.

Project identification and prioritisation

Projects are identified through various processes including but not limited to:

- Legislative compliance

- Levels of service
- Growth
- Renewal
- Operation and Maintenance

Projects are then assigned to the individual staff to complete depending on their association or main project criteria. Most projects sit within multiple categories and responsibility is assigned based on the primary category and individual workloads.

While projects in year one of the updated LTP are considered to be highly relevant, over the following two years some become less relevant. This is generally due to:

- Changes in legislation which remove the need for the work
- Better understanding of methods, costs and timing to deliver the project outcomes. This may be via other council business units, external agencies or through other projects.
- The community and council no longer supporting the work

It is vital that the projects database is updated periodically reflecting the changes for that period. Through this update process, the impact on working towards sustainable development may be followed.

Each capital project is subject to an 'Issues and Options' report. Development of new or updating existing tools and systems are included as improvement items in the AMP.

All projects including asset management projects are the responsibility of the associated team leader.

7.7 Asset disposal

All pipeline renewals have a corresponding disposal either through the pipes being removed and disposed of at the landfill, or being left in the ground if the water services are renewed using 'no-dig' techniques, or the asset is replaced in a new location. A work order report records each disposal, and the details are entered into the IPS database. Similarly, replacement of components at treatment plants and pumping stations usually involves disposal of those items being renewed/upgraded.

Buried assets remain in the ground unless it is economic to remove them, or they pose a potential hazard. Council adopted a policy specifically for Asbestos Cement Pipe in 2023, which can be viewed here.

In all cases, asset disposal processes must comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale
- Restrictions on the minimum value recovered
- Use of revenue received from asset disposal

Under the Water Activity no assets for disposal are considered to be eligible for sale.

When considering disposal options all relevant costs of disposal will be considered, including:

- Evaluation of options
- Consultation/advertising
- Obtaining resource consents

- Professional service, including engineering, planning and legal survey
- Demolition/making safe
- Site clearing, decontamination, and beautification

Actual disposals 2020-23

The following table lists the water assets abandoned between 2017 and 2023 and shows the detail for 2023.

Figure 7.7-1: Additions and disposals since 2020

Disposal	2020	2021	2022	2023
Water assets	$780,314	$1,466,277	$1,316,190	$1,149,662

Asset	2023 ($)	% of total
Equipment	$71,880.90	6.3%
Hydrant	$582,658.34	50.7%
Water main	$5,318.71	0.5%
Water meter	$50,552.43	4.6%
Service line	$370,099.51	32.2%
Valve	$69,151.726	6%
Water miscellaneous	$0	0%
Total	**$1,149,661.62**	**100%**

The above assets are actual disposals as a result of renewals/replacements as extracted from the IPS AMIS database. They are not outcomes from changes within GIS or valuation data.

8 Financial summary

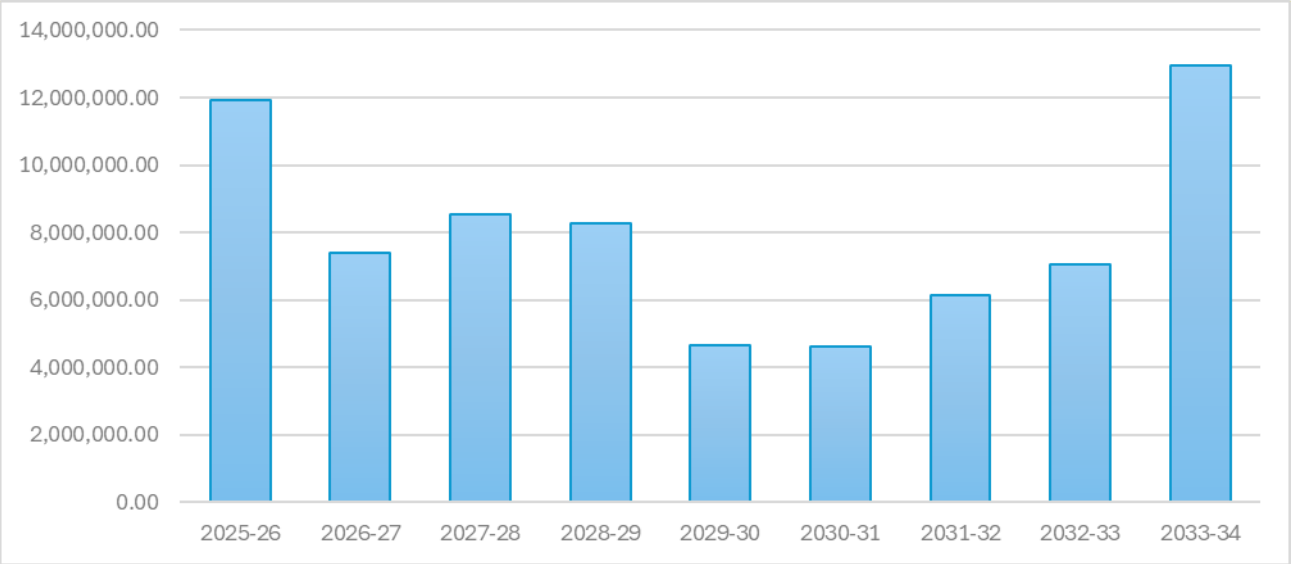
Council has planned a prudent financial approach to managing its assets and services. This section provides a summary of the total value of the activity and the investment that the Council has planned to make over the next 10 years.

Note that budgets for Operations and Maintenance will remain as for 2024/25 and are only planned out to 2027 while Council considers options for the future delivery of Water Services as part of the Government's *Local Water Done Well.*

8.1 Summary of CAPEX and renewals

A full outline of Council's capital, operational and renewals projects for Water Supply is included as Appendix 2.

Figure 8.2-1: Total water capital and renewal projects 2025-34



8.2 Statement of operational and maintenance budgets

Operational budget	LTP Budget (000's)	
	2025/26	2026/27
Payments to staff and suppliers	5,742	5,715
Finance costs	1,987	2,423
Internal charges and overheads applied	20	27
	7,749	**8,165**

8.3 Summary of projected revenue and funding sources

Sources of operating funding	LTP Budget (000's)	
	2025/26	2026/27
General rates, uniform annual general charges, rates penalties	1,556	26
Targeted rates	7,340	7,973
Fees and charges and other revenue	729	729
Local authorities fuel tax, fines, infringement fees, and other receipts	(204)	(211)
	9,421	**8,517**

Sources of capital funding	LTP Budget (000's)	
	2025/26	2026/27
Development and financial contributions	636	640
Increase (decrease) in debt	9,601	6,419
	10,237	**7,059**

8.4 Funding details

Financial Strategy

Council drafted its new Financial Strategy in September 2024, and it was adopted by Council on 17 December 2024.

Overall, within the Strategy, Council's focus is on delivering good quality services that meet the changing needs of the community, while at the same time ensuring rates affordability and financial flexibility by focusing on efficiency and effectiveness to maximise value for money and limit the use of debt.

This will be achieved by a variety of measures, with the heart of the financial strategy being:

- Reviewing what is required to deliver Council's existing services, with the aim of achieving better value for money.
- Using Council's assets for their maximum possible life, but also appreciating that community needs, safety, and legal requirements are not compromised.
- Deciding on any new initiatives or increased levels of service in a very selective way, with a focus on delivering core services and infrastructure.

This is a continuation of the key features of the previous strategy. However, there is now a much greater need to achieve these to ensure affordability and sustainability over the life of the Long Term Plan and beyond.

Funding Impact Statement

The Council's Funding Impact Statement (FIS) for this activity is included in the executive summary of this AMP. It summarises in one place how this activity will be funded and how those funds will be applied over the next 10 years. The Funding Impact Statement is included in Appendix 1.

Project Drivers

All expenditure must be allocated against at least one of the following project drivers:

- Operation and Maintenance: operational activities that do not involve the renewal or upgrade of assets, or work that is necessary to provide on-going services at the agreed levels.
- Renewals: significant work that restores or replaces an existing asset towards its original size, condition or capacity.
- Increase Level of Service: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance.
- Growth: works to create a new asset, or to upgrade or improve an existing asset, beyond its original capacity or performance to provide for the anticipated demands of future growth.

This is necessary for two reasons as follows:

1. Schedule 13(1) (a) and section 106 of the Local Government Act require the Council to identify the total costs it expects to have to meet relating to increased demand resulting from growth when intending to introduce a Development Contributions Policy.
2. Schedule 10(2)(1)(d)(l)-(iv) of the Local Government Act requires the Council to identify the estimated costs of the provision of additional capacity and the division of these costs between changes to demand for, or consumption of, the service, and changes to service provision levels and standards.

All new works have been assessed against these project drivers. Some projects may be driven by a combination of these factors and an assessment has been made of the proportion attributed to each driver.

Rating

The general approach to funding of the annual costs of Council's water supplies starts from the premise that those who benefit (either directly or indirectly) should pay – termed 'targeted rating'.

The current approach is that costs for the service are recovered directly from the households served by the individual schemes. Council will use several different rating tools to charge the targeted rates for water supply. These tools are:

- A targeted rate for water supply that will be charged based on the number of connections the rating unit has to the system.
- A targeted rate for treatment and supply of water to an appropriate standard, based on the number of connections the rating unit has to the system.
- A targeted rate to fund the cost of the reticulation network. This will be charged to each connected rating unit.
- A uniform targeted rate based on the type of connection that allows a specified volume to be supplied to a rating unit (a unit) or the total volume supplied recorded by a meter.
- Some rates will be set on a differentiated basis:
    - Geographic supply zone. This is a specific area with a larger rating area.
    - Connected – all separately used and inhabited portions of rating units connected to the water reticulation.
    - Serviceable – all rating units within 100 metres of the water reticulation. Serviceable charges are 50% of the connected charge.

Table 8.5-1: Water supply rates

Urban water rates		
Urban Town/Township	**Basis for charge**	
Ōamaru Supply	Connections per rating unit	
Ōamaru reticulation	Per connected rating unit	
Kurow	Connections per rating unit	
Lake Ōhau Village	Connections per rating unit	
Lake Ōhau Village availability	Per rating unit located within 100m of water reticulation	
Ōmārama	Connections per rating unit	
Ōtematatā	Connections per rating unit	
Palmerston Zone – Waihemo Water	Connections per rating unit	
Rural water rates		
Township/Locality	**Activity and basis for charge**	**Unit Volume (litres/day)**
Awamoko	Supply per unit	1,818
Dunback zone – Waihemo Water	Supply per unit	1,818
Duntroon	Supply per unit	1,818
Enfield zone – Ōamaru Water	Supply per unit	
Goodwood zone – Waihemo Water	Supply per unit	1,818
Herbert/Waianakarua zone – Ōamaru Water	Supply per unit	1,818
Kauru Hill	Supply per unit	1,818
Lower Waitaki	Supply per unit	1,818
Bushy Creek	Supply per unit	1,818
Stoneburn	Supply per unit	1,000
Tokarahi	Supply per unit	1,818
Weston zone – Ōamaru water	Supply per unit	1,818
Windsor	Supply per unit	1,818

The Hampden/Moeraki Rural Water Supply is differentiated by the nature of the connection that allows the supply of volume using the following definitions:

- Domestic unit - rating units supplied to the original townships of Hampden and Moeraki
- Rural unit - rating units supplied outside the original townships of Hampden and Moeraki

The Kakanui Rural Supply rate is differentiated by the nature of the connection that allows the supply of volume using the following definitions:

- Unit – uniform volume of water supplied to a connected rating unit.
- Crib Unit – uniform volume of water supplied to a connected rating unit to properties identified as cribs in the rating information database.

The specified volumes of water for connected properties are:

Township/locality	Activity and basis of charge	Unit volume (litres/day)
Hampden/Moeraki zone – Ōamaru Water	Domestic supply per unit (crib) Rural Supply per unit	909 1,818
Kakanui zone – Ōamaru Water	Supply per unit Crib supply per unit	1,818 909

The metered water rates will be set on all rating units serviced by meter. The targeted rates will be used to fund water supply.

Harmonisation

Council is aware that upgrading and maintaining the infrastructure assets will come at a significant cost. There are concerns that people relying on fixed incomes, such as a pension, might not be able to afford the spikes in rates that may happen in future, especially those serviced by smaller systems. One way of addressing this is to spread the cost of each utility across all the systems so that all users pay the same for each utility service. Thus, every town will have the same level of service and rate for that service. This will spread the costs smoothly over time and insulate the towns from sudden costly rate increases when capital work is needed. It also ensures the sustainability of the district in the future.

Price level changes & Forecast Financial Statements

Accounting rules require that Council adjust its forecast financial information to take account of the impact of inflation. This should more fairly indicate rates movements, particularly in the first three years of the Plan. Council has used forecast price level changes for key categories of expenditure as they affect local government.

These price level adjustments have been applied to all core budgets and projects. To take account of the impact of revaluation movements, these have also been applied to depreciation expenses.

The forecast financial statements have been prepared in accordance with the Local Government Act 2002. In accordance with the Act, the first 3 years have been prepared in detail and the following 7 years in outline.

Accounting rules require that Council adjust its forecast financial information to take account of the impact of inflation. This should more fairly indicate rates movements, particularly in the first three years of the Plan. These price level adjustments have been applied to all core budgets and projects. To take account of the impact of revaluation movements, these have also been applied to depreciation expenses.

The LTP is based on current Council policies. The forecast financial statements are prospective information. Actual results are likely to vary from the information presented, and the variations may be material.

Lifecycle funding

It is critical that equity of funding for renewals between current and future (intergenerational) users occurs. While it is possible that some original supply members will stay for 20 or more years having contributed to both the original capital costs and 20 years renewals, this will only account for the lower cost, high wear and tear item renewals. Pipes, reservoirs, wells and the like have comparatively higher costs and would be renewal funded intergenerational e.g. 50-100 years away.

The closer a supply gets to large infrastructure renewals, the more it should focus on confirming the remaining useful life. Criticality (renewal strategy) assessment is the cornerstone of this programme. The renewal value charged is reviewed on a 3-yearly basis at the time of asset revaluation.

8.5 Financial Forecasting

Council holds actual and budget figures for many years. These historical figures provide a robust basis for calculation and estimating future costs.

Renewals

Renewal costs are funded through targeted rates (depreciation component), which provides for the upkeep of the asset.

Capital Projects

Capital projects are funded from:

- Loans (internal or external)
- Depreciation
- Financial contributions (development)
- Government subsidies (where appropriate)

Sensitivity

A sensitivity analysis is done with every capital project by the Finance unit to determine the rates impact. The sensitivity analysis tests the robustness of the results while considering the uncertainties. This provides improved understanding of the inputs and outputs while identifying potential errors.

Internal analysis is performed by Council during facility equipment renewals e.g. pumps, etc. Pipe renewals are depreciation funded and therefore have no direct rates impact.

Development Contributions

Development Contributions are collected by Council to ensure roads, water supply and wastewater disposal infrastructure can continue to support the needs of the community as it grows, and that it is paid for by those that generate the additional demand.

Development contributions are used to fund new or additional infrastructure, or to increase the capacity of existing infrastructure.

The current policy was adopted on 15 June 2021 and is included with Council's Funding and Financial Policies and can be viewed here.

Development Contributions are reviewed regularly and subject to change on 1 July each year. The current policy allows Council to require contributions of money when applicants are granted resource consents or building consents, or when service connections are approved.

Table 8.6-1: Development Contribution rates for water supply 2024-35

Connections (incl GST)	
On-demand	
Standard new 20mm connection	$3,795.00
Standard new 20mm connection with meter	$3,995.00
Water meter installation (including scheduled contractor charge)	Actual cost
Disconnection	Quoted
Restricted	
Quoted works for connection	Quoted
Restrictor change (physical costs)	$490.00

Development Contributions (incl GST)			Rates (incl GST)		
On-demand		**DC Charge** (Per HEU)	**Water Rates** (per CRU)	**Meter Rate** (per m3)	**Meter Rate Credit** (m3)
Kurow		$2,408.10	$924.00	$0.70	1,320
Oamaru		$7,263.40	-	$1.57	263
- Oamaru Supply		-	$413.00	-	-
- Oamaru Reticulation		-	$370.00	-	-
Omarama		$8,485.80	$950.00	$1.27	748
Otematata		$8,353.60	$870.00	$0.70	1242
Waihemo		$3,944.50	$1075.00	$1.57	684
Restricted	**Unit Size** (m3/day)	**DC Charge** (Per UNIT of Water/day)	**Water Rates** (per CRU)		**Meter Rates Credit** (m3)
Bushy Creek (closed to new applications)	1.8	Closed for new applications	$250.00	-	-
Duntroon	1.8	$561.00	$1182.00	-	-
Lake Ohau - if paying availability rate ($237.00) 50% off DC applies	0.6	$18,874.30	$473.00	-	-
Lower Waitaki	1.8	$4,790.00	$776.00	-	-
Oamaru - includes Kakanui, Weston, Enfield, Herbert/Waianakarua & Hampden/Moeraki Zones	1.8	$7,263.40	$892.00	-	-
Oamaru - Hampden/Moeraki Domestic Unit	0.9	$3,631.70	$696.00	-	-
Oamaru - Kakanui Crib (closed to new applications)	0.9	Closed for new applications	$696.00	-	-
Stoneburn	1.0	$7,771.70	$576.00	-	-
Waihemo - incl Palmerston, Dunback & Goodwood Zones	1.8	$3,944.50	$1075.00	-	-
Waihemo - incl Palmerston, Dunback & Goodwood Zones	0.9	$1,972.20	$537.50	-	-
Oamaru - Maheno (full unit)	1.8	$7,263.40	$892.00	-	-
Oamaru - Maheno (half unit)	0.9	$3,631.70	$446.00	-	-

Supplies managed by Corriedale Water Management Ltd.	DC Charge (Per UNIT of Water/day)	Water Rates (per CRU)		
Awamoko	$7,791.50	$687.00	-	-
Kauru Hill	$10,451.40	$567.00	-	-
Tokarahi	$6,230.70	$531.00	-	-
Windsor	$8,377.30	$466.00	-	-

Notes:

Development Contributions are contributions defined by the provisions of Part 8 Subpart 5 and Schedule 13 of LGA 2002. Contributions are assessed based on the fiscal implications of growth.

As the sequence of development is not always consistent, development contributions shall be required at the first available opportunity. At each and every subsequent opportunity the development will be reviewed and additional contributions required if the units of demand assessed for the development exceed those previously paid for.

Development contributions are triggered on the granting of:

- A resource consent
- A building consent
- An authorisation for a service connection for sewer or stormwater
- An authorisation for a service connection for water, including additional units of water by volume supplied to existing consumers
- An application for a Certificate of Acceptance

The development contributions for the amalgamated water schemes are based on a weighted average approach, and on the premise that 1 HEU is equivalent to 1 Unit (1 point), except where otherwise stated

Council applies a differential system to ensure that different types of development, such as rural residential, commercial, accommodation, primary industry/dairy contribute fairly to capital expenditure for growth.

Connection costs and annual rates charges also apply. Remissions apply in some cases.

Note that Development Contributions differ from Financial Contributions. Financial Contributions can be charged as a condition of a resource consent under Section 108 of the Resource Management Act 1991. They contribute towards the expansion of the District's reserves, community facilities and other infrastructure where additional demand is created and Development Contributions don't apply.

Financial Contributions		
Water Supply	**Wastewater**	**Stormwater**
Financial contributions where appropriate. Environmental effects – Chapter 14 District Plan. Environmental Considerations	Financial contributions where appropriate. Environmental effects – Chapter 14 District Plan. Environmental Considerations	Financial contributions where appropriate. Environmental effects – Chapter 14 District Plan. Environmental Considerations

Notes:

Financial Contributions are defined by Section 108 of the Resource Management Act (RMA) 1991 and collected using the provisions of the District Plan. Contributions are assessed based on the environmental effects of growth. These are defined in Chapter 14 of the Waitaki District Plan. Chapter 14 of the District Plan is particularly relevant for contributions of a non-fiscal nature. These will generally be of an environmental nature, including public access, provision of parking and protection of environmentally sensitive sites

8.6 Vested assets

The Council receives assets that are vested in it, but there has been no direct exchange of funds. In the case of infrastructural assets, the value of exchange is deemed to be at the current valuation at time of issue of the 224 Certificate. For all donated and subsidised assets, the initial value recorded is the current valuation at the date of acquisition.

8.7 Asset valuations

Councils are required to value and depreciate their assets regularly. The most recent full valuation of the treatment facilities and reticulation systems for the Three Waters was carried out for 30 June 2024.

This revaluation was undertaken by Waitaki District Council and Peer Reviewed by WSP.
We certify that the valuations summarised below have been completed in accordance with the following:

- NZ Infrastructure Asset Valuation and Depreciation Guidelines Second Edition
- Public Benefit Entity International Public Sector Accounting Standard 17 Property, Plant and Equipment (PBE IPSAS17) (Replacement for NZ IAS 16) and
- The Local Government Act 2002

Table 8.8-1: Summary asset valuation results for 2024

	Replacement Cost ($)	Depreciated Replacement Cost ($)	Annual Depreciation ($)
Wastewater	282,749,279	183,289,906	2,720,268
Stormwater	57,550,017	29,871,276	493,445
Water	272,042,498	164,007,210	4,424,119
Total Utilities	**612,341,795**	**377,168,392**	**7,637,832**

The valuation is based on an accurate and substantially complete asset register with appropriate replacement unit rates and effective lives.

The lives are generally based on NZ Infrastructure Asset Valuation and Depreciation Guidelines, or where appropriate, a new life is adopted.

The component level of the assets is appropriate to calculate depreciation separately for those assets that have different useful lives and the unit rates for these reflect the current market value for the district conditions.

Valuation comparison

Following are tables detailing the movement in valuation from 2021 to 2024. The following table is the overall summary of the Total Utilities followed by the individual Utilities with explanations of the reason for the movement.

Table 8.8-2: Overall valuation comparison

	2024			2021			Movement		
Asset type	Replacement cost	Depreciated replacement cost	Annual Depreciation	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation	Replacement Cost	Depreciated Replacement Cost	Annual depreciation
Sewer	282,749,279	183,289,906	2,720,268	189,226,962	129,341,036	1,693,194	49%	42%	61%
Storm	57,550,017	29,871,276	493,445	38,535,147	20,719,505	327,745	49%	44%	51%
Water	272,042,498	164,007,210	4,424,119	176,556,717	104,065,115	2,698,500	54%	58%	64%
Total	612,341,795	377,168,392	7,637,832	404,318,826	254,125,656	4,719,439	**51%**	**48%**	**62%**

Asset Lives and Assumptions

The base life of an asset is set during the valuation process to identify what is believed to be the average length of time that the asset will be capable of providing the required level of service. The setting of the base life is the factor in the valuation process that directly affects the annual depreciation requirement for the asset.

The expected base lives in the reticulation for water, sewer and stormwater are reviewed as part of each valuation to align the expected lives, and the method of setting these with the renewal decision making practice.

The review process and assumptions are detailed within the 2024 Asset Valuation.

Table 8.8-3: Asset base life for water

Pipe material	Base life	Assumptions
PVC pipe	100	
PE pipe	80	
AC pipe 450mm	140	This is Redcastle Rd rising main, which is currently over-pressurised, and the assumption is that it operated at its design pressure.
AC pipe 250mm-375mm	100	
AC pipe 100mm – 200mm	80	
AC pipe less than 100mm	70	
Concrete pipe	60	
Steel pipe	80	
Galvanised pipe	40	

Pipe material	Base life	Assumptions
Cast iron pipe	150	This is the revised base life recommended by WSP following condition assessments undertaken in 2024.
Service line	40-150	Service lines take the life of the main they are attached to as they are managed as part of the main for renewal. This approach will be reviewed prior to the next AMP.
Fire hydrant	40-150	Fire hydrants take the life of the main they are attached to as they are managed as part of the main for renewal
Valves 25mm and greater	40-150	Valves are attributed the life of the main they are attached to as they are managed as part of the main for renewal
Water meter	15	
Miscellaneous	Various	

Asset valuation

The following table reflects the adopted General Ledger Component hierarchy that is utilised for managing the assets. Historically it was split to a reticulation and network/facilities level.

Table 8.8-4: Asset valuation by supply 2024

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Awahokomo Water Supply	Water - Awahokomo Main Intake	2	20	20,900	3,554	418
Awahokomo Water Supply	Water - Awahokomo Reservoir	4	300	225,007	100,852	3,726
Awahokomo Water Supply	Water - Awahokomo Surge Tank	1	1	5,559	945	111
Awahokomo Water Supply	Resource Consent	2	2	51,187	32,074	9,164
Awahokomo Water Supply	Water Main	24	8944	406,196	215,223	4,602
Awahokomo Water Supply	Water Miscellaneous	2	2	6,300	3,032	79
Awahokomo Water Supply Total		**35**	**9269**	**715,149**	**355,681**	**18,100**
Awamoko Water Supply	Water - Awamoko PS - Horse Gully Rd	8	39	153,065	140,683	5,623
Awamoko Water Supply	Water - Altavady Main Intake	22	186	521,998	114,737	18,302
Awamoko Water Supply	Water - Awamoko Res Three	1	1	11,400	798	228
Awamoko Water Supply	Water - Horse Gully Rd Ps W314	1	20	9,000	1,351	180
Awamoko Water Supply	Water - Jardine Rd Ps	4	29	110,357	23,556	4,024
Awamoko Water Supply	Water - Awamoko Res Two	2	51	18,393	8,857	338
Awamoko Water Supply	Water Main	281	69685	3,522,592	2,003,500	38,274
Awamoko Water Supply	Water Miscellaneous	2	2	2,700	2,134	54
Awamoko Water Supply	Water Valve	14	14	19,275	14,866	269
Awamoko Water Supply Total		**335**	**70027**	**4,368,780**	**2,310,481**	**67,293**
Duntroon Water Supply	Water - Duntroon Main Intake	29	438	333,075	186,812	16,073
Duntroon Water Supply	Water - Duntroon Reservoir	10	158	125,123	113,062	3,641
Duntroon Water Supply	Resource Consent	2	2	51,187	33,032	9,141
Duntroon Water Supply	Water Hydrant	8	8	43,200	19,022	676
Duntroon Water Supply	Water Main	71	6184	304,590	142,449	3,908

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Duntroon Water Supply	Water Meter	2	2	2,355	824	157
Duntroon Water Supply	Water Miscellaneous	3	3	4,050	3,564	81
Duntroon Water Supply	Water Service Line	52	52	89,934	43,689	1,528
Duntroon Water Supply	Water Valve	13	13	19,875	13,935	286
Duntroon Water Supply Total		**190**	**6860**	**973,389**	**556,391**	**35,491**
Kauru Hill Water Supply	Water - Kauru Hill Intake	23	695	315,330	56,239	12,633
Kauru Hill Water Supply	Water - Kauru Hill Reservoir	3	397	279,020	55,779	4,488
Kauru Hill Water Supply	Water - Kauru Hill Fuchsia Res	1	1	5,559	389	111
Kauru Hill Water Supply	Resource Consent	1	1	6,398	4,953	206
Kauru Hill Water Supply	Water Hydrant	1	1	5,400	979	68
Kauru Hill Water Supply	Water Main	278	77236	3,174,589	1,283,571	39,140
Kauru Hill Water Supply	Water Meter	2	2	4,500	3,600	300
Kauru Hill Water Supply	Water Miscellaneous	4	4	7,200	4,162	120
Kauru Hill Water Supply	Water Valve	31	31	27,075	10,467	677
Kauru Hill Water Supply Total		**344**	**78368**	**3,825,072**	**1,420,140**	**57,744**
Kurow Water Supply	Water - Kurow Intake	48	227	639,834	295,984	25,296
Kurow Water Supply	Water - Kurow Reservoir	14	408	339,658	95,306	7,174
Kurow Water Supply	Water - Chlorine Analyser Site - Kurow Retic	4	4	33,589	31,390	2,102
Kurow Water Supply	Resource Consent	2	2	51,187	32,149	9,141
Kurow Water Supply	Water Hydrant	46	46	259,802	151,043	3,113
Kurow Water Supply	Water Main	164	12632	3,339,307	1,809,115	39,296
Kurow Water Supply	Water Meter	279	279	334,638	168,484	22,309
Kurow Water Supply	Water Miscellaneous	9	9	28,350	24,536	567
Kurow Water Supply	Water Service Line	319	319	1,004,822	629,335	16,707
Kurow Water Supply	Water Valve	66	66	221,680	179,511	3,683
Kurow Water Supply Total		**951**	**13992**	**6,252,867**	**3,416,855**	**129,387**
Lake_Ohau Water Supply	Water - Lake Ohau Intake	1	10	20,000	2,767	400
Lake_Ohau Water Supply	Water - Lake Ohau Reservoir	1	160	109,600	50,577	1,370
Lake_Ohau Water Supply	Resource Consent	2	2	51,187	32,791	9,164
Lake_Ohau Water Supply	Water Backflow	1	1	1,050	389	42
Lake_Ohau Water Supply	Water Hydrant	14	14	76,201	52,635	794
Lake_Ohau Water Supply	Water Main	34	3902	958,228	583,399	9,759
Lake_Ohau Water Supply	Water Meter	4	4	13,388	12,371	893
Lake_Ohau Water Supply	Water Miscellaneous	5	5	12,150	7,705	192
Lake_Ohau Water Supply	Water Service Line	141	141	444,409	309,036	4,825
Lake_Ohau Water Supply	Water Valve	9	9	33,855	24,595	397
Lake_Ohau Water Supply Total		**212**	**4248**	**1,720,068**	**1,076,263**	**27,836**
Lower_Waitaki Water Supply	Spare Assets Water	1	1	2,838	2,791	189
Lower_Waitaki Water Supply	Water - Lower Waitaki Bores	36	171	560,231	333,113	19,658
Lower_Waitaki Water Supply	Water - Lower Waitaki High Res	13	111	117,261	87,395	4,347
Lower_Waitaki Water Supply	Water - Lower Waitaki Low Res	9	227	190,031	69,367	4,472
Lower_Waitaki Water Supply	Water - Lower Waitaki Treatment Plant	39	267	486,894	324,981	21,426
Lower_Waitaki Water Supply	Resource Consent	2	2	51,187	35,320	9,141

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Lower_Waitaki Water Supply	Water Hydrant	2	2	12,000	6,780	209
Lower_Waitaki Water Supply	Water Main	641	93688	3,894,736	2,065,475	43,241
Lower_Waitaki Water Supply	Water Meter	5	5	5,888	2,669	393
Lower_Waitaki Water Supply	Water Miscellaneous	7	7	9,450	8,343	189
Lower_Waitaki Water Supply	Water Service Line	5	5	14,033	11,731	269
Lower_Waitaki Water Supply	Water Valve	99	99	105,526	63,693	1,470
Lower_Waitaki Water Supply Total		**859**	**94585**	**5,450,076**	**3,011,657**	**105,002**
Oamaru Water Supply	Spare Assets Water	4	4	64,878	62,844	4,325
Oamaru Water Supply	Water - Appleby St Ps. W032	9	38	167,625	136,612	7,047
Oamaru Water Supply	Water - Brockmans Hill Res	10	10	79,500	70,084	3,944
	Water - Chlorine Analyser Site - Maheno	3	3	44,216	24,201	3,927
Oamaru Water Supply	Water - Chlorine Analyser Site - Stoke Retic	4	4	33,994	30,537	2,129
Oamaru Water Supply						
Oamaru Water Supply	Water - Duncan Rd Reservoir	9	9	84,110	76,122	3,991
Oamaru Water Supply	Water - Enfield Reservoir	12	226	202,096	54,480	5,360
	Water - Fortification Rd Ps. W451 (Bob Allans)	13	45	189,234	141,626	7,921
Oamaru Water Supply	Water - Fortification Res	9	9	74,986	64,531	3,425
Oamaru Water Supply	Water - Hamnak Pump Station 1	54	189	623,597	503,496	24,062
Oamaru Water Supply	Water - Hamnak Pump Station 2	49	174	633,958	510,190	24,743
	Water - Hampden_Moeraki Main Pumps	1	36	16,200	1,134	324
Oamaru Water Supply	Water - Herbert Booster Res	10	238	217,632	185,631	6,968
	Water - Hillgrove-Moeraki Road Ps	29	35	260,979	179,384	11,215
Oamaru Water Supply	Water - Homestead Rd Ps	4	4	35,914	6,285	1,796
Oamaru Water Supply	Water - Kakanui Reservoir	4	203	139,352	77,991	4,082
Oamaru Water Supply	Water - King George Park Ps. W014	17	122	633,787	410,336	26,480
Oamaru Water Supply	Water - New Hampden-Moeraki Rs	20	286	182,413	147,073	5,406
Oamaru Water Supply	Water - Oamaru Reservoir	883	181108	39,146,358	31,292,149	918,334
Oamaru Water Supply	Water - Redcastle Rd Intake. W011	42	3372	2,272,126	817,581	58,130
Oamaru Water Supply	Water - Robbs Crossing - Enfield Ps	21	333	524,844	205,720	17,943
Oamaru Water Supply	Water - Rosedale Farm Ps	17	33	228,095	166,905	10,048
Oamaru Water Supply	Water - Rosedale Reservoir	2	24	12,689	6,934	200
Oamaru Water Supply	Water - South Hill Reservoir	34	2389	1,312,217	335,234	26,302
Oamaru Water Supply	Water - Tanker Filling Station	1	1	49,984	27,486	2,499
Oamaru Water Supply	Water - Totara Reservoir	1	40	12,400	9,132	155
Oamaru Water Supply	Water - Troup St Ps	10	42	176,757	127,743	7,306
Oamaru Water Supply	Water - Weston Reservoir	17	395	330,738	81,795	7,034
Oamaru Water Supply	Resource Consent	1	1	44,788	31,352	8,958
Oamaru Water Supply	Water Backflow	15	15	30,405	22,542	1,216
Oamaru Water Supply	Water Hydrant	1027	1027	6,440,630	3,603,822	84,495
Oamaru Water Supply	Water Main	7046	686902	96,161,249	53,180,825	1,060,295

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Oamaru Water Supply	Water Meter	443	443	699,346	308,996	46,623
Oamaru Water Supply	Water Miscellaneous	28	28	91,801	50,130	1,684
Oamaru Water Supply	Water Service Line	7674	7674	23,783,685	14,522,216	428,642
Oamaru Water Supply	Water Valve	1590	1590	5,832,159	3,858,507	83,594
Oamaru Water Supply Total* **		**19113**	**887052**	**180,834,742**	**111,331,626**	**2,910,607**
Omarama Water Supply	Water - Omarama Main Intake	45	175	322,486	308,959	15,999
Omarama Water Supply	Water - Omarama Reservoir	10	1647	801,912	472,475	11,209
Omarama Water Supply	Water - Omarama Water Treatment Plant	136	2376	1,831,948	1,790,438	71,183
Omarama Water Supply	Resource Consent	1	1	44,788	31,352	8,958
Omarama Water Supply	Water Backflow	1	1	3,603	3,410	144
Omarama Water Supply	Water Hydrant	42	42	237,002	123,825	3,025
Omarama Water Supply	Water Main	221	14826	4,364,433	2,434,275	51,567
Omarama Water Supply	Water Meter	61	61	90,571	38,009	6,038
Omarama Water Supply	Water Miscellaneous	9	9	28,350	25,122	567
Omarama Water Supply	Water Service Line	374	374	1,224,379	726,483	18,305
Omarama Water Supply	Water Valve	92	92	295,458	174,896	3,570
Omarama Water Supply Total		**994**	**19625**	**9,297,913**	**6,178,810**	**193,123**
Otekaieke Water Supply	Water - Otekaieke Intake	1	4	2,000	1,960	40
Otekaieke Water Supply	Water - Otekaieke Reservoir	2	2	10,216	800	204
Otekaieke Water Supply	Resource Consent	1	1	6,398	4,128	206
Otekaieke Water Supply	Water Main	57	20369	766,312	404,717	8,048
Otekaieke Water Supply	Water Meter	1	1	2,250	1,650	150
Otekaieke Water Supply	Water Miscellaneous	1	1	1,350	1,188	27
Otekaieke Water Supply	Water Service Line	1	1	1,973	1,755	33
Otekaieke Water Supply	Water Valve	8	8	9,900	5,798	110
Otekaieke Water Supply Total		**72**	**20387**	**800,400**	**421,996**	**8,818**
Otematata Water Supply	Spare Assets Water	1	1	14,463	14,030	964
Otematata Water Supply	Water - Chlorine Analyser Site - Otematata	4	4	33,589	31,390	2,102
Otematata Water Supply	Water - Otematata Intake And Treatment Plant	75	640	1,044,935	710,532	46,334
Otematata Water Supply	Water - Otematata Reservoir	6	24	63,325	38,270	3,259
Otematata Water Supply	Resource Consent	2	2	51,187	36,718	9,164
Otematata Water Supply	Water Backflow	1	1	1,547	1,470	62
Otematata Water Supply	Water Hydrant	66	66	378,003	240,300	4,491
Otematata Water Supply	Water Main	274	15334	5,873,000	4,084,442	69,202
Otematata Water Supply	Water Meter	18	18	32,858	20,951	2,191
Otematata Water Supply	Water Miscellaneous	14	14	45,900	39,469	918
Otematata Water Supply	Water Service Line	533	533	1,800,144	1,189,590	34,416
Otematata Water Supply	Water Valve	101	101	365,028	248,181	5,009
Otematata Water Supply Total		**1095**	**16738**	**9,703,978**	**6,655,343**	**178,112**
Stoneburn Water Supply	Water - Stoneburn Intake	18	683	369,336	229,360	15,879
Stoneburn Water Supply	Water - Stoneburn Main Ps	22	24216	2,814,512	2,467,068	17,185
Stoneburn Water Supply	Water - Stoneburn Tanks	8	301	194,608	78,869	4,718
Stoneburn Water Supply	Resource Consent	3	3	57,585	41,671	9,371
Stoneburn Water Supply	Water Hydrant	1	1	6,000	3,260	60
Stoneburn Water Supply	Water Main	251	86120	3,900,042	2,298,088	44,376
Stoneburn Water Supply	Water Meter	3	3	7,350	3,325	490

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Stoneburn Water Supply	Water Miscellaneous	14	14	38,700	26,138	514
Stoneburn Water Supply	Water Service Line	1	1	1,973	1,767	29
Stoneburn Water Supply	Water Valve	27	27	31,350	21,336	388
Stoneburn Water Supply Total		**348**	**111369**	**7,421,456**	**5,170,882**	**93,009**
Tokarahi Water Supply	Water - Livingstone Ps	6	41	149,609	19,557	5,588
Tokarahi Water Supply	Water - Reservoir -Davidson Rd	1	1	5,559	389	111
Tokarahi Water Supply	Water - Tapui Ps	8	40	166,171	25,870	5,919
Tokarahi Water Supply	Water - Tokarahi Main Intake And Wtp. W441	45	423	621,042	470,398	22,880
Tokarahi Water Supply	Water - Tokarahi Reservoir Num 2	3	21	18,814	1,317	376
Tokarahi Water Supply	Water - Tussocky Rd Reservoir	1	46	14,260	3,015	178
Tokarahi Water Supply	Water -Tokarahi Reservoir Main	3	397	279,020	55,791	4,488
Tokarahi Water Supply	Resource Consent	1	1	6,398	1,179	183
Tokarahi Water Supply	Water Hydrant	4	4	22,200	2,869	306
Tokarahi Water Supply	Water Main	1145	273030	12,992,644	5,349,269	160,934
Tokarahi Water Supply	Water Meter	2	2	6,990	1,631	466
Tokarahi Water Supply	Water Miscellaneous	26	26	67,501	27,710	1,087
Tokarahi Water Supply	Water Valve	186	186	182,777	80,952	2,878
Tokarahi Water Supply Total		**1431**	**274218**	**14,532,984**	**6,039,947**	**205,395**
Waihemo Water Supply	Water - Chlorine Analyser Site - Dunback Retic	4	4	20,208	18,793	1,210
Waihemo Water Supply	Water - Chlorine Analyser Site - Goodwood Retic	4	4	20,208	18,690	1,210
Waihemo Water Supply	Water - Chlorine Analyser Site - Palmerston Retic	6	6	60,796	55,715	2,834
Waihemo Water Supply	Water - Dunback Reservoir	10	224	212,703	83,608	5,526
Waihemo Water Supply	Water - Goodwood Reservoir	11	225	214,116	79,873	5,361
Waihemo Water Supply	Water - Palmerston Intake	29	925	494,198	186,184	20,222
Waihemo Water Supply	Water - Palmerston Prv Site	8	27	35,725	25,852	898
Waihemo Water Supply	Water - Palmerston Reservoir	8	1364	660,024	225,993	10,853
Waihemo Water Supply	Water - Palmerston Tanker Filling Station	3	22	64,882	61,264	2,708
Waihemo Water Supply	Water - Shag Point Reservoir	1	115	35,650	23,842	446
Waihemo Water Supply	Water - Treatment Plant #1 At Mill Road Site	31	166	545,919	298,956	29,495
Waihemo Water Supply	Water - Treatment Plant #2 At Mill Road Site	21	98	280,931	225,557	12,835
Waihemo Water Supply	Resource Consent	2	2	51,187	35,739	9,141
Waihemo Water Supply	Water Backflow	2	2	5,150	4,813	206
Waihemo Water Supply	Water Hydrant	96	96	550,054	364,463	6,559
Waihemo Water Supply	Water Main	1415	208180	17,333,925	11,023,105	201,935
Waihemo Water Supply	Water Meter	49	49	82,328	50,515	5,489
Waihemo Water Supply	Water Miscellaneous	12	12	18,000	15,903	336
Waihemo Water Supply	Water Service Line	613	613	2,062,406	1,397,377	26,461
Waihemo Water Supply	Water Valve	242	242	606,741	463,662	9,416
Waihemo Water Supply Total		**2567**	**212376**	**23,355,151**	**14,659,904**	**353,139**
Windsor Water Supply	Water - Windsor Intake	16	73	312,904	83,696	11,418
Windsor Water Supply	Water - Windsor Reservoir	2	396	262,800	114,630	3,407
Windsor Water Supply	Resource Consent	1	1	6,398	4,953	206
Windsor Water Supply	Water Hydrant	1	1	5,400	3,213	54
Windsor Water Supply	Water Main	228	51594	2,164,947	1,174,538	25,099

Scheme	Asset Type	Count of Assets	Length (m)	Replacement Cost	Depreciated Replacement Cost	Annual Depreciation
Windsor Water Supply	Water Meter	2	2	4,500	1,050	300
Windsor Water Supply	Water Miscellaneous	3	3	4,050	3,483	81
Windsor Water Supply	Water Valve	26	26	29,475	15,671	499
Windsor Water Supply Total		**279**	**52096**	**2,790,474**	**1,401,234**	**41,063**
Water Total		**28825**	**1871210**	**272,042,498**	**164,007,210**	**4,424,119**

8.8 Depreciation

Background

Section 100 subsection 1 of the LGA 2002 states: "A local authority must ensure that each year's projected operating revenues are set at a level sufficient to meet that year's projected operating expenses."

This requirement to set operating revenues at a level sufficient to meet operating expenses includes depreciation, as Section 111 obliges councils to follow generally accepted accounting practice (GAAP) which includes a definition of "operating expenses." As depreciation is defined as an operational expense it must be included with other operational costs, including interest, when a council sets its operating revenue.

GAAP defines depreciation as follows:

Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.

Therefore, deprecation measures the annual consumption of an asset so that the reduction in its value is accounted for as it is consumed. The purpose of depreciation is not to provide for the replacement of the asset, although this is a consequence of depreciation. Deprecation ensures that each year's ratepayers pay their way for the consumption of the assets. For example, if an asset will last for 10 years, the annual depreciation charge is 1/10th of the value of the asset.

The basic value of an asset reduces in accordance with the wearing out or consumption of benefits over the asset's life arising from use, the passage of time, or obsolescence. This reduced value is called the depreciated value. It is accounted for by the allocation of the cost (or revalue amount) of the asset less its residual value over its useful life.

The decline in service potential is thus provided on a straight-line basis on all fixed assets. Therefore, Council complies with the requirements of FRS3 and NZIAS 16 and calculates depreciation for assets.

Asset lives

Asset expected lives are tabled in the Asset Valuation. Assets are installed and maintained to Council standards and specifications. These standards are relevant to New Zealand and Australian Standards and are included in Construction, Operation and Maintenance Contracts e.g. NZS4404 Land Development and Subdivision Infrastructure. This ensures the relevance of industry standard expected lives. Depending on the criticality of the asset, when an asset is

nearing its expected useful life, the asset is assessed and its remaining useful life determined. A run to failure strategy is applied to low criticality assets as the consequence of failure is not major and the costs of ongoing condition monitoring may outweigh the costs of failure. A risk and condition-based strategy is applied where there is a significant implication due to failure, such as a major health and safety risk, significant reliability of supply consequence or significant expense in repair. This risk and condition-based strategy will be refined upon completion of the Criticality project currently under development and will guide the future.

Council engineers know the consequences of their decisions and acknowledge that there is a potential for decline in service, although it is not permanent or significant. Where an asset needs replacement, it is done to the appropriate Council standards and specifications, prioritised on criticality and funding available from depreciation funds. In years of high depreciation renewals with insufficient depreciation, reserves loan funding may be used.

In 2015 it was identified that adding 10% onto short life assets (typically Plant Equipment), did not always achieve a remaining useful life of greater than 3 years. And therefore, the asset would depreciate to zero value before the next revaluation even though it was still in service. Therefore, the policy was altered for assets past their base life, and these now have an additional 3.5 years added onto their current age to ensure they do not depreciate to zero. This also gets the extended life asset to the next triannual valuation where it will have another 3.5 years added to the current age if it is still in service. If such an extended life asset is no longer fit for service prior to the next revaluation it is disposed of like any other disposal with the replacement asset depreciation taking other from the disposed asset.

In the 3.5 years extended life scenario; the calculation would now be:

Replacement Cost / (Current Age +3.5) = Annual Depreciation

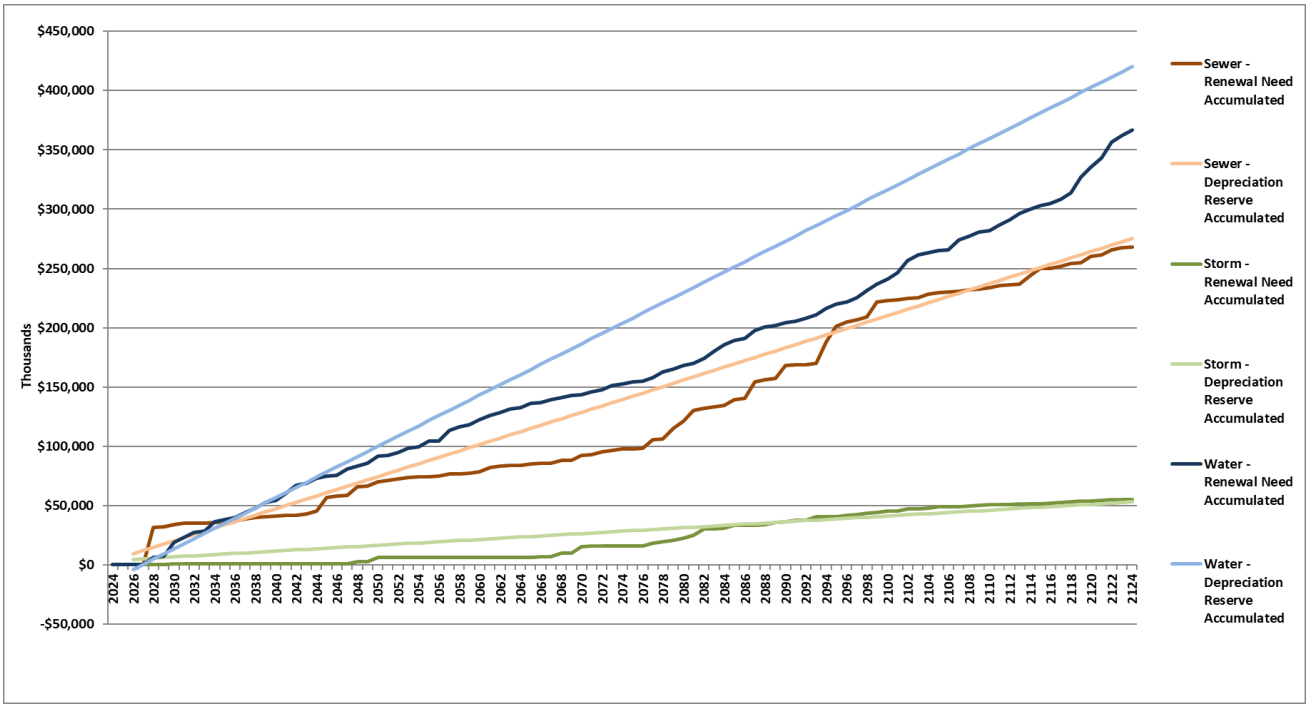
Annual Depreciation = 10,000 / (55 +3.5) = $170.94

The total annual depreciation figure for all Water asset components amounts to $2.7m. The valuation schedules itemise the water assets to such a level that the calculated depreciation is unlikely to materially differ from actual loss of value.

Depreciation Projections

The intention of depreciation is to maintain the water infrastructural assets, as a whole, in a serviceable condition for the future and to achieve this, individual components need to be replaced from time to time.

Figure 8.9-1: Depreciation versus renewals 2024-2124

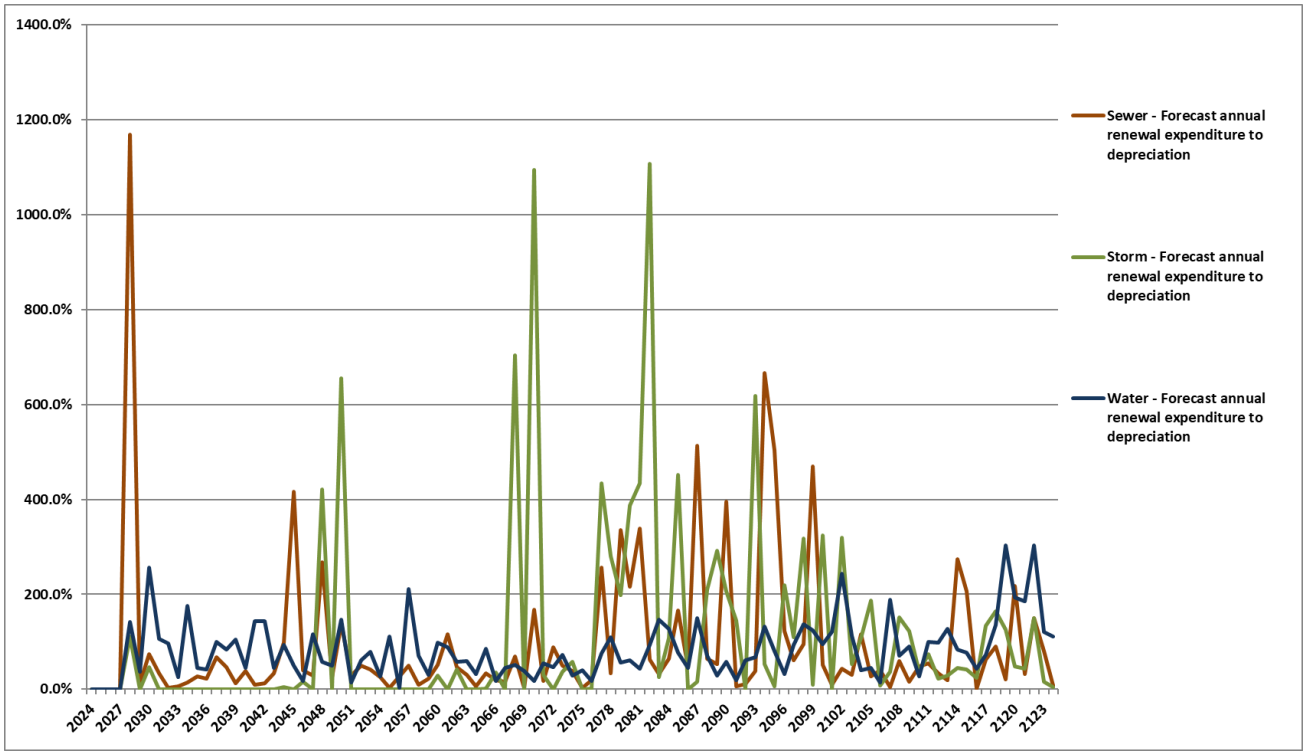


The chart above compares the projected accumulated renewal need versus the accumulated depreciation reserves. This represents:

- The projected renewal need based on the replacement value required as assets reach the end of their expected lives over the next 100 years.
- The current available depreciation reserves plus the current annual depreciation charge accumulating over the next 100 years

It shows that depreciation funds are generally consistent with, or greater than, the current renewal need over the next 40 years. Depreciation for Water Supply assets exceeds renewals significantly after 40 years. This will be reviewed over time as more assets reach the end of their expected lives to ensure available depreciation funds match the renewal needs.

Figure 8.9-2: Three Waters depreciation versus renewals



The lines in the graph above represent the percentage of forecast annual renewal expenditure related to the annual depreciation.

It shows numerous spikes (for example, in 2027-30 for Wastewater the forecasted renewal requirement is nearly 1200% of the annual depreciation and for Stormwater in 2069-72 the forecasted renewal requirement is around 1100% of the annual depreciation). Water Supply renewals related to depreciation is relatively consistent over the 100-year period. Annual accumulation of depreciation smoothes these spikes to achieve affordable funding over extended periods.

Summary

The focus for the Three Waters activity is to ***Protect Public Health and the Environment***. For water supply this includes an increased focus on compliance with the Health Act and new drinking water regulatory framework.

Over time, the focus will shift from 'new capital projects' to maintaining the existing asset set from available depreciation funds. This will build on the existing asset base by the provision of focussed renewal and development plans, ensuring the needs of the community are well catered for into the future with ongoing affordability in mind.

Council will continually review the information that supports this graph through regular asset valuations, auditing of asset registers and prudent asset management.

8.9 Key assumptions

In developing its Significant Forecasting Assumptions for the draft Long Term Plan 2024-25, the Council has identified several key assumptions relevant to water supply. Key relevant assumptions include:

Capital delivery				
Key assumption Council's capital programme will be delivered on time and within budget. Capital project projections Timing of capital expenditure See Auckland for example	**How sure are we about this assumption?** Low	**What are the potential effects of this uncertainty on our financial estimates?** The deliverability of the works programmes could be affected by the availability from the contractor market as well as the Council's ability to deliver the higher programme of works. Actual costs may vary from estimates resulting in budget shortfall. Projects may be carried forward if not completed as planned, and if the work is still considered to be needed. Any consistent backlog of work will have an impact on levels of service. This may result in increased costs due to inflation, possible reduction in levels of service, possible additional reactive operational expenditure.	**If this assumption turned out to be incorrect, what level of impact would the potential effects have on Council and the district?** High	**What measures do we have in place to mitigate the level of uncertainty associated with this assumption?** Projects may be carried forward if not completed as planned, and if the work is still considered to be needed. Any consistent backlog of work will have an impact on levels of service. This may result in increased costs due to inflation, possible reduction in levels of service, possible additional reactive operational expenditure.

Water infrastructure & services				
Key assumption Council will continue to deliver Water Supply, Stormwater, and Wastewater infrastructure and services until year 2027/28 of the 2025-34 LTP and has budgeted accordingly.	**How sure are we about this assumption?** Medium	**What are the potential effects of this uncertainty on our financial estimates?**	**If this assumption turned out to be incorrect, what level of impact would the potential effects have on Council and the district?** High	**What measures do we have in place to mitigate the level of uncertainty associated with this assumption?**

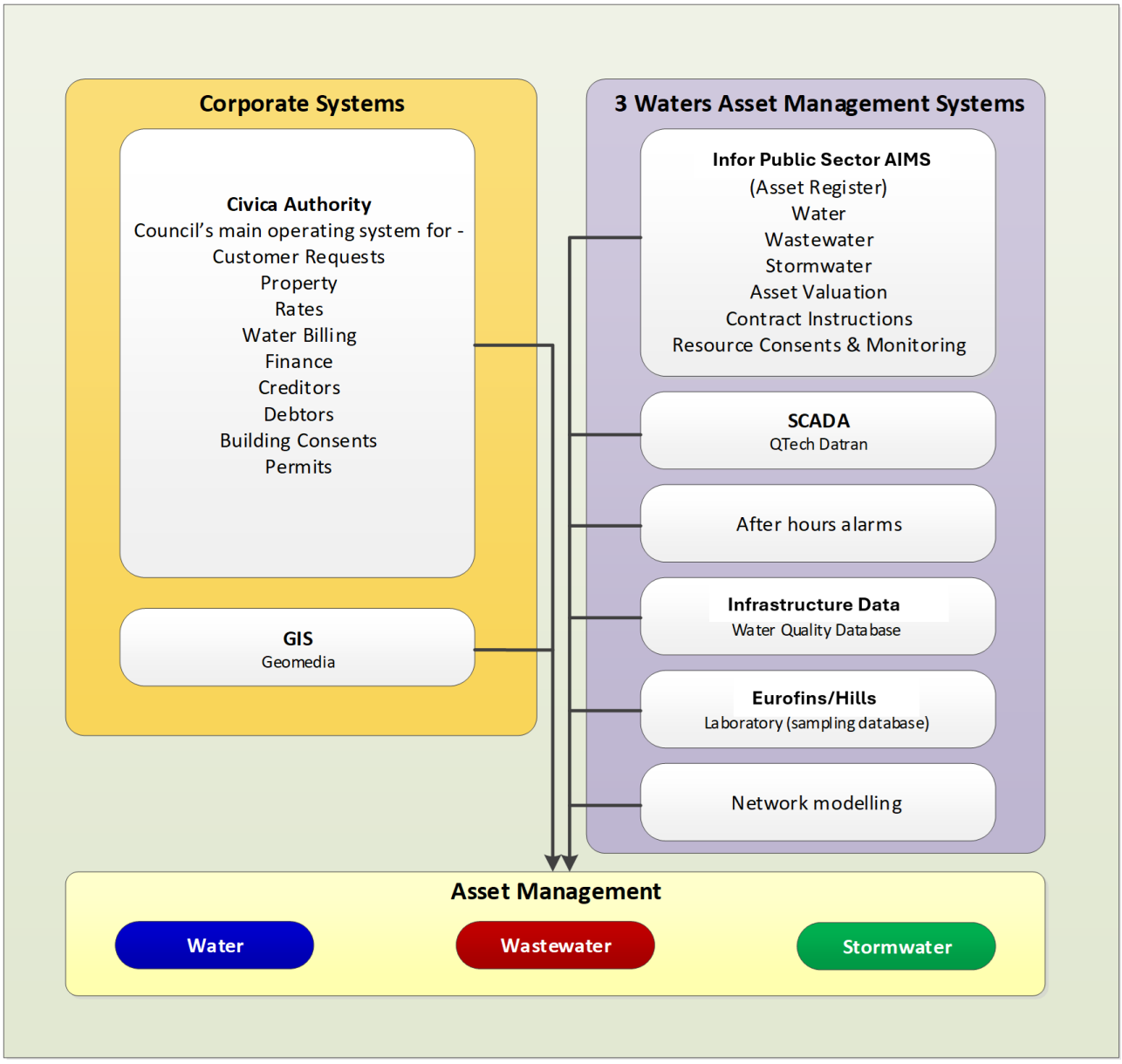
9 Asset management practices

This section covers the available asset information, information systems used processes used to manage the asset, and an overview of our organisational structure and people.

9.1 Information and data systems

Information and Data Systems provide Council staff with the ability to obtain, store, analyse and report on the significant quantities of data that is associated with the Water Supply activity. The information and data systems available to Council staff are shown below and discussed within this section.

Figure 9.1-1: Existing information and data systems



Asset Management Information System

The Council uses IPS (Infor Public Sector) as its asset management information system. IPS includes modules for wastewater, stormwater, water, plant, customer service, parks and work management.

The system records:

- Maintenance records
- Service failures, type of failure
- Cost to repair
- Operating data
- Rehabilitation & renewal works
- Condition data
- Performance data
- CCTV data
- Resource Consents and their supporting compliance information and results
- Asset valuation and depreciation
- Hierarchy of assets - parent/child configuration (where necessary)

All maintenance data is recorded within the AMIS. This includes the systematic collection of asset attributes, location, etc., through completing all relevant information on the appropriate work orders and then capturing this into IPS.

IPS allows manipulation of historical and current maintenance data, recording and analysis of information, including pipe size, material, and grading of faults. The system produces work orders i.e. fault repair, routine work, programmed and cyclic work and can confirm work completed (time and cost). Maintenance and operational activities can be reviewed and compared with the associated costs.

Council has componentised the assets within IPS. Work orders are applied at an asset component level but aggregated for Asset Management reporting.

IPS is integrated with the GIS system to allow for spatial analysis of assets and their performance such as condition and failures.

Geographic Information System

The Geographic Information System (GIS) holds and displays the water, wastewater and stormwater asset information in relation to each other and referenced to earth. Council replaced Geomedia with ESRI ArcGIS in February 2025 as its GIS system. The GIS supports IPS by providing spatial representation of the water, wastewater and stormwater assets. The GIS system is available to all Council Staff (at all Service Centres) and used extensively through all Councils activities.

Civica Authority

Council uses Civica Authority as its corporate operating system for:

- Customer requests
- Property
- Rates

- Water Billing
- Finance
- Creditors/Debtors
- Consents/Permits

This system is available to all Council Staff (at all Service Centres) and used extensively through all Councils activities.

Ibis

Council uses Ibis Information Systems (designed for local government and water authorities) to enhance revenue management, improve their operational productivity and reduce their planning risk.

GoGet

Council uses GoGet software for processing and inspecting building consents.

Network Modelling

Network modelling is an effective tool to assist in the secure and sustainable supply of water to consumers. Network modelling software aids Council staff in effectively managing the water network distribution system through simulation of the existing and future networks.

There are different models developed and used based on the requirements at the time i.e. operational model and design upgrade model.

Council uses the Infoworks WS Pro network model simulation programme for managing the network and identifying network inefficiencies.

There are network models for each of the following systems:

Table 9.1-2: Hydraulic Models

Water
Ōamaru
Kurow
Lake Ōhau
Ōmārama
Ōtematatā
Waihemo
Duntroon
Lower Waitaki
Stoneburn

Preliminary calibration has been done for the water supply models.

SCADA and Telemetry

Council uses SCADA (supervisory control and data acquisition) to control the functions of plant items and pump stations. QTech Datran is used by Council as its SCADA system. SCADA is

highly desirable for Water Treatment Plant performance monitoring and exception alarm generation.

All Council-owned water supply facilities have SCADA systems that allow operation and alarm functions to be monitored, with the following exceptions:

- Windsor
- Awahokomo
- Bushy Creek
- Awamoko
- Kauru Hill
- Tokarahi

Four of the above supplies are managed by Corriedale Water Management Limited (Awamoko, Kauru Hill, Tokarahi and Windsor).

Compliance HUB

In monitoring and reporting on the delivery of safe drinking water against Drinking Water Standards and wastewater discharges against environmental standards a significant amount of information is held and sourced from various data databases such as:

- Authority
- IPS
- SCADA
- Eurofins
- Hills
- Hinekōrako
- Infrastructure Data

Reporting is a lengthy and confusing process and needs streamlining to improve reporting compliance. It is also important to bring operational performance issues front of mind through dashboard display. This will eliminate delayed response and increase system performance. There are numerous proprietary systems that can be procured or an inhouse system can be developed. Further investigation is required to confirm the requirements of a compliance tool or hub which displays compliance information from multiple sources and development of an RFP for consideration of existing market products.

9.2 Data management

Key information comes into Council through work reports, as-builts, SCADA, consumers and contractors. Other information comes via emails, journals, Government publications and the media.

Upgrades, such as the water treatment plant upgrades, are followed up with site visits capturing all new asset information and configurations. From this the asset register is updated (new assets added and old assets retired) and schematics developed. Schematics document the asset IDs at facilities, this ensures any maintenance performed is recorded against the correct asset.

Decisions on activity management, renewals and acquisitions are made in consultation with staff, council and the public as appropriate. Staff meetings are held regularly to discuss current and future plans and decisions.

Asset data integrity audits are ongoing, and data is checked on a continual basis by various stakeholder groups within Council and the contractor. As work orders are completed and submitted to be captured within the asset register, the data recorded on site is compared with the asset register data. This is an ongoing process of ensuring a high level of data integrity. Monthly auditing of work orders against as-built data is performed by the GIS Analyst.

Main repair/waypoint validation

The 'main repair/waypoint validation' tool was developed by Council's GIS unit to check water mains against waypoint data and main repair data that has been collected over the last 10 years. This compares:

- Waypoint data (GPS location) from the work order with the location of the main in GIS in consideration of the GIS data confidence
- Work order data (asset ID/material/diameter) against GIS data
- Date of work order against main installation date (GIS)
- Asset in service or abandoned

This forms part of a systematic collection of asset attributes, location, etc., through completing all relevant information on the appropriate work orders and then capturing this into the IPS. Asset data integrity audits are an ongoing process, and data is checked on a continual basis. This ensures a high level of data integrity and increasing data reliability. It also provides appropriate information for evidence-based decision making.

Data confidence and accuracy (quality)

Data confidence grades are held against each individual asset within the IPS asset register. These grades indicate the type of data source and the confidence in the specific data source. A summary of the confidence levels in the attributes of the assets within water utility are detailed in the following table.

Table 91: Data confidence

Asset Group	Component	Quantity	Attributes	Cost	Age	Condition	Performance
Reticulation	Mains	A-B	B	A-B	B	C	C
	Hydrants	A-B	B	A-B	B	C	C
	Valves	A-B	B	A-B	B	C	C
Storage	Reservoirs	A	B-C	B	B	B	B
Treatment Plants	Pumps	A	B-C	B	B	B	B
	Electrical	A	A-B	B	B	B	B
	Valves & Fittings	A	A-B	C	B	B	B
Pump Stations	Pumps	A	A-B	B	B	B	B
	Electrical	A	A-B	B	B	B	B
	Valves & Fittings	A	A-B	C	B	B	B

Table 9.2-2: Data confidence score descriptors

Confidence Grade	Description
A – Highly reliable	Data based on sound records, procedures, investigations and analysis, documented properly and recognised as the best method of assessment. Dataset is complete and estimated to be accurate ±2%
B – Reliable	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings for example some data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ±10%
C - Uncertain	Data based on sound records, procedures, investigations and analysis, which is incomplete or unsupported, or extrapolated from a limited sample for which grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ±25%
D – Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ±40%
E - Unknown	None or very little data held

The confidence in data is greater for high criticality assets. The 2011/12 criticality assessment identified High and Medium criticality assets for further analysis and the criticality was recorded against the asset within the IPS AMIS.

This process was repeated in 2023, and the results are being used to ensure the criticality assessment is considered in prioritising inspections, investigations, maintenance and renewal strategies.

Metadata standards

A Central Government funded project is the 'Metadata Standards' which sets national metadata standards for Three Waters (potable, waste and storm) networks, and for residential and light commercial buildings. This is to ensure the correct asset data is collected and in the correct manner. The roll out of these data standards started in mid-2017.

Going forward Council will continue aligning its data collection and recording with the Metadata Standards, as there may be minor discrepancies. However, the existing data will be held and only aligned with the standards over time as more current information is captured.

It is important to ensure data collection is performed consistently and to set standards. As a result, the development of Asset Management Information Guidelines to ensure consistency in asset data collection is included as an improvement item.

As-built information

Clear, defined documented procedures exist for as-builts and associated data transfer into information systems.

A Capital work order request is issued upon approval of a capital project. The capital work order request records:

- Utility type
- Initiated date and due date
- Project type (new contract, operation and maintenance contract, quoted works, etc.)
- Description
- Budget number
- Contractor name
- Estimated costs

Status of capital work orders are tracked during monthly meetings. Upon completion of the project and the capital work order request, the data is captured into IPS. IPS contains additional fields to be completed i.e. as-built and GIS. This requires acknowledgement as to whether the as-built information has been received and entered into IPS and GIS.

Contract 613 (*Section 5.4 Knowledge Creation*) acknowledges the importance of each party i.e. the Principal, the Engineer, and the Contractor in asset data (knowledge creation). How each party's role compliments and increases the value of the other party's efforts is tabled below:

System	What	Who	How
Records	AMIS & GIS records, hard copy records, files and report forms of accumulated knowledge	Principal	Owns current and learnt knowledge
		Engineer	Collects, stores, maintains and reference
		Contractor	Collects and reference
Planning documents	Annual & Long Term Plans AMPs Infrastructure Strategy	Principal	Sets service provision requirements in consultation with the community
		Engineer	Develop & maintain
		Contractor	Implement
	O&M Manuals	Principal	Owns current and learnt knowledge

System	What	Who	How
Operational documents	Codes of Practice	Engineer	Develop & maintain
		Contractor	Implement & reference
CRM	Customer Request Management system (CRM) records service performance	Principal	Monitors and reports to on performance achievement to elected members and Audit
		Engineer	Analyses compliance with performance objectives
		Contractor	Completes and updates CRM to capture the action undertaken to provide the service
AMIS (IPS)	Holds asset data and maintenance records (work orders)	Principal	Owns current and learnt knowledge
		Engineer	Undertakes quality auditing of provided information
			Undertakes assessment and reporting on quality of completed works and reporting
			Determines and approves work completed, performance achieved and certified payment due
		Contractor	Completes Work Order (WO) information collection forms to record executed works and build and confirm asset knowledge
Audit	Provides independent verification that actions are consistent and appropriate for the sought outcome	Engineer	Engineer initiated and undertaken audits of works, processes, documentation, actions and the like undertaken by the Contractor
	Provides confidence that actions are consistent and appropriate for the sought outcome	Contractor	Contractor initiated and undertaken audits of technical and management performance

Major capital works have an as-built process specification within the formal contract documents. Operation and maintenance works, small asset renewals and quoted works need a formal documented process and specification. This needs to include closing the loop from design to final GIS record i.e. auditing of GIS data capture.

Upon completion and receipt of as-built data the assets are captured within the IPS AMIS. This process needs to be reviewed and improvement implemented to ensure consistency in naming convention, level of detail and assigned maintenance frequencies.

9.3 Information Technology (IT)

The responsibility for asset information security rests with the IT department administrators. The data is backed up daily and backup files are stored in a secure place. Data manuals are available that explain the various procedures.

9.4 AMP preparation

A process has been established over several LTP periods whereby a review of the AMPs is conducted. Reviews focus on improvements to existing AMPs without attempting to acknowledge good features or accentuate any positives.

Following the review Council engineers consider review recommendations and use these as guidance where appropriate. The AMPs are then updated through a process of regular meetings between Council engineers and consultants to identify:

- Status and changes, including but not limited to:
  - Legislation
  - Levels of Service
  - Assets
  - Processes & Systems
  - Population
  - Demand
  - Organisation
  - Asset Values
  - Projects
  - Council direction
- Self-assessment of the current AMP

This information is then used to ensure the AMP demonstrates:

- All asset-based activities of Council are supported through the AMP
- Three Waters AMPs are easy to read, and follow the same agreed format
- The underlying activity management planning processes occurring for each activity, including improvements, are made because of the review
- Levels of service, and show linkages to other Council planning documents
- A robust reflection of the future intentions of Council with respect to Three Waters activities
- The financials arising from the plans reliably forecast the lowest lifecycle cost to deliver agreed levels of service for a period of no less than 10 years

9.5 Delivering water services – our people

Organisational structure

Through Q4 2024 and Q1 2025 Council underwent a Transformation Process whereby management of 3 Waters Assets was shifted from a stand-alone Water Services Team to a cross-Council delivery model whereby water is delivered across multiple teams. Those teams most involved in the various aspects of water delivery are shown below:

Strategy, Performance & Design

- Asset Planning

Community Engagement & Experience

- Customer Experience
- Customer Services
- Strategic Communications & Engagement

Support Services

- Finance
- Project Management Office
- People and Capability
- Digital Services

Natural & Built Environment

- Regulatory and Compliance
- Infrastructure

Contractors

Council's water supplies are currently operated and maintained by two different groups:

- Major contractor
- Community liaison groups

Group	Association
Major contractor	Council contracts the operation and maintenance of reticulation (Contract 613) and facilities (Contract (633) to SouthRoads Ltd for water systems
Community liaison groups	This includes Corriedale Water Management Limited, who are responsible for all management, operations and maintenance of the four Corriedale supplies owned by Council.

With the exception of the Corriedale Supplies (Awamoko, Kauru Hill, Tokarahi and Windsor), Council staff undertake all management of the water supplies. This includes:

- Receiving customer enquiries and requests for servicing
- Issuing instructions to Contractors
- Contract management and supervision
- Asset management
- Management of new capital projects and renewal programmes
- Engagement and management of consultants

Following an open tender process, Council awarded the Three Waters Reticulation Operations and Maintenance contract (Contract 613) to SouthRoads, commencing 1 July 2016. In 2023, Council extended contract 613 with SouthRoads to July 2027.

Contract 669 for the operation and maintenance of Council's wastewater facilities was added to Contract 613 as a variation in February 2017 following negotiation with SouthRoads. Contract 633 for the operation and maintenance of Council's water facilities was added to Contract 613 as a variation in February 2017 following negotiation with SouthRoads. Contract 633 is managed by direct engagement (Council officers carry out the management of the water facility operators) on a time and materials basis.

The contract follows a collaborative approach with high value placed on quality over price. Council engineers and the contractor are working together towards a common goal of keeping the community safe and healthy. There is an on-going performance measurement process with the operation and maintenance contractor with monthly focus areas identified by the claim process and annual focus areas identified by a formal review. The contract centralised operations with work performed from a single depot in Ōamaru. As performance is managed through collaboration between Council and Contractor, with quality of work of high importance, there has been noticeable improvement in materials and workmanship.

Construction contracts are let on a project basis for new construction and renewal projects. Typically, consultants are engaged to provide design, documentation and contract supervision for these projects.

Specialised assistance and additional resources are provided by a variety of consultants. There is currently no professional services contract in place, but Council engages consultants on a case-by-case basis as required. Consultants are sourced locally (Ōamaru and Timaru) as well as from Dunedin and Christchurch.

Suitably qualified and trained persons

An important measure of this Plan's quality is the ability, experience and qualifications of the individuals and companies involved in its preparation. The Council employs staff appropriately qualified to carry out the asset management function. Formal qualifications range from New Zealand Certificate in Engineering to Registered Engineer. Specialised external support is available as the need arises.

On-going training is available for staff involved in infrastructure asset management and includes attendance of:

- Āpōpō -sponsored workshops on Asset Management
- Certificate of Practice in Asset Management through Otago Polytechnic

- Annual Water NZ conference
- Asset Management conferences
- Water Managers (NZ wide) quarterly meeting

Council staff have a reasonable record of attendance at these seminars, conferences and workshops.

9.6 Sustainability

Sustainability can be defined as meeting the needs of the current generation without compromising the ability of future generations to meet their own needs.

Sustainability and lifecycle

Asset management is designed to improve decision-making about assets to enable the better management of existing and future assets. Effective asset management ensures that agreed levels of service are met and risks, including public health, financial and environmental, are minimised, while costs are optimised. Improved decision-making is crucial to achieve asset management and sustainability goals. Therefore, having the correct asset information available is important to support the decision-making process. This makes it clear that lifecycle costs are part of, and support, asset management and sustainability.

Asset management practices include action that recognise the need for environmental, economic, social and cultural sustainability.

Activity response to sustainability

Council will continue to:

- Protect the environment
  - Water takes are consented
  - Discharges are consented
  - Improving effluent quality and/or improved disposal methods
- Provide reliable and safe drinking water to the community
  - Compliant with the legislation and appropriate standards
  - Optimal decisions based on least capital and lifecycle cost solution satisfying the requirements of the Drinking Water Standards
  - Managing risks in accordance with approved Water Safety Plans
  - Pipe size and materials – appropriate for now and the future
- Increase efficiency at facilities
  - Use of VFDs
  - Night pumping to take advantage of lower electricity rates
  - Duty/assist pump arrangements
  - More efficient aeration
  - Pump selection
- Within Council:
  - Staffing levels
  - Skills

- Training
- Succession planning
- Collaborate with other Councils

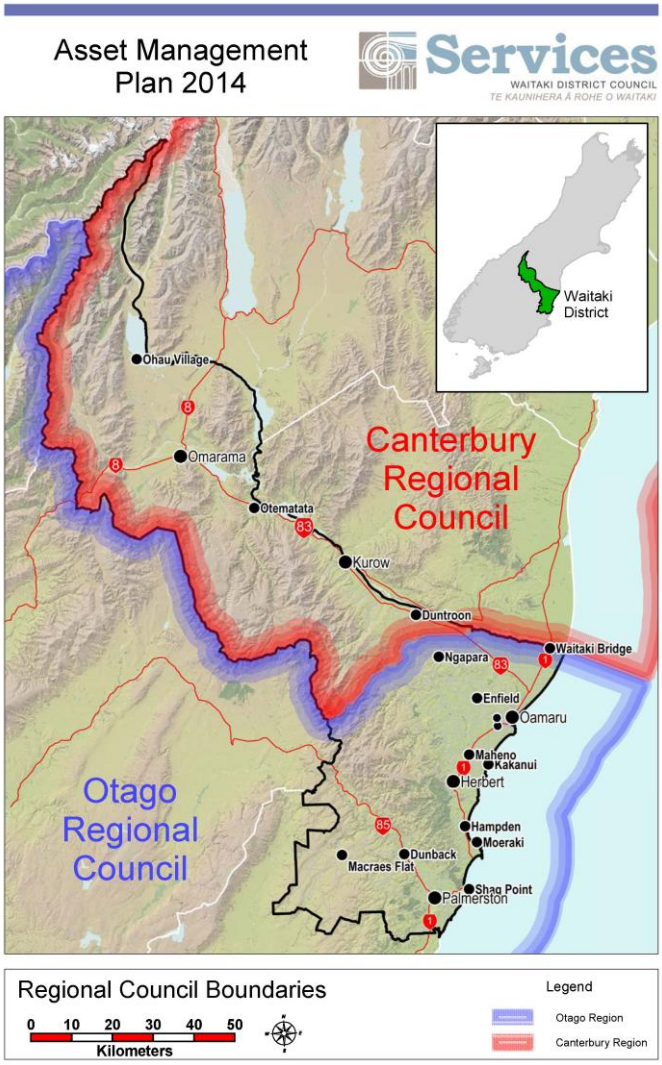
9.7 Environmental management

A very important aspect of the water supply authority's function is to ensure that the District's natural water sources are managed responsibly. Resource consents are held for various activities relating to water activity such as abstraction, treatment and the disposal of treated water at the water treatment plants.

There are two Regional Councils that have authorisation within the Waitaki District. The northwest of the district (including all of the Waitaki River) is under the authorisation of Environment Canterbury, with all of the area to the south under the authorisation of Otago Regional Council. This mixture of Regional Authorities results in two different rules and multitude of plans which impacts on staff time.

The boundaries of the two Regional Councils are graphically represented in the figure below.

Figure 9.7-1: Regional Council Boundaries



Schedule of Resource Consents

Location	Consent No.	Expiry Date	Allowable Take (m^3/day)	Comments
Awahokomo	CRC 940476	10-Nov-2028	225	Infiltration Gallery in Awahokomo Stream Bed
Awamoko	Sand Filter - Water from Lower Waitaki Irrigation Race			
Duntroon	CRC 982133	9-Sep-2033	306	Groundwater Via Bore
Kauru Hill	RM15.240.01	1-May-2051	611	Infiltration Gallery in the Kauru River
Kurow	CRC 940477	10-Nov-2028	2419	Groundwater Via Bore - (3 Bores)
Lower Waitaki	RM11.019.1	01 Mar-2046	1,728	Take groundwater from Lower Waitaki Plains aquifer for community supply
Ohau	CRC 001915	21 June 2035	2.2 l/s	Groundwater Via Infiltration Gallery
Ōamaru	CRC224708	2 Mar-2030	Varies depending on river flow	Surface water – This is not a council consent. Council buy shares off LWIC, but have additional volume allocated/held/guaranteed through LW Zone Committee
Ōmārama	CRC194088	10 Sep 2034	345	To take water from Old Man Creek
	CRC213794	23-Dec-2032	3,240	Infiltration Gallery adjacent to Ōmārama Stream
Bushy Creek	CRC084382	18 Apr-2046	1,512m^3/ consecutive 7 days	Take and use water for Bushy Creek
Ōtematatā	CRC185065	8 May 2044	4,380	Take surface water from Ōtematatā Stream bed
Stoneburn	RM17.121.01	1-Sep-2052	360	Surface Water Intake from North Branch of Waikouaiti River – Primary Allocation
	RM17.121.02	1-Sep-2052	40	Surface Water Intake from North Branch of Waikouaiti River – Supplementary Allocation
Tokarahi	CRC 960857	13-Dec-2030	1750	Infiltration Gallery adjacent to Maerewhenua
Waihemo	RM11.025.1	21 Mar-2046	11,427 m^3/week	Take water from Shag Alluvium aquifer for community supply
Windsor	RM15.240.02	1-May-2051	569	River Intake on Kakanui River

Consent monitoring and reporting

Consent monitoring and reporting within Council for Water Services is the responsibility of the Compliance Analyst. Information for consent compliance is drawn from various databases (SCADA, IPS, Eurofins) and forwarded to Environment Canterbury and Otago Regional Council.

Water, wastewater (and stormwater) resource consents, and associated monitoring and records are held in an electronic database. The database contains all consents, conditions, associated information and include triggers for renewal, monitoring and associated maintenance. This provides:

- The ability to demonstrate environmental compliance with confidence
- Ease of reporting to Regional Council
- Transparency in actions required to achieve compliance

For Water Supply specifically, Watermetrics sends the data directly to regional councils daily, and to Council monthly. Compliance staff review the spreadsheet when received and advise the Compliance Lead of any issues.

Regional Plans

Under Section 30 of the Resource Management Act of 1991 Regional Councils are required to provide policies and methods to achieve integrated and sustainable management of the regions natural and physical resources. The Regional Plans of Otago and Canterbury provide a framework for the sustainable management of the regions water resources. These resources include groundwater, rivers, lakes and wetlands.

Catchment Management Plans are expected to be a requirement under increased Regional Council rules and will be prepared once the regional rules come into effect.

Otago Regional Plan – Water

Otago Regional Council has a Regional Plan - Water, which provides a framework for the integrated and sustainable management of Otago's water resources including lakes, rivers groundwater and wetlands. It sets out the issues relating to protection and enhancement of the region's water resources. The Otago Water Plan is under review to align with the NPSFM.

Environment Canterbury – Land and Water Regional Plan

The Canterbury Land and Water Regional Plan (LWRP) identifies the resource management objectives for managing land and water resources in Canterbury to achieve the purpose of the Resource Management Act 1991. It identifies the policies and rules needed to achieve the objectives and provides direction in terms of the processing of resource consent applications.

Energy

The three water activities are energy intensive, accounting for a significant portion of Council's total electricity consumption. The major power demands are from water and wastewater pumping stations and treatment facilities. The direct use of fossil fuels is generally limited to emergency power generation equipment, but the indirect use of transportation fuels for operation and maintenance activities should also be considered when planning changes to energy management. Energy, in varying forms, is used during the construction and renewal of assets and the manufacture of materials used in construction, operation and maintenance of assets. Carbon emissions for many current energy sources contribute to climate change.

Energy prices have increased significantly over recent years, impacting on operational costs for the water service. This trend is expected to continue.

Alternative Energy Sources

No formal study has been conducted, but solar energy is used to power telemetry at remote rural reservoir sites.

Small solar/wind energy systems are not suitable for higher power demand sites such as UV water treatment plants and water/wastewater pumping stations.

The Waitaki District Council is committed to implementing environmental best practices. This includes being more energy efficient. Where technologies exist that allows Council to operate in a more energy efficient manner it will be investigated and if there is a significant cost and environmental benefit it will be considered for implementation.

Remote Monitoring

The Council operates a SCADA system that allows remote monitoring of the facilities (WWTP and majority of wastewater pump stations) increasing efficiency and reducing the frequency of site visits, which reduce the facility's carbon footprint. Refer to Section 9.1-5 SCADA and Telemetry.

Greenhouse gas emissions

The Waitaki District Council Greenhouse Gas emissions report for 2018/19 shows Council at significantly negative net emissions, with the Council removing more greenhouse gases than it emits. The report found the total gross carbon dioxide equivalents for Waitaki District Council are 2,876 tonnes. The report found wastewater treatment (36% of all emissions), electricity consumption (30%), and the Palmerston landfill emissions (13%) as the main contributors to the council's carbon footprint.

Waitaki District Council has a total of 165 hectares of forest. Emissions under the Land Use and Land use Forestry sector total -4,902 tonnes. Taking into account Waitaki District Council's gross emissions of 2,876 tonnes and removals of -4,902 tonnes results in net emissions of -2,026 tonnes. This means that the Council is making a positive contribution overall towards climate change

Report recommendations include:

- Encourage staff to use alternative, low carbon, transport options for travelling to work and for work journeys, where appropriate. This may include cycling, walking and public transport, pool cars, installation of bike racks, route optimisation, teleconferencing, and wherever possible moving away from single occupancy vehicle journeys.
- Develop a strategy for transitioning the fleet to small engine vehicles, electric cars and hybrids.
- Introduce electric bikes/scooters for staff members to use for appropriate local journeys.
- Undertake energy audits across different parts of the Council's operations.
- Determine which energy providers have the least Green House Gas intensive sources of electricity.
- Develop awareness raising initiatives to make staff and the public more energy aware, including training, communication and general encouragement.

- Supporting energy efficiency in community housing, including the installation of insulation and ensuring that boilers are energy efficient, and raising awareness amongst tenants.
- Develop a strategy for lowering energy requirements from buildings, street lighting, and other facilities that are within the Council's control/ownership.
- Use video conferencing as an alternative to face-to-face meetings whenever possible.
- Evaluate and where possible reduce the number of staff that need to travel to meetings in other parts of the country.
- Ensure that staff members coordinate travel and share taxis whenever possible.

9.8 Managing potential negative effects

The negative effects for the Waitaki Community that the water supply activity may have on the social, economic, environmental or cultural wellbeing of the community are tabled below. It indicates the existing approach or proposed action to address these in the future. No significant potential negative effects have been identified for the water supply activity.

Table 9.8-1: Potential negative effects and management measures

	Location of treatment plants close to residential properties; poor water treatment may cause sickness in the community	Preventative maintenance; emergency management; Risk Management Plans; placement to limit disruption to wellbeing.
The collection, treatment and distribution of water may have potential negative effects on the community.	High water supply costs that may affect industries expanding/relocating to Waitaki; treatment upgrade costs being unviable for those ratepayers on low incomes.	Implementation of cost-effective upgrades to minimise operational cost increases.
	Spillage of chemicals stored at water treatment plants may impact staff health and safety and the environment.	Appropriately trained staff and contractors. All chemicals are stored in the correct manner.
	All our water supplies take water from our environment (via surface or groundwater) and require a resource consent. We aim to manage water takes so the impact is not detrimental to the surrounding environment. Water extraction, especially during times of drought, has an impact on our natural water body. Through compliance with our resource consent conditions, we ensure this impact is only minor. Extraction may add strain on river systems at low flows during peak summer periods and can impact ecosystems.	Council introduces water rationing during times of drought. Demand Management will assist with reducing the volume of water abstracted from the water source. Investigating new water sources and educating the public on water usage. Resource consents are in place, so the Council operates within a certain limit.

This needs further development – there are other potential effects and management measures.

Table 9.8-2: Potential positive effects of water supply activity

Effect	Description
Economic development	Provision and maintenance of water supplies allows for the development of commercial businesses, industry and residential use, therefore, contributing to economic growth and prosperity in the district. Council's management of the water supply activities uses best practice and competitive tendering to provide best value for money for ratepayers and provides fair value compensation for service delivery from contractors.
Public health	Safe drinking water supplies provide critical public health benefits related to health and safety and sanitation.
Safety and personal security	Much of the Council's urban water supply network is built to accommodate firefighting requirements and supports protection of life and property.

10 Improvement plan

10.1 Quality assurance

Audits

To establish and ensure the ongoing improvement of the quality of this Plan, a series of audits are planned that include Financial, Systems, Technician and Performance Audits.

Financial audits - the Local Government Act requires that independent annual financial audits be undertaken on the operations of Council; such audits may include all significant activities such as activity management planning. The auditor's opinions will be included in the Annual Report.

System audits - are continuous and ongoing and incorporated in operational practices. However, as part of the LTP process, systems are discussed and reviewed every 3 years. This audit identifies the status of asset management processes, systems and data, and produces targets for Asset Management practices to be achieved in following years. A programme of recommended actions will be developed for Asset Management processes, systems and data. Future regular system audits will measure progress against targets and the development programme.

Technical audits - peer reviews will be undertaken at regular intervals to assess and identify compliance with statutory accounting requirements:

- The quality of the Plan in terms of completeness, objectivity, logic, technical content and presentation
- Perceived strengths and weaknesses for Plan improvement
- Recommended specific areas for Plan improvement
- Technical audits may be undertaken using external or internal reviewers

Performance audits - will establish whether the stated objectives for the operation of the asset have been achieved. Measurement of the success of the operation of the asset will be assessed using the results of:

- Customer satisfaction surveys
- Key Service Criteria objectives compliance (e.g. NFPM)
- Benchmarking surveys.

These measurements will determine the public view of how well the levels of service have been achieved, an objective measure against stated Key Service Criteria and national measures of relative performance. The performance audits will also be used in ongoing customer consultation regarding future standards and requirements of the customers in the provision of the service.

AMP reviews

The following table lists the past AMP Reviews:

Table 10.1-1: AMP Reviews

Date	LTP	Description
2008	2009 - 19	Review 2006 AMPs including GAP analysis based on the Core and Advanced Asset Management criteria used by the Office of the Auditor General
2011	2012 - 22	Review 2009 AMPs including a formal review for "Selecting the Appropriate AM Level" which is fundamentally based on the IIMM Section 2.2.4. and built on the previous review and the OAG AMP criteria for core and advanced Asset Management. The outcome of this was that Water and Wastewater section of Council has been assessed as Core Plus.
2013	2015 - 25	To reflect on the recommendations from the Office of the Auditor General, previous AMP review items and developing a 30-year Infrastructure Strategy a new direction was implemented for the 2015-25 Utilities Activity management plans. This included a change to the document structure used since 2006. The new template incorporates the seven areas of asset management i.e. Description of Assets, Levels of Service, Growth/Demand, Sustainability, Lifecycle, Risk, and Financials
2017	2018-28	Formal documented assessment of the Water and Wastewater AMPs undertaken.
2020	2021-31	No formal review was undertaken, and AMP development built on previous AMP reviews. The 2017 AMP Assessment provided valuable guidance for continuous improvement to achieve appropriate practice. It is expected that the remaining gaps identified will be closed during subsequent reviews and updates. A consistent and project-based approach has been evidenced in the approach taken to develop the AMPs.
2024	2025-34	A review of the AMPs structure using the Āpōpō Guide has been undertaken to achieve a more logical structure and flow. Data and other information have also been reviewed and updated to reflect changes since the previous AMP. This work will be ongoing by the Asset Planning team to ensure the AMP is relevant and always fit for purpose.

2017 AMP Review –Waugh Infrastructure Management was engaged to perform a formal documented assessment of the Water and Wastewater AMPs.

The AMP shows the traditional seven areas of asset management (Description of the asset, Levels of Service, Growth, Risk Management, Lifecycle, Sustainability and Financials) well laid out, easily accessible, clear and concise.

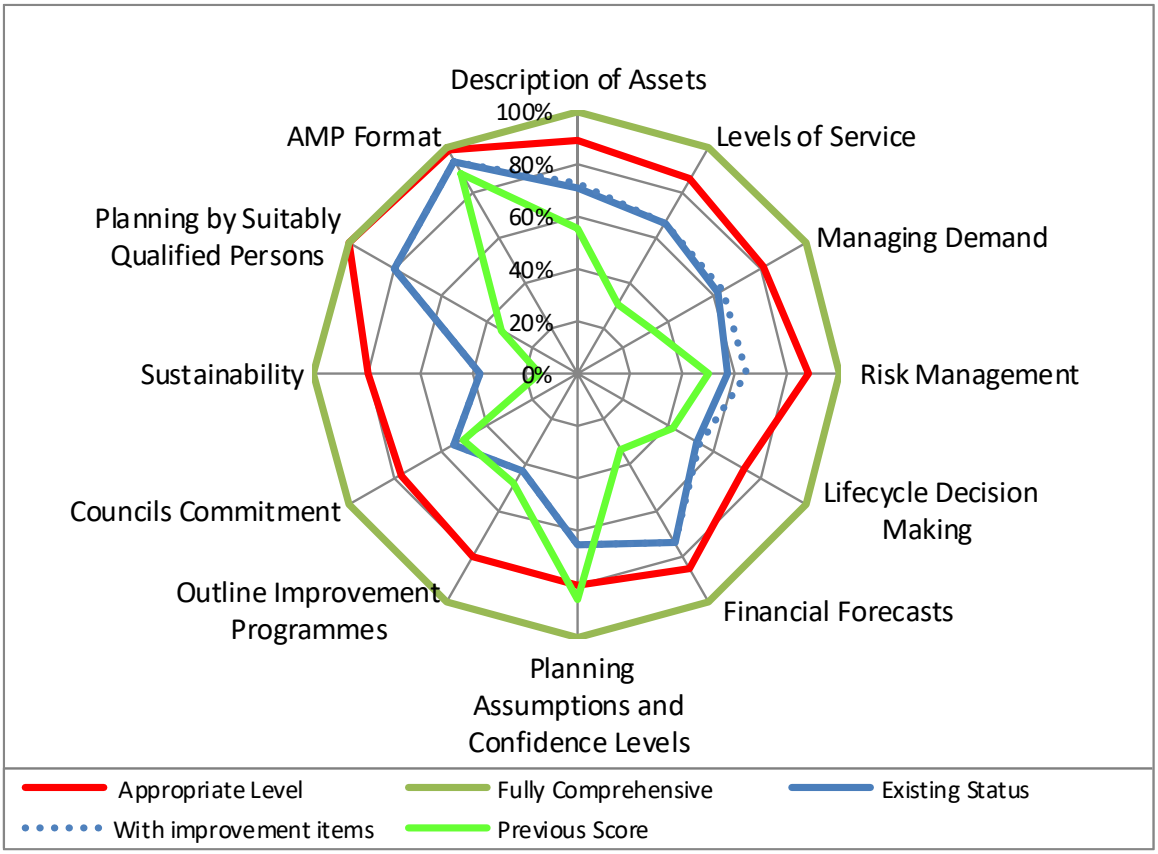
Overall, the assessment indicates the AMPs assessed are improving over time and moving closer to the target appropriate practice level. It is expected that many of the remaining gaps identified will be closed during subsequent reviews and updates. A consistent and project-based approach has been evidenced in the approach taken to develop the AMPs.

The result of this self-assessment is tabled and graphically represented below:

Table 10.1.2: 2017 Assessment

AMP Content Area	Percentage		
	Assessment Scores	Appropriate AMP Level	Gaps
Description of Assets	70	89	**19**
Levels of Service	66	86	20
Managing Growth	62	82	20
Risk Management	57	88	**31**
Lifecycle Decision making	53	73	20
Financial forecasts	75	86	13
Planning Assumptions and Confidence Levels	65	80	15
Outline Improvement Programmes	42	80	**38**
Councils Commitment	54	78	24
Sustainability	37	80	43
Planning by qualified Persons	80	93	13
AMP format	93	98	5

Figure 10-1: 2017 AMP Assessment



In general, the AMPs are complete documents with minor areas for improvement. The identified gaps will form the basis of discussion for a prioritised improvement programme.

10.2 Asset management development

The objective of the Council's Asset Management Policy is to ensure that service delivery is optimised to achieve agreed community outcomes and levels of service. It aims to manage related risks and optimise expenditure over the entire life cycle of service delivery, using appropriate assets as required.

The Asset Management (AM) Policy requires that management of assets be in a systematic process to guide planning, acquisition, operation and maintenance, renewal and disposal of the required assets. Delivery of service is required to be sustainable in the long term and deliver on Council's economic, environmental, social, and cultural objectives.

The AM Policy sets the appropriate level of asset management practice for Council's Water, Wastewater, Roading, Rubbish and Recycling, Aquatic Centre, Gardens, Recreation and Community services.

Council has undertaken a structured assessment of the appropriate level of asset management practice for the Water services. This structured assessment follows the guidance provided in Section 2.2.4 of the 2006 International Infrastructure Management Manual (IIMM).

The 2010 AM Policy sets the appropriate level of asset management practice for Council's Water and Wastewater Activity as 'Core Plus' practice (now also referred to as 'Intermediate).

Definition: 'Core Plus' asset management practice is undertaken at a level between 'Core' and 'Comprehensive' practice. The focus is to build on the basic technical activity management planning of 'Core' practice by introducing improved maintenance management and more advanced asset management techniques (as appropriate). Further use is made of risk management, asset lifecycle management, and service standard optimisation techniques.

Current appropriate practice levels have been expanded and as a proxy 'Core Plus' is linked with Intermediate level. To ensure this aligns with the latest appropriate practice asset management levels the AM Policy will be reviewed (**IP 3W1**).

Council's AM Policy is scheduled for review, and the need for an AM Strategy has been identified. This strategy will provide a roadmap, linking the AM Policy, which sets the appropriate level of asset management, with the AMP, which demonstrates the current level of asset management.

Improvement Plan Focus

The Council Water Services Asset Management Improvement Plan will be focused on the following key areas:

- Water treatment improvements
- Supply knowledge update
- Renewals
- Human resources/customer services
- Enhanced maintenance
- Asset management

The full Improvement Plan is included as Appendix 6.

10.3 Water safety improvement plan

The new Drinking Water Safety Plans completed for each of Council's water supplies have identified a range of improvements needed to ensure the supplies are compliant and continue to provide reliable, safe drinking water to consumers.

While some of these require changes to the way the supplies are operated and maintained on a day-to-day basis, others have informed the development of our capital and renewals projects programme.

10.4 Reporting on improvement plan progress

All projects in the Long Term Plan 2025-34 and Annual Plan are recorded in Authority and reported quarterly. It is proposed that this frequency of reporting continue. It is acknowledged that the management and completion of improvement items will contribute to the achievement of Community Outcomes, and regular reporting on activity items will assist to ensure that achievement towards each outcome.

10.5 AMP review and monitoring

This AMP will continue to be developed over time to incorporate further advanced asset management techniques, make use of improved data collection and management systems, respond to legislative and policy changes, and address evolving issues. It is anticipated that the sustainability themes introduced in this Plan will be further tested and developed with ongoing focus on legislative compliance, planning for climate change, environmental management, and improving efficiency. A future review of charging mechanisms may be warranted to ensure inter- and intra-generational equity.

This AMP is the responsibility of the Asset Planning Manager.

Due to the impending changes from the Government's Local Water Done Well reforms, the Council will likely remain responsible for delivering and funding water services during the first two years of the 2025-34 Long Term Plan until a decision is made on water service delivery. This AMP captures the operational budget detail for the first two years but also includes the programme of works for 9 years.

Appendices

Appendix 1: Funding Impact Statement – water supply

Waitaki District Council : Funding Impact Statement for 2026 - 2035 for Water Supply

	2024/25 Annual Plan (000's)	2025/26 LTP (000's)	2026/27 LTP (000's)	2027/28 LTP (000's)	2028/29 LTP (000's)	2029/30 LTP (000's)	2030/31 LTP (000's)	2031/32 LTP (000's)	2032/33 LTP (000's)	2033/34 LTP (000's)	2034/35 LTP (000's)
Sources of operating funding											
General rates, uniform annual general charges, rates penalties		1,556	26								
Targeted rates		7,340	7,973								
Subsidies and grants for operating purposes		-	-								
Fees and charges and other revenue		729	729								
Local authorities fuel tax, fines, infringement fees, and other receipts		(204)	(211)								
TOTAL OPERATING FUNDING (A)		9,421	8,517								
Applications of operating funding											
Payments to staff and suppliers		5,742	5,715								
Finance costs		1,987	2,423								
Internal charges and overheads applied		20	27								
TOTAL APPLICATIONS OF OPERATING FUNDING (B)		7,749	8,165								
SURPLUS (DEFICIT) OF OPERATING FUNDING (A - B)		1,673	351								
Sources of capital funding											
Development and financial contributions		636	640								
Increase (decrease) in debt		9,601	6,419								
TOTAL SOURCES OF CAPITAL FUNDING (C)		10,237	7,059								
Application of capital funding											
- to improve the level of service		8,250	2,600								
- to replace existing assets		3,660	4,810								
Increase (decrease) in reserves		-	-								
TOTAL APPLICATIONS OF CAPITAL FUNDING (D)		11,910	7,410								
SURPLUS (DEFICIT) OF CAPITAL FUNDING (C - D)		(1,673)	(351)								
FUNDING IMPACT STATEMENT		0	0								

Appendix 2: Water supply projects (capital, operational, renewal)

Project Number	Project Name	Type	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34
1043	Awamoko Drinking Water Supply Upgrade	Capital	800,000		-	-	-	-	-	-	-
1046	LTP Adjusted 2025: Bushy Creek Drinking Water Supply Upgrade	Capital	600,000	-	-	-	-	-	-	-	-
1050	Kurow Resource Consent Renewal	Capital	-	-	65,000	-	-	-	-	-	-
1054	Oamaru Water Facilities Renewals (building related)	Capital	100,000	500,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
1055	Oamaru Urban Water Main Renewals (pipes etc)	Capital	500,000	500,000	1,280,000	1,280,000	1,280,000	1,280,000	1,280,000	1,280,000	1,280,000
1069	Tokarahi Drinking Water Supply Upgrade	Capital	2,000,000	-	-	-	-	-	-	-	-
1070	Tokarahi Resource Consent Renewal	Capital	-	-	-	-	65,000	-	-	-	-
1073	Awahokomo Resource Consent Renewal	Capital	-	-	65,000	-	-	-	-	-	-
1197	Rural Water Main Renewals (district wide)	Capital	200,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000

2448	LTP Adjusted 2025: Backflow Prevention Plan	Capital	150,000	750,000	950,000	-	-	-	-	-	-
2457	Kauru Hill Drinking Water Supply Upgrade	Capital	800,000	-	-	-	-	-	-	-	-
2458	LTP Adjusted 2025: Lower Waitaki Capacity Upgrade	Capital	-	-	-	500,000	-	-	-	-	-
2465	SCADA Renewals (Water)	Capital	-	500,000	650,000	325,000	65,000	65,000	65,000	-	-
2467	LTP Adjusted 2025: Waihemo Urban & Rural Water Main Upgrades	Capital	1,000,000	750,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
2470	Windsor Drinking Water Supply Upgrade	Capital	800,000	-	-	-	-	-	-	-	-
2473	Otematata Water Main Renewals	Capital	-	-	-	-	-	-	-	200,000	200,000
4441	Oamaru Rural Water Main Renewals	Capital	860,000	260,000	260,000	260,000	260,000	260,000	260,000	260,000	260,000
4459	Water Strategy Rest-of-District (Stage Two)	Operational	-	-	-	100,000	-	-	-	-	-
4460	Condition Assessment of Water Infrastructure	Operational	50,000	100,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000

4490	Leak Detection Programme	Operational	100,000	100,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
4491	Mains Flushing Programme	Operational	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
4547	LTP Adjusted 2025: Oamaru Water Strategy Phases One (Build) & Two-Three (Plan)	Capital	200,000	2,600,000	1,350,000	-	-	-	-	-	-
4548	LTP Adjusted 2025: Oamaru Water Treatment Plant Renewals	Capital	1,700,000	100,000	100,000	100,000	200,000	200,000	200,000	200,000	200,000
4551	Restrictor Check Programme	Operational	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
4554	Stoneburn Drinking Water Supply Upgrade	Capital	500,000	-	-	-	-	-	-	-	-
4567	Urban Water Main Renewals (Valley townships)	Capital	100,000	100,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
4573	Appleby St Suction Main Upgrade	Capital	-	100,000	-	-	-	-	-	-	-
4577	Duntroon Resource Consent Renewal (Water)	Capital	-	-	-	-	-	-	-	50,000	-
4588	Oamaru North End Falling Water Main Upgrade	Capital	-	100,000	3,000,000	3,000,000	-	-	-	-	-

4597	LTP Adjusted 2025: Oamaru Water Strategy Source Resiliance (Build)	Capital	-	-	-	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
4600	Omarama Reservoir Replacement - Concrete Tanks	Capital	-	-	-	-	-	-	-	750,000	-
4601	Omarama Resource Consent Renewal (Water)	Capital	-	-	-	-	-	-	50,000	-	-
4611	Water Main Upgrades	Capital	-	-	-	-	-	-	1,500,000	1,500,000	200,000
5632	LTP New 2025: Ardgowan Dam Upgrades	Capital	100,000	900,000	-	-	-	-	-	-	-
5634	LTP New 2025: Kurow Water Supply Compliance and Resilience Improvements	Capital	1,500,000	-	-	-	-	-	-	-	-
5635	LTP New 2025: Otematata Water Supply Storage Issues and Options Assessment	Operational	-	30,000	-	-	-	-	-	-	-
5636	LTP New 2025: Universal Water Metering Investigation	Operational	100,000	-	-	-	-	-	-	-	-
5637	LTP New 2025: Universal Water Metering	Capital	-	-	-	-	-	-	-	-	8,000,000

Appendix 3: Overview of SCADA and telemetry

SCHEME	FACILITY	METER	SCADA REPORT												ALARMING	
			Accumulator reset	Pump Start /Stop	Pump Hours	Level	Flow	Turbidity	Pressure Pressure	FAC Residual	Energy Consumption	pH	UV Intensity/ Dose	Intruder	Outgoing Alarms	Flashing Light
LEGEND – 1 = level alarm (actual level not given); 2 = local telemetry to start/stop pumps; 3 = only for booster pump (not main pumps); 4 = pending (Full SCADA);																
Awahokomo	Reservoir														✓	
Awamoko	Pump Station	✓														✓
	Reservoir					✓1									✓	
Duntroon	Intake and Treatment Plant	✓		✓2	✓	✓1	✓			✓		✓		✓	✓	
	Reservoir					✓									✓	
Kauru Hill	Pump Station	✓		✓1												
	Reservoir					✓1									✓	
Kurow	Intake and Treatment Plant	✓	✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	
	Reservoir					✓									✓	
	Kurow Retic									✓		✓			✓	
Lake Ōhau																
	Reservoir	✓														
Lower Waitaki	Intake	✓	✓	✓	✓	✓	✓	✓				✓			✓	
	Treatment Plant	✓	✓	✓	✓		✓	✓		✓		✓	✓	✓	✓	
	Low Level Reservoir					✓									✓	
	High Level Reservoir					✓									✓	
	Lower Waitaki Retic (at Ōamaru WWTP site)									✓		✓			✓	
	Redcastle Road Pump Station incl North Zone Retic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
	Treatment Plant, Ardgowan Reservoir, Tower Zone	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	

SCHEME	FACILITY	METER		SCADA REPORT											ALARMING	
			Accumulator reset	Pump Start /Stop	Pump Hours	Level	Flow	Turbidity	Pressure Pressure	FAC Residual	Energy Consumption	pH	UV Intensity/ Dose	Intruder	Outgoing Alarms	Flashing Light
Ōamaru	Pumps, Weston Zone Pumps, Ardgowan Zone Pumps,															
	King George Park Booster PS	✓	✓	✓	✓	✓	✓		✓	✓		✓			✓	
	South Hill Reservoir and South Hill Microzone pumps	✓	✓	✓	✓	✓	✓		✓			✓		✓	✓	
Ōamaru	Enfield Reservoir	✓		✓		✓	✓								✓	
	Enfield Booster PS	✓		✓	✓		✓			✓	✓	✓			✓	
	Weston Reservoir	✓				✓	✓								✓	
	Kakanui Retic (from multiple sites)	✓					✓		✓	✓		✓			✓	
	Brockmans Booster PS	✓		✓	✓		✓			✓		✓			✓	
	Brockmans Res					✓									✓	
	Bob Allen PS			✓	✓									✓	✓	
	Bob Allen Res					✓									✓	
	Hamnak 1	✓		✓	✓		✓		✓	✓		✓		✓	✓	
	Hamnak 2	✓		✓	✓		✓		✓	✓		✓		✓	✓	
	Troup St PS			✓	✓				✓					✓	✓	
	Cemetery Res					✓									✓	
	Appleby St PS			✓	✓				✓					✓	✓	
	Duncan Rd Res					✓									✓	
	Central Zone Retic (at Regina Lane WWPS)									✓		✓			✓	
	South Hill Zone Retic (at Bluestone Drive WWPS Site)									✓		✓			✓	
	Tower Zone Retic									✓		✓			✓	

SCHEME	FACILITY	METER		SCADA REPORT											ALARMING	
			Accumulator reset	Pump Start /Stop	Pump Hours	Level	Flow	Turbidity	Pressure Pressure	FAC Residual	Energy Consumption	pH	UV Intensity/ Dose	Intruder	Outgoing Alarms	Flashing Light
Ōmārama	Ōmārama Zone Retic (at Ōmārama WWTP site)									✓		✓			✓	
	Intake	✓		✓	✓	✓	✓	✓	✓			✓			✓	
	Treatment Plant	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Reservoir	✓				✓	✓								✓	
Bushy Creek	Pump Station	✓														
	Reservoir															
Ōtematatā	Intake, Treatment Plant and Pump Station	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
	Ōtematatā Zone Retic									✓		✓			✓	
Waihemo	Waihemo Intake	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	
	Palmerston Res	✓				✓	✓								✓	
	Waihemo Treatment Plant (+ Dunback Pumps and Goodwood Pumps)	✓		✓	✓		✓	✓		✓		✓	✓	✓	✓	
	Palmerston Zone Retic									✓		✓			✓	
	Dunback Zone Retic									✓		✓			✓	
	Goodwood Zone Retic									✓		✓			✓	
	Dunback Res	✓				✓	✓								✓	
	Goodwood Res					✓									✓	
Stoneburn	Intake	✓		✓	✓	✓	✓								✓	
	Treatment Plant	✓		✓	✓					✓		✓		✓	✓	
	Reservoir	✓				✓	✓								✓	
Tokarahi	Pump Station	✓													✓	
	Reservoir					✓[1]									✓[1]	
Windsor	Pump Station	✓														

SCHEME	FACILITY	METER		SCADA REPORT											ALARMING	
			Accumulator reset	Pump Start /Stop	Pump Hours	Level	Flow	Turbidity	Pressure Pressure	FAC Residual	Energy Consumption	pH	UV Intensity/ Dose	Intruder	Outgoing Alarms	Flashing Light
	Reservoir															

Appendix 4: Asset management improvement plan

The following table lists the improvement items over the LTP period (X denotes year of activity).

#	Description (Responsibility)	Funding	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
IP W1	Water Supply Bylaw (Review) Review of the existing Water Bylaw. This should include a new process for enforcement of illegal connections and the like.	AM						X			
IP W2	Council Water Supply Management To review the future management of water supplies such as the four Corriedale supplies and Stoneburn, currently operated and managed by supply consumers.	AM			X						
IP W3	Private Water Supply Management To review the future management of private water supplies such as Dunrobin, currently operated and managed by supply consumers.	AM				X					
IP W4	Facility O and M manuals Review of facility specific Operations and Management manuals.	Operational	X								
IP W5	Restrictor Check Programme Development and implementation of a cyclic restrictor check programme.	Operational	X	X	X	X	X	X	X	X	X
IP W6	Mains Flushing Programme Development and implementation of a cyclic mains flushing programme.	Operational	X	X	X	X	X	X	X	X	X
IP W7	Leak Detection Programme Development and implementation of a cyclic leak detection programme.	Operational	X	X	X	X	X	X	X	X	X
IP 3W1	Asset Management Policy (Review)	AM	X								

#	Description (Responsibility)	Funding	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
	Review of the existing Asset Management Policy. The current policy sets the asset management maturity level we should be aiming for.										
IP 3W2	Critical Asset Criteria Review existing criteria for classification of critical assets.	AM		X			X			X	
IP 3W3	Activity management plan Reviews 3 yearly review of the Water, Wastewater and Stormwater Activity management plans including adoption by Council.	AM		X			X			X	
IP 3W4	Asset Revaluation 3 yearly revaluation of assets including peer review.	AM		X			X			X	
IP 3W5	Service Level Review and Community Engagement Review of existing service level statements and engagement with the community to determine new and amended service levels.	AM		X			X			X	
IP 3W6	Renewal Planning Tools and Systems Development Develop new or update existing tools and systems used for forward renewal planning.	AM	X	X	X	X	X	X	X	X	X
IP 3W7	Condition Assessment Tools and Systems Development Develop new or update existing tools and systems used for asset condition assessment.	AM	X	X							
IP 3W8	Strategic Planning Tools and Systems Development Develop new or update existing tools and systems used for strategic planning such as business cases and project prioritisation.	AM	X	X							
IP 3W9	Field Equipment Renewal	Depreciation	X	X	X	X	X	X	X	X	X

#	Description (Responsibility)	Funding	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34
	Replacement of field equipment used by Three Waters Officers such as dataloggers, drones and other monitoring equipment).										
IP 3W10	Visibility of facility assets in GIS Develop greater visibility of linear and point assets within facilities in our GIS	AM	X	X							

Appendix 5: Water safety improvement plan as at April 2025

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
72	DWSPs	Otematata	Reticulation storage	Add more treated water storage in Otematata town distribution zone	Network optimisation	Capital	Not started	1	3
18	DWSPs	Duntroon	Abstraction	Consider raising of bore headworks further to provide greater protection during surface flooding	Safety improvements	Capital	TBC	1	0
48	DWSPs	Oamaru	Reticulation – Reservoirs	Construct additional reservoir at South Hill.	Network optimisation	Capital	WIP	3	3
45	DWSPs	Oamaru	Raw Water Storage	Implement recommendations from Dam Safety Report.	Safety improvements	Capital	TBC	3	3
68	DWSPs	Otematata	Treatment	Upgrade treatment process (add filtration) to provide better treatment during high turbidity events and ensure compliance with Quality Assurance T2 rules	Safety improvements	Capital	Not started	3	3
157	Emergency Management	Organisational		Trailer generator(s) – for the loss of power from the grid if power is lost.	Business Continuity Planning	Capital	Not started	3	5
30	DWSPs	Ohau Alpine Village	Other	Establish and install the most appropriate pre-treatment and disinfection treatment to improve safety of the supply and compliance with Drinking Water	DWQAR requirement	Capital	Not started	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				Standards and Quality Assurance Rules.					
157	Emergency Management	Organisational		Remove references to Alternative Water Supply options and portable treatment plant in next review of the Drinking Water Safety Plans.	Business Continuity Planning	Document development	TBC	2	4
53	DWSPs	General	Barrier Management	Amend Oamaru O& M Manual to include Weston-Enfield, Kakanui and Hamnak Zones.	Safety improvements	Document development	Not started	0	0
103	DWSP Reviews	Organisational	General	Consider reviewing the Policy on Drinking Water Quality and update to reflect current legislation and standards.	Safety improvements	Document development	Not started	0	0
102	DWSP Reviews	Organisational	Water Services Act	Continue working on 'new' DWQAR requirements including development of a hygiene Code of Practice (G11), Water Storage Management Plan (D3.12), disinfection procedures for storage facilities (D3.14), and a sampling plan for disinfection by products, plumbosolvent metals, total coliforms and E. Coli (D3.18 and D3.28).	DWQAR requirement	Document development	WIP	1	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
108	DWSP Reviews	Organisational	General	Continue working on 'new' DWQAR requirements including development of a Hygiene Code of Practice (G11).	DWQAR requirement	Document development	Not started	1	0
1	DWSPs	Awahokomo	Other	Develop a full source water risk management plan in alignment with Taumata Arowai requirements and use to amend the next revision of the Awahokomo DWSP.	Legislative requirement	Document development	WIP	3	0
6	DWSPs	Bushy Creek	Other	Develop a full source water risk management plan in alignment with Taumata Arowai requirements and use to amend the next revision of the Bushy Creek DWSP.	Legislative requirement	Document development	WIP	3	0
14	DWSPs	Duntroon	Reticulation	Develop and implement a scheduled maintenance inspection for all restricted supplies.	Safety improvements	Document development	Not started	1	0
26	DWSPs	Kurow	Reticulation	Develop and implement a scheduled maintenance inspection for all restricted supplies.	Safety improvements	Document development	Not started	1	0
39	DWSPs	Lower Waitaki	Reticulation	Develop and implement a scheduled maintenance inspection for all restricted supplies.	Safety improvements	Document development	Not started	1	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
65	DWSPs	Oamaru	Reticulation	Develop and implement a scheduled maintenance inspection for all restricted supplies.	Safety improvements	Document development	Not started	1	0
84	DWSPs	Waihemo	Reticulation	Develop and implement a scheduled maintenance inspection for all restricted supplies.	Safety improvements	Document development	Not started	1	0
13	DWSPs	Duntroon	Reticulation	Develop and implement backflow prevention programme which involves checking backflow risk on rural properties. Review backflow prevention policy and continue to implement	Safety improvements	Document development	Not started	1	0
52	DWSPs	General	Barrier Management	Develop clear standard operational procedures (SOPs) for each critical Incident and Emergency responses and update Oamaru O& M Manual.	Safety improvements	Document development	Not started	3	0
34	DWSPs	Ohau Alpine Village	Other	Develop O & M Manual, including Emergency Response Plan.	Safety improvements	Document development	Not started	3	0
3	DWSPs	Awahokomo	Other	Develop the supporting processes and systems required for the responsible management and operation of the water supply. As a minimum this should include: - SOP development - Adjustment of sampling and monitoring programme (if required)	Safety improvements	Document development	Not started	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				- Inspection and maintenance scheduling (including calibrations) - Training related to new systems					
105	DWSP Reviews	Organisational	General	Ensure DWSP is updated to reflect the current stakeholders.	Safety improvements	Document development	WIP	1	0
74	DWSPs	Otematata	General	Ensure procedures are in place to check functionality of assets following earthquake / flood etc. Develop emergency response plan for the Otematata area in the event of catastrophic failure	Safety improvements	Document development	Not started	3	0
97	DWSP Reviews	Organisational	Water Services Act	Ensure the DWSPs are updated when (or if) the identified water supplies are upgraded to incorporate multiple barriers.	Legislative requirement	Document development	WIP	0	0
100	DWSP Reviews	Organisational	Water Services Act	Ensure the Organsiational DWSP is updated when the emergency management documentation update is complete.	Legislative requirement	Document development	WIP	0	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
8	DWSPs	Bushy Creek	Other	Following the upgrade of the Bushy Creek Water Supply, develop the supporting processes and systems required for the responsible management and operation of the water supply. As a minimum this should include: - SOP development - Adjustment of sampling and monitoring programme (if required) - Inspection and maintenance scheduling (including calibrations) - Training related to new systems	Safety improvements	Document development	Not started	5	1
127	DWSP Reviews	Oamaru	Improvements	New Improvement – Raw Water Storage - Review the residual risk levels of loss of supply related hazardous events from the catchment or water race and consider if an additional improvement of increasing the raw water storage if warranted.	Legislative requirement	Document development	TBC	3	0
125	DWSP Reviews	Oamaru	Risk Assessment	New risk – Distribution Zone Chemical Contamination (metals) - Continue investigating unexpected high metals results and ensure the sampling points are adequate and the sampling process is robust.	Legislative requirement	Document development	TBC	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				Include new risk and risk assessment in next review of the DWSP.					
133	DWSP Reviews	Otematata	Risk Assessment	New risk – Distribution Zone Chemical Contamination (metals) - Continue investigating unexpected high metals results and ensure the sampling points are adequate and the sampling process is robust. Include new risk and risk assessment in next review of the DWSP.	Legislative requirement	Document development	Not started	3	0
27	DWSPs	Kurow	Storage	Prepare procedure for entry to reservoir	Safety improvements	Document development	Not started	3	0
57	DWSPs	General	Barrier Management	Review the operational procedures for managed and operated water supplies (facilities and reticulation) and develop new procedures or review as necessary. Include the following: Develop formalised procedure for transgressions and incorporate Taumata Arowai as required. Process mapping for DWSP/Compliance processes.	Safety improvements	Document development	WIP	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
116	DWSP Reviews	Kurow	Risk Assessment	Risk 10: Bore structure compromised - Consider if the current residual risk level of 'Medium' should be increased. Amend the existing preventive measures to add the bore detail.	Legislative requirement	Document development	Not started	3	0
117	DWSP Reviews	Kurow	Risk Assessment	Risk 12: Inadequate chlorination - Incorporate new setup into next version of DWSP. No change to residual risk level (current level = Medium).	Legislative requirement	Document development	Not started	3	0
113	DWSP Reviews	Duntroon	Risk Assessment	Risk ID 11: UV disinfection risk assessment - Incorporate new setup into next version of DWSP. Review residual risk level (current level = High).	Legislative requirement	Document development	Not started	3	0
129	DWSP Reviews	Oamaru	Improvements	Risk ID 14: Ardgowan Reservoir failure - Carry across any relevant details from the dam risk assessment during the next review of the Oamaru DWSP.	Legislative requirement	Document development	Not started	3	0
114	DWSP Reviews	Duntroon	Risk Assessment	Risk ID 18: Lack of reservoir turnover risk assessment - Amend the existing preventive measures to add the new operating detail.	Legislative requirement	Document development	Not started	3	0
118	DWSP Reviews	Kurow	Risk Assessment	Risk ID 21: changes in standards and guidelines risk classification - Review the residual risk level upon completion of this work.	Legislative requirement	Document development	Not started	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
136	DWSP Reviews	Waihemo	Risk Assessment	Risk ID 28: changes in standards and guidelines risk classification - Ensure Ct compliance is understood for all supply scenarios and review if DWQAR requirements are met.	Legislative requirement	Document development	Not started	3	0
120	DWSP Reviews	Lower Waitaki	Risk Assessment	Risk ID 28: changes in standards and guidelines risk classification - Update the Lower Waitaki DWSP with the latest Ct information and amend the risk assessment if necessary.	Legislative requirement	Document development	Not started	3	0
126	DWSP Reviews	Oamaru	Risk Assessment	Risk IDs 43-45: Instrumentation and data collection failure - Review the risk assessment for these items and incorporate 'Starlink' units as preventive measures when these have been purchased.	Legislative requirement	Document development	Not started	3	0
122	DWSP Reviews	Oamaru	Supply description	Update the schematic during the next review of the Oamaru DWSP to include the following adjustments: • Add another treated water reservoir • Add a new primary chlorine dose point prior to treated water reservoirs • Change the waste treatment polymer to PACl	Legislative requirement	Document development	WIP	1	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
134	DWSP Reviews	Waihemo	Supply description	Update the supply description during the next review of the Waihemo DWSP to include details relating to the new UV reactors and review the UV related risk assessment.	Legislative requirement	Document development	WIP	1	0
99	DWSP Reviews	Organisational	Water Services Act	WDC to consider how to meet this WSA requirement alongside any advice or enforcement activities from Taumata Arowai.	Legislative requirement	Document development	Not started	1	0
98	DWSP Reviews	Organisational	Water Services Act	When SWRMPs are completed, ensure information is carried over to the corresponding DWSP and the risk assessment is adjusted accordingly.	Legislative requirement	Document development	Not started	1	0
154	Emergency Management	Organisational		Develop water supply and/or reservoir shut down processes (to conserve water) where applicable.	Preparedness	Document development	Not started	3	5
157	Emergency Management	Organisational		Develop SOPs related to the supplying from different zones (i.e. Valve opening and closing, and potential flushing points).	Preparedness	Document development	Not started	3	5
157	Emergency Management	Organisational		Development Communication Tools – draft and prepare communications folder to share with Communications Team/PIM:	Preparedness	Document development	WIP	4	5
157	Emergency Management	Organisational		Develop an initial sanitation plan execution and agree on the trigger for activating CDEM from a welfare perspective.	Preparedness	Document development	Not started	2	2

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Understand the transition of improvements into the DWSPs and Activity management plan/LTP.	Legislative requirement	Document development	WIP	2	0
156	Emergency Management	Organisational		Weather watch integrated into docs and operator practice.	Safety improvements	Document development	TBC	1	0
157	Emergency Management	Organisational		Understand the process to download RTU data and backfill.	Safety improvements	Document development	TBC	4	4
69	DWSPs	Otematata	Treatment	Assess water pH levels to ensure they meet Quality Assurance T2 rules. Adjustment to pH may need to be considered.	DWQAR requirement	Investigation	TBC	1	0
50	DWSPs	Oamaru	Treatment	Condition assess valves and actuators at Oamaru WTP and setup full replacement programme (if required)	Investigation	Investigation	Not started	3	3
44	DWSPs	Oamaru	Treatment	Continue investigation of fouling of membranes and develop solutions for the optimal approach to resolve this. Could include but is not limited to the modification of the membrane cleaning processes, new types of membrane cells, addition of a pre-treatment process or something else.	Investigation	Investigation	WIP	3	5
42	DWSPs	Lower Waitaki	Other	Investigate ability to connect to the Oamaru Water Supply to permanently or temporarily (i.e.,	Investigation	Investigation	Not started	3	5

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				emergencies) supply fully treated water. This could be at 100% or supplementary flows.					
62	DWSPs	Oamaru	Raw Water Storage	Investigate and implement Ardgowan Reservoir dam solutions including lowering the overflow and plan for developing a new dam.	Investigation	Investigation	Not started	3	5
11	DWSPs	Bushy Creek	Other	Investigate connecting the Bushy Creek Rural Scheme to a nearby potable water supply (Kurow and/or Duntroon). This option could be considered as an alternative or additional option to the Bushy Creek treatment system upgrade.	Investigation	Investigation	Not started	3	3
78	DWSPs	Stoneburn		Investigate feasibility of excluding stock from intake area	Investigation	Investigation	Not started	3	3
47	DWSPs	Oamaru	Treatment	Investigate option upgrade Ozone control to ensure an Ozone dose of C.t 1.2 mg.min/L to act as second barrier for bacterial treatment/compliance.	DWQAR requirement	Investigation	TBC	1	0
2	DWSPs	Awahokomo	Other	Investigate potential solutions for upgrading the Awahokomo treatment system to provide a safe water supply and allow the removal of the permanent boil water notice. Investigation to	Investigation	Investigation	WIP	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				include the consideration of the risks to be managed (catchment, abstraction and reticulation), Drinking Water Quality Assurance Rules and any other Taumata Arowai requirements, and Ministry of Health/Health NZ requirements.					
7	DWSPs	Bushy Creek	Other	Investigate potential solutions for upgrading the Bushy Creek treatment system to provide a safe water supply and allow the removal of the permanent boil water notice. Investigation to include the consideration of the risks to be managed (catchment, abstraction and reticulation), Drinking Water Quality Assurance Rules and any other Taumata Arowai requirements, and Ministry of Health/Health NZ requirements.	Investigation	Investigation	WIP	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
79	DWSPs	Stoneburn		Investigate potential solutions for upgrading the Stoneburn treatment system to provide a safer water supply. Investigation to include the consideration of the risks to be managed (catchment, abstraction and reticulation), Drinking Water Quality Assurance Rules and any other Taumata Arowai requirements, and Ministry of Health/Health NZ requirements.	Investigation	Investigation	WIP	5	3
16	DWSPs	Duntroon	Treatment	Investigate upgrades related to treatment system redundancy (duty standby) for filtration, UV and Chlorination.	Investigation	Investigation	WIP	3	3
41	DWSPs	Lower Waitaki	Treatment	Investigate upgrades related to treatment system redundancy (duty standby) for UV and Chlorination. Currently single UV reactor and single chlorinator in place.	Investigation	Investigation	Not started	3	0
29	DWSPs	Ohau Alpine Village	Other	Investigate whether a new water source is required to improve quality and quantity of drinking water.	Investigation	Investigation	Not started	5	3
80	DWSPs	Stoneburn		Investigation connection to the Waihemo/Palmerston Supply	Investigation	Investigation	Not started	3	5

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
43	DWSPs	Oamaru	Raw Water Storage	Raw water study. Includes: investigate increasing raw water storage. Identify where flood waters are entering channel. Liaise with LWIC to enforce shareholder compliance. Liaise with LWIC to remove all stock from waterways. Ascertain the design of the Stopbanks from LWIC and ascertain if design is still appropriate.	Investigation	Investigation	Not started	3	3
51	DWSPs	Oamaru	Treatment	Review DIT/PDT automation against the membrane requirements set out in the Quality Assurance Rules 2022	DWQAR requirement	Investigation	TBC	3	0
73	DWSPs	Otematata	Reticulation storage	Review options for improved access to the Water treatment plant during flooding events	Investigation	Investigation	Not started	3	0
128	DWSP Reviews	Oamaru	Improvements	Risk ID 14: Ardgowan Reservoir failure - Inspect and exercise the Ardgowan Reservoir bypass to ensure it is operable and update the DWSP details if necessary, pending the outcome of this.	Investigation	Investigation	Not started	3	0
130	DWSP Reviews	Oamaru	Improvements	Risk ID 17: Membrane Filtration failure - Ensure investigation of fouling and development of solutions is carried out.	Investigation	Investigation	Not started	3	5

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Identify areas of the water supply that could be valved off when water restrictions are implemented. These would be connections that are top up only (i.e., onsite storage expected).	Investigation	Investigation	Not started	3	5
157	Emergency Management	Organisational		Understand the backup power supply capacity where backup power is currently in place (how many hours/days with onsite fuel reserves).	Preparedness	Investigation	Not started	3	5
157	Emergency Management	Organisational		Develop the water model to understand multiple ways to supply to higher level properties. Include review of Central Zone and South Hill Reservoir performance with these scenarios.	Preparedness	Investigation	Not started	3	5
157	Emergency Management	Organisational		Determine the critical assets and mains in the WDC water supplies.	Preparedness	Investigation	Not started	4	5
157	Emergency Management	Organisational		WDC to investigate viable alternative water sources for Oamaru Water Supply and a rough outline of what treatment or works would be required to liven this up.	Business Continuity Planning	Investigation	Not started	2	2
157	Emergency Management	Organisational		Determine the cost of a Portable Water Treatment Plant and source, lead time for receipt.	Business Continuity Planning	Investigation	Not started	3	5

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Determine if purchasing a portable water treatment plant can support current and future supplies impacted by adverse events.	Business Continuity Planning	Investigation	Not started	2	5
157	Emergency Management	Organisational		Define needs for a portable treatment system capable of supplementing the smaller water supplies.	Business Continuity Planning	Investigation	Not started	3	5
157	Emergency Management	Organisational		Understand the treatment capability of the Oamaru treatment systems with cyanobacteria treatment (Membrane, Chlorine and/or Ozone), and develop procedure if viable.	Investigation	Investigation	TBC	2	4
157	Emergency Management	Organisational		Understand the process to bypass the Ardgowan Reservoir and test if possible. Suggest a viable process is captured in a procedure.	Investigation	Investigation	TBC	2	4
157	Emergency Management	Organisational		Investigate whether the membrane cells or racks can be bypassed and if so how.	Investigation	Investigation	TBC	4	4
157	Emergency Management	Organisational		Investigate options to mitigate or eliminate risk of no standby UV Reactor at the Kurow and Lower Waitaki WTPs.	Investigation	Investigation	TBC	2	4

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Investigate the degradation of FAC levels in Otematata where the shutdowns regularly occur and possibility of low FAC exists.	Standard Operating Procedures	Investigation	TBC	3	0
75	DWSPs	Otematata	Other	Consideration could be given to universal metering at some stage	Network optimisation	Monitoring	Not started	1	3
38	DWSPs	Lower Waitaki	Other	Consideration could be given to universal metering at some stage.	Network optimisation	Monitoring	Not started	1	3
64	DWSPs	General	Other	Consideration could be given to universal metering at some stage.	Network optimisation	Monitoring	Not started	1	3
83	DWSPs	Waihemo	Other	Consideration could be given to universal metering at some stage.	Network optimisation	Monitoring	Not started	1	3
146	Protozoal Risk Assessment	Stoneburn	Source	Consideration of additional raw water monitoring (manual or continuous) to ensure better quality water is abstracted. This heightened monitoring arrangement is warranted to due to the high microbial risks attributed to the Waikouaiti River and catchment.	Safety improvements	Monitoring	Not started	1	0
71	DWSPs	Otematata	Reticulation	Develop and implement unaccounted for water monitoring programme to reduce leakage	Network optimisation	Monitoring	TBC	3	3
12	DWSPs	Duntroon	Reticulation	Develop unaccounted for water monitoring programme	Network optimisation	Monitoring	TBC	3	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
82	DWSPs	Waihemo	Reticulation	Develop unaccounted for water monitoring programme	Network optimisation	Monitoring	TBC	3	3
9	DWSPs	Bushy Creek	Verification Monitoring	Develop unaccounted for water monitoring programme.	Network optimisation	Monitoring	TBC	3	3
24	DWSPs	Kurow	Verification Monitoring	Develop unaccounted for water monitoring programme.	Network optimisation	Monitoring	TBC	3	3
36	DWSPs	Lower Waitaki	Verification Monitoring	Develop unaccounted for water monitoring programme.	Network optimisation	Monitoring	TBC	3	3
60	DWSPs	General	Verification Monitoring	Develop unaccounted for water monitoring programme.	Network optimisation	Monitoring	TBC	3	3
94	DWSP Reviews	Organisational	Water Services Act	Emerging chemicals and viruses to be considered during the next review of the DWSPs.	Safety improvements	Monitoring	Not started	1	0
137	Protozoal Risk Assessment	Awahokomo	Source	Enhanced catchment management	Safety improvements	Monitoring	Not started	1	0
138	Protozoal Risk Assessment	Bushy Creek	Source	Enhanced catchment management	Safety improvements	Monitoring	Not started	1	0
139	Protozoal Risk Assessment	Ohau Alpine Village	Source	Enhanced catchment management	Safety improvements	Monitoring	Not started	1	0
46	DWSPs	Oamaru	Redcastle Basin and Pump Station	Install online contaminant (spectrometer) monitoring at Redcastle Pumps.	Safety improvements	Monitoring	TBC	3	0
32	DWSPs	Ohau Alpine Village	Storage	SMS to alert WDC of low levels in storage tanks.	Safety improvements	Monitoring	TBC	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Update Ardgowan Cyanotoxin Monitoring Plan to include monitoring and actions for other sources. Ensure appropriate actions for alternative supply etc is included.	Safety improvements	Monitoring	TBC	2	0
157	Emergency Management	Organisational		Implement indicators for sampling of Cyanotoxin for other sources.	Safety improvements	Monitoring	TBC	2	0
20	DWSPs	Kurow	Storage	Change pipework to have high level inlet away from outlet	Safety improvements	Operational	TBC	3	0
22	DWSPs	Kurow	Storage	Clean access platform at reservoir entry	Safety improvements	Operational	Not started	3	0
66	DWSPs	Otematata	Abstraction	Install bund around diesel tank filling point	Safety improvements	Operational	TBC	1	0
67	DWSPs	Ōtematata	Abstraction	Seal bore headworks housing and seal cable glands on bore headworks	Safety improvements	Operational	TBC	3	0
21	DWSPs	Kurow	Storage	Seal up all gaps in reservoir storage building - between roof and walls and under door and door vent and seal all rivets on roof of reservoir	Safety improvements	Operational	TBC	3	0
31	DWSPs	Ohau Alpine Village	Storage	Inspect reservoirs and clean as required. Add inspection to maintenance programme.	Safety improvements	Operational	Not started	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
106	DWSP Reviews	Organisational	General	As time progresses and the compliance requirements become more complex, a wider team approach to maintaining and demonstrating compliance may be required.	Legislative requirement	Process improvement	Not started	3	0
4	DWSPs	Awahokomo	Reticulation	Backflow inspection programme	Safety improvements	Process improvement	Not started	3	0
140	Protozoal Risk Assessment		Source	Community engagement – ensuring the landowners and operators within the catchment area understands the impact of their activities within the catchment and how this could affect raw water quality.	Safety improvements	Process improvement	Not started	3	0
141	Protozoal Risk Assessment	Bushy Creek	Source	Community engagement – ensuring the landowners and operators within the catchment area understands the impact of their activities within the catchment and how this could affect raw water quality.	Safety improvements	Process improvement	Not started	3	0
142	Protozoal Risk Assessment	Ohau Alpine Village	Source	Community engagement – ensuring the landowners and operators within the catchment area understands the impact of their activities within the catchment and how this could affect raw water quality.	Safety improvements	Process improvement	Not started	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
143	Protozoal Risk Assessment	Stoneburn	Source	Community engagement – ensuring the landowners and operators within the catchment area understands the impact of their activities within the catchment and how this could affect raw water quality.	Safety improvements	Process improvement	Not started	3	0
10	DWSPs	Bushy Creek	Reticulation	Complete backflow hazard inspection programme	Safety improvements	Process improvement	Not started	3	0
25	DWSPs	Kurow	Reticulation	Complete backflow hazard inspection programme	Safety improvements	Process improvement	Not started	3	0
37	DWSPs	Lower Waitaki	Reticulation	Complete backflow hazard inspection programme	Safety improvements	Process improvement	Not started	3	0
63	DWSPs	Oamaru	Reticulation	Complete backflow hazard inspection programme	Safety improvements	Process improvement	Not started	3	0
85	DWSPs	Waihemo	Reticulation	Complete backflow hazard inspection programme	Safety improvements	Process improvement	Not started	3	0
33	DWSPs	Ohau Alpine Village	Reticulation	Complete survey of connection in village to check airgaps and check valve on manifolds.	Safety improvements	Process improvement	TBC	3	0
111	DWSP Reviews	Organisational	General	Consider defining the team or role that will lead the oversight of any improvements identified through risk assessment (DWSPs) or other processes.	Legislative requirement	Process improvement	WIP	3	0
19	DWSPs	Duntroon	Treatment	Consider upgrade to on-line (SCADA) monitoring of differential	DWQAR requirement	Process improvement	TBC	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				pressure, turbidity, UVT and flow for UV and filtration process steps					
104	DWSP Reviews	Organisational	General	Continue building relationships with Mana Whenua and increasing understanding of Te Mana o te Wai.	Legislative requirement	Process improvement	WIP	1	1
109	DWSP Reviews	Organisational	General	Continue optimising the Infrastructure Data system to a point where the reports are accurate and trusted. Update all DWSPs with DWQAR requirements that Infrastructure Data assists to report on.	DWQAR requirement	Process improvement	WIP	3	0
5	DWSPs	Awahokomo	Other	Council will initially confirm ongoing ownership arrangements for the supply. If the supply is to be under Council ownership and management going forward, the following will be undertaken:	Legislative requirement	Process improvement	Not started	5	3
55	DWSPs	General	Other	Create an employee awareness and training plan so all personnel (WDC staff and contractors) are aware of their role in creating safe drinking water for the community. Include DWSPs in content being delivered in the training/session.	Safety improvements	Process improvement	TBC	3	0

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
56	DWSPs	General	Barrier Management	Ensure there is a document control system in place that includes, all relevant documentation and where to find it, who is responsible for each document and minimum review timeframes.	Safety improvements	Process improvement	Not started	3	0
70	DWSPs	Otematata	Treatment	Implement backflow prevention programme, including installation of backflow prevention devices on at-risk premises	Safety improvements	Process improvement	Not started	3	0
81	DWSPs	Stoneburn		Investigate the scope, management and application of reticulation operations as it relates to WDC responsibilities as a water supplier.	Safety improvements	Process improvement	WIP	5	3
151	Protozoal Risk Assessment	Bushy Creek	Reticulation	Maintaining adequate system pressure	Safety improvements	Process improvement	TBC	3	3
152	Protozoal Risk Assessment	Ohau Alpine Village	Reticulation	Maintaining adequate system pressure	Safety improvements	Process improvement	TBC	3	3
153	Protozoal Risk Assessment	Stoneburn	Reticulation	Maintaining adequate system pressure	Safety improvements	Process improvement	TBC	3	3
150	Protozoal Risk Assessment	Stoneburn	Reticulation	Maintaining an adequate disinfectant residual	Safety improvements	Process improvement	TBC	3	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
144	Protozoal Risk Assessment	Bushy Creek	Source	Regular inspections of catchment areas to review catchment land use	Safety improvements	Process improvement	Not started	3	0
145	Protozoal Risk Assessment	Stoneburn	Source	Regular inspections of catchment areas to review catchment land use	Safety improvements	Process improvement	Not started	3	0
49	DWSPs	Oamaru	Treatment	Review and implement coagulant dosing procedure including pacing ACH dose to flow and improving mixing.	Investigation	Process improvement	TBC	3	3
58	DWSPs	General	Barrier Management	Review CCPs for WDC managed and operated water supplies against the finalised Drinking Water Quality Assurance Rules.	Safety improvements	Process improvement	WIP	5	3
124	DWSP Reviews	Oamaru	CCPs	Review the application of different permission levels in relation to the ability to amend values according to the type of user.	Safety improvements	Process improvement	WIP	5	0
112	DWSP Reviews	Duntroon	CCPs	Review the CCP tables and insert into new version of DWSPs. This was clarified with Paul J and Caitlin B to be the best location for CCPs considering all WTPs will have hard copies of these documents on site.	Safety improvements	Process improvement	Not started	5	3
115	DWSP Reviews	Kurow	CCPs	Review the CCP tables and insert into new version of DWSPs. This was clarified with Paul J and Caitlin B to be the best location	Safety improvements	Process improvement	Not started	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				for CCPs considering all WTPs will have hard copies of these documents on site.					
119	DWSP Reviews	Lower Waitaki	CCPs	Review the CCP tables and insert into new version of DWSPs. This was clarified with Paul J and Caitlin B to be the best location for CCPs considering all WTPs will have hard copies of these documents on site.	Safety improvements	Process improvement	Not started	5	3
132	DWSP Reviews	Otematata	CCPs	Review the CCP tables and insert into new version of DWSPs. This was clarified with Paul J and Caitlin B to be the best location for CCPs considering all WTPs will have hard copies of these documents on site.	Safety improvements	Process improvement	Not started	5	3
157	Emergency Management	Organisational		Review the lower FAC setpoints at the WTPs and ensure these have been set to 0.8 mg/L	Safety improvements	Process improvement	TBC	3	0
135	DWSP Reviews	Waihemo	CCPs	Review the CCP tables and insert into new version of DWSPs. This was clarified with Paul J and Caitlin B to be the best location for CCPs considering all WTPs will have hard copies of these documents on site.	Safety improvements	Process improvement	Not started	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
131	DWSP Reviews	Oamaru	Improvements	Risk ID 42: Inadequate staff resourcing - Review the level of staff resourcing required to account for the increased complexity of operating upgraded WTPs. Carry any concerns through to the risk assessment of Risk ID 42 during the next review of the Oamaru DWSP.	Safety improvements	Process improvement	Not started	3	0
147	Protozoal Risk Assessment	Awahokomo	Treatment	Use of available water storage for periods of heavy rainfall or poor-quality raw water	Network optimisation	Process improvement	Not started	3	0
148	Protozoal Risk Assessment	Ohau Alpine Village	Treatment	Use of available water storage for periods of heavy rainfall or poor-quality raw water	Network optimisation	Process improvement	Not started	3	0
149	Protozoal Risk Assessment	Stoneburn	Treatment	Use of available water storage for periods of heavy rainfall or poor-quality raw water	Network optimisation	Process improvement	Not started	3	0
15	DWSPs	Duntroon	Catchment/ Groundwater zone	Work with farmers/landowners within the Community Drinking Water Protection Zone to educate on how to protect the water supply catchment from farming practices e.g. fertiliser and pesticide use.	Safety improvements	Process improvement	Not started	3	0
155	Emergency Management	Organisational		Develop CCPs related to stored water levels/volumes (raw, treated at WTP and treated in reticulation), and where	Safety improvements	Process improvement	Not started	5	3

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
				applicable the treated water isolation steps.					
157	Emergency Management	Organisational		Understanding team personality profiles. This will help to define roles and responsibilities in future.	Preparedness	Process improvement	Not started	2	0
157	Emergency Management	Organisational		Roles etc will need to be understood due to the size and wider skillset of the team now. Responsibilities to be defined.	Preparedness	Process improvement	Not started	2	0
157	Emergency Management	Organisational		Water specific induction/training to assist CCP documents:	Safety improvements	Process improvement	Not started	3	2
157	Emergency Management	Organisational		WDC Water Team to look into attending the wider CDEM exercise planned for next year.	Preparedness	Process improvement	WIP	2	0
157	Emergency Management	Organisational		Consider the critical spares for a low FAC at the WTP type of event.	Business Continuity Planning	Process improvement	Not started	4	5
157	Emergency Management	Organisational		Comms backup – Starlink for remote communications and for situations when standard communications are broken.	Business Continuity Planning	Process improvement	WIP	2	0
157	Emergency Management	Organisational		Stocktake task for understanding inventory (and capacity of the spares in stock) and understanding the sourcing of equipment (i.e., generators).	Business Continuity Planning	Process improvement	Not started	3	5

ID	Source doc	Supply Component	Process Step	Proposed works	Group	Project Type	Status	Overall Risk Rating	LoS
157	Emergency Management	Organisational		Understand Council Leaderships position on responding to events. Is the water team adequately supported? Does the exec team need to be trained.	Business Continuity Planning	Process improvement	Not started	3	0
157	Emergency Management	Organisational		Formalise a service level agreement Dirk Hasselhoff.	Business Continuity Planning	Process improvement	Not Started	2	2
157	Emergency Management	Organisational		Review pumping regime at Otematata to ensure adequate Turnover and good FAC levels.	Standard Operating Procedures	Process improvement	TBC	3	0

Appendix 6: Legislative context for water supply

Key Legislation	Relationship to Water Supply Activity
The Health Act 1956	The Council has the responsibility under the Health Act 1956 to improve, promote, and protect public health within the district. Some Councils uses provisions in the Health Act as legal bases to issue I/I defect notices to property owners. I/I problems lead to sewer overflows which in turn poses a risk to public health. The Health Act includes some specific and some implied references to wastewater services including: Section 23 grants powers to local authorities to protect public health. Section 25 gives powers to the Ministry of Health to order local authorities to provide sanitary works for the benefit of the district. Section 39 requires all dwelling houses and commercial businesses to provide sanitation facilities. Section 60 makes it an offence to cause the pollution of a water supply. This may be invoked if wastewater is allowed to get into a source of water used as a water supply.
Local Government Act 2002	The Local Government Act requires local authorities to prepare a ten-year Long-Term Plan and 30-year Infrastructure Strategy, which are to be reviewed every three years. The Act requires local authorities to be rigorous in their decision-making by identifying all practicable options and assessing those options by considering the benefits and costs in terms of the present and future well-being of the community. This activity management plan provides information to support the decisions considered in the Long-Term Plan. The Local Government Act includes some specific and some implied references to wastewater services including: Section 11A states local authorities are required to provide 'core services. Network services are listed as a core service. Section 125 requires the local authority to undertake an assessment of the water and sanitary services within its area. Section 126 states the purpose of an assessment is to assess the "adequacy of water and other sanitary services available to communities…" in terms of the quality of the service currently available; the potential health risks from the absence or deficiency of the service; the current and estimated future demand; and the potential consequences of discharges of sewage and stormwater.

Key Legislation	Relationship to Water Supply Activity
	Section 146 and 148 give powers to territorial authorities to make bylaws for the control of waste, on-site wastewater systems and trade waste.
Water Services Act 2021	Established drinking water standards and regulates all persons and organisations that supply drinking water.
Taumata Arowai—the Water Services Regulator Act 2020	The bill establishes Taumata Arowai - the Water Services Regulator as a new Crown Agent and provides for its objective's general functions operating principles, and governance arrangements. Taumata Arowai is responsible for a small number of complementary functions relating to improving the environmental performance of wastewater networks.
Infrastructure Funding and Financing Act 2020	Provides a new legislative tool to enable private capital to support the provision of new infrastructure for housing and urban development. The Act provides opportunities for local councils, Māori and iwi, and developers to partner and deliver infrastructure, free of the council's debt limits or from charging high upfront costs to developers.
Covid-19 Recovery (Fast-track Consenting) Act 2020	This Act shortcuts the current resource consent process under the RMA to support New Zealand's recovery from the impacts of Covid-19. The Act's purpose is to urgently promote employment to support New Zealand's recovery and the certainty of ongoing investment across New Zealand, while continuing to promote the sustainable management of natural and physical resources.

Key Legislation	Relationship to Water Supply Activity
Resource Management Act 1991	The Resource Management Act 1991 (RMA) is the principal legislation that sets out how we manage our environment sustainably. As well as managing air, soil, freshwater and the coastal marine area (and the effects of human activity on these resources), the RMA regulates land use and the provision of infrastructure, which are integral components of New Zealand's planning system.
Civil Defence Emergency Management Act 2002	Sets an expectation that the Council's lifeline utilities (which includes wastewater service) to prepare to function at the fullest possible extent during and after an emergency, even though this may be at a reduced level of service.
Health and Safety in Employment Act 1992 and 2015	Health and Safety legislation requires that staff and contractors are kept safe at work. New legislative changes to the act will mean improved health and safety measures will be required.
Utilities Access Act 2010	The processes and rules for coordinating work done in transport corridors by utility operators, or that affects utility operators' assets.
Te Tiriti o Waitangi – Treaty of Waitangi	The Treaty of Waitangi is an agreement between Māori and the Crown. Under Section 4 of the Local Government Act 2002, local authorities are required to 'recognise and respect the Crown's responsibility to take appropriate account of the principles of the Treaty of Waitangi and to maintain and improve opportunities for Māori to contribute to local government decision-making processes. Sections 77 and 81 detail the scale of requirement for local authorities to seek contributions and involvement from Māori in consultation and decision-making processes.

Key Legislation	Relationship to Water Supply Activity
Climate Change Response Act 2002	The Climate Change Response Act 2002 puts in place a legal framework to support New Zealand to respond to climate change and meet its international obligations. It also establishes the New Zealand Emissions Trading Scheme.