Three Waters Services
Asset & Activity Management Plan 2024-2034

Queenstown Lakes District Council

Date: May 2024

QUEENSTOWN LAKES DISTRICT COUNCIL

Document History	Date	Prepared By	Reviewed By	Approved
2017/18 AMP DEVELOPMENT & REVIEW	FEBRUARY 2018	POLLY LAMBERT & MARK BAKER	MYLES LIND	PETE HANSBY
2020/21 AMP DEVELOPMENT & REVIEW	JANUARY 2021	POLLY LAMBERT & MARK BAKER	POLLY LAMBERT & MARK BAKER	PETE HANSBY
2024/25 AMP DEVELOPMENT & REVIEW	MAY 2024	ALISON TOMLINSON & NICHOLA GREAVES	MORGANA Z. LANER	TONY AVERY

In response to the repeal of Three Waters legislation in February 2024, QLDC is working to update and reincorporate Three Waters activities into its long-term planning. The timeframe available to develop QLDC's 30 Year Infrastructure Strategy, Three Waters Asset Management Plan, and Long Term Plan has meant these key planning documents have needed to develop in parallel rather than sequentially as would be optimal.

The current local government planning environment is facing a complex and uncertain future. There are Government reforms underway (and yet to come) that will have a significant impact on how to plan for and fund Three Waters infrastructure and services for the future. QLDC's Three Waters planning is influenced by a wide-ranging suite of external factors, many of which are currently under review or signalled as planned for review; changes that emerge from these reviews are likely to impact QLDC's Three Waters planning and asset management requirements. Accordingly, QLDC acknowledges this Asset Management Plan, and other key infrastructural planning deliverables, will be subject to ongoing updates and continual improvements over the next three years. This Asset Management Plan is, and will remain, a high-priority work-in-progress during this time.

This Asset Management Plan contains a range of identified improvements that will form the basis of our ongoing asset management improvement programme. These actions acknowledge the complexity of the current planning environment, the disruption Three Waters reform has created in recent years, and reinforce QLDC's commitment to continual prioritisation for, and improvement of, its asset management practices.

Of particular note, QLDC has commenced a comprehensive Three Waters Asset Data Improvement Programme. This initiative will ensure QLDC has detailed and accurate asset data that informs evidence and data driven decisions to optimise service performance and cost-efficiency. The next iteration of this Asset Management Plan will demonstrate the outputs of this initiative, with the inclusion of more comprehensive, detailed, and accurate Three Waters asset information and corresponding management approaches.

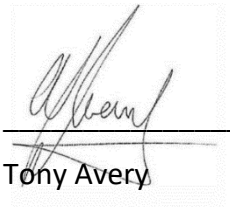
FOREWORD

Asset management provides an important framework for QLDC in our role as one of the Kaitiaki of our district. Whilst our three waters asset management is growing in strength, there is still plenty of room for improvement and the next three years will be focused on building capability and capacity in this space. This plan sets out the challenges and opportunities in front of us and how QLDC will respond strategically and operationally. Infrastructure assets are long-life assets and will be here long after the many of us working on them today have stepped away. The decisions we make now will impact those who follow. Investment is signalled in both planned capital works and operational budgets, we believe that setting out this asset management plan business case, which is supported by robust evidence, represents an important step in engaging the wider community and our business partners for the future.

There are many challenges that our industry and communities currently face, and these are exacerbated in the Queenstown Lakes District given our historic and continuing rapid growth. The last couple of years have presented significant pressures, whether it is from proposed reforms, weather events, natural hazards, pandemics, or economic pressures. QLDC's growth brings many exciting opportunities as we have seen with central government investment in our Queenstown town centre upgrades, but with it comes increasingly complex urbanisation and intensification, which when combined with the district's role as an international tourist destination means our historic infrastructure deficient exacerbates our service delivery issues.

Water supply, wastewater and stormwater services have a significant impact on how well we achieve the Council's long-term outcome of providing the Queenstown Lakes district with "access to safe and reliable water supplies, waste disposal, flood protection systems that protect public health and ecosystems". The water supply is critical in that it provides clean drinking water to our communities. The wastewater assets contribute significantly in the collection, treatment and disposal of our city's sewerage to protect people's health, property and minimising effects on the environment. The stormwater network keeps the city safe through flood protection and to reduce the impact of environmental changes.

QLDC is looking to the future in its planning and is aware that the reliable and efficient provision of three water services is essential developing a robust and resilient foundation for the future that we all want. The Council is committed to a process of ongoing improvement in the management of three water services to our communities. This plan is not without significant funding and affordability constraints, local government is managing complex funding environments where tough decisions must be made around what we can and can't fund. QLDC are working hard to meet the needs of our community, the LTP 2024 focuses on protecting the assets we have and keeping our maintenance and renewals budgets has been key. Faced with uncertainty in reform and financial constraints it is reassuring to see this plan set out our steps for the next ten years, to support our community needs.



Tony Avery

General Manager, Property and Infrastructure

Queenstown Lakes District Council

CONTENTS

FOREWORD **3**

1. EXECUTIVE SUMMARY **8**

1.1. WHAT WE PROVIDE *8*

1.2. FUTURE WATER SERVICE DELIVERY MODEL *8*

1.3. KEY ISSUES/CHALLENGES *9*

1.4. OUR ASSET MANAGEMENT STRATEGY *9*

1.5. OUR PROGRAMMES *10*

1.6. CLIMATE STATEMENT *12*

1.7. SERVICES PERFORMANCE OVERVIEW *13*

2. INTRODUCTION TO THE THREE WATERS AMP **15**

2.1. LATEST POSITION ON THREE WATERS REFORM / LOCAL WATER DONE WELL *15*

2.2. AMP PURPOSE & FRAMEWORK *16*

2.3. STRATEGIC ASSET MANAGEMENT PLAN *17*

2.4. IMPROVEMENT ACTIONS – STRATEGIC ASSET MANAGEMENT *19*

3. STRATEGIC CONTEXT **20**

3.1. OUR PEOPLE *20*

3.2. OUR DEMAND AND GROWTH *21*

3.3. OUR LAND – OUR NATURAL ENVIRONMENT *29*

3.4. IMPROVEMENT ACTIONS – STRATEGIC CONTEXT *30*

4. STRATEGIC DIRECTION **31**

4.1. LEGISLATION *31*

4.2. NATIONAL DRIVERS AND GUIDANCE *31*

4.3. REGIONAL DRIVERS *37*

4.4. LOCAL DRIVERS *39*

4.5. IMPROVEMENT ACTIONS – STRATEGIC DIRECTION *52*

5. STRATEGIC ASSESSMENT **53**

5.1. KEY STRATEGIC ISSUES AND RESPONSES *53*

5.2. IMPROVEMENT ACTIONS – STRATEGIC ASSESSMENT *62*

6. ASSETS AND ACTIVITIES – LIFECYCLE MANAGEMENT **63**

6.1. ASSET ACQUISITION *63*

6.2. OUR THREE WATERS NETWORK *65*

6.3. DRINKING WATER ACTIVITIES *67*

6.4. WASTE WATER ACTIVITIES *85*

6.5. STORMWATER ACTIVITIES *88*

7. SCHEME SUMMARIES 90

7.1. TECHNOLOGY INTIATIVES 90

7.2. IMPROVEMENT ACTIONS –ASSETS AND ACTIVITIES 92

8. DEFINING AND MEASURING LEVELS OF SERVICE 93

8.1. INTRODUCTION 93

8.2. DEPARTMENT OF INTERNAL AFFAIRS (DIA) MEASURES 94

8.3. LEVELS OF SERVICE REVIEW 97

8.4. THREE WATERS REPORTING FRAMEWORK 100

8.5. FUTURE DEMAND FOR OUR ASSETS AND SERVICES 105

8.6. IMPROVEMENT ACTIONS – DEFINING AND MEASURING LEVELS OF SERVICE 107

9. OUR THREE WATERS PROGRAMME 108

9.1. CONTEXT OF 2024-34 PROGRAMME 108

9.2. MAINTENANCE OPERATIONS AND RENEWALS 108

9.3. MAINTENANCE & OPERATIONS PROGRAMME 109

9.4. STRATEGIC RENEWALS 110

9.5. DEVELOPMENT OF THREE WATERS MASTERPLANS 110

9.6. TEN YEAR CAPITAL EXPENDITURE 111

9.7. IMPROVEMENT ACTIONS – OUR PROGRAMME 115

10. MANAGING RISK 116

10.1. QLDC RISK MANGEMENT FRAMEWORK 116

10.2. SIGNIFICANT ASSETS 117

10.3. CRITICAL ASSETS 117

10.4. INCIDENT MANAGEMENT 118

10.5. RESILIENCE 118

10.6. HERITAGE ASSETS AND PROTECTED FEATURES 122

10.7. CONSENTS 123

10.8. IMPROVEMENT ACTIONS – MANAGING RISK 124

11. EFFICIENTLY AND EFFECTIVELY PROCURE & MANAGE 125

11.1. PROCUREMENT 125

11.2. SERVICE DELIVERY 127

11.3. IMPROVEMENT ACTIONS – EFFICIENTLY AND EFFECTIVELY PROCURE AND MANAGE 127

12. FINANCIAL MANAGEMENT 128

12.1. INTRODUCTION 128

12.2. FINANCIAL IMPACT LARGE DEFECTIVE BUILDING CLAIMS 128

12.3. REVENUE AND FINANCING POLICY 128

12.4. FUNDING RISKS 130

12.5. KEY ASSUMPTIONS, CONFIDENCE AND RELIABILITY 130

12.6. ASSET VALUATION *131*
12.7. TOTAL EXPENDITURE *136*
12.8. IMPROVEMENT ACTIONS – FINANCIAL MANAGEMENT *139*
13. CONTINOUS AMP IMPROVEMENT **140**
13.1. CONTINOUS IMPROVEMENT *140*
13.2. ASSET MANAGEMENT MATURITY *140*
13.3. PROGRESS AGAINST PREVIOUS AMP *142*
13.4. IMPROVEMENT PLAN *143*
13.5. AUDITS *143*
13.6. IMPROVEMENT ACTIONS –AMP IMPROVEMENTS *144*
APPENDIX **146**
APPENDIX A: *ASSET MANAGEMENT MATURITY REPORT 2022* 148
APPENDIX B: *ACTIVE CONSENT RELATING TO THREE WATERS* 166
APPENDIX C: *SCHEME SUMMARIES* 172

ACKNOWLEDGEMENTS

This document is proudly produced internally by QLDC staff, but the content is the culmination of many different pieces of work that has been undertaken by many contributors including Whole Box ‘n’ Dice, Veolia and WSP – Valuations.

1. EXECUTIVE SUMMARY

QLDC's vision for Three Waters is:

> "To provide access to safe and reliable water supplies, waste disposal, and flood protection systems that protect health and ecosystems."

1.1. WHAT WE PROVIDE

Three Waters services are made up of drinking water supplies, wastewater collection and treatment and stormwater management:

- The water supply is essential in that it provides clean drinking water to the communities within the district. The provision of a safe, reliable drinking water supply is critical to the wellbeing and prosperity of the district that those services are safe, reliable, and cost-effective.
- The wastewater assets contribute significantly to the collection, treatment, and disposal of our district's sewerage to protect people's health, property, and minimising effects on the environment. Reticulated wastewater systems are recognised internationally as the most effective method of collecting urban domestic and business liquid wastes for treatment while protecting public health and the environment.
- The Stormwater network keeps the district safe through flood protection and to reduce the impact of environmental changes. Effective management of rain through these systems is critical to limiting erosion and property damage, as well as ensuring public amenity of open spaces and protection of the environment.

1.2. FUTURE WATER SERVICE DELIVERY MODEL

Local Water Done Well is the Coalition Government's plan for financially sustainable, locally delivered water infrastructure and services. Measures to be introduced through new legislation in mid-2024 will establish the Local Water Done Well framework and the transitional arrangements for the new water services system.

By mid-2025, Council must submit a Water Service Delivery Plan (WSDP) to Government.[1] It is expected that the WSDP will be required to detail the current state of three waters assets and services, the type and level of investment required to ensure services are compliant and respond to projected growth, and how services will be organised and funded to ensure ongoing financial sustainability.

Key considerations the WSDP are expected to include:

- which organisation is best placed to provide water services to the community (e.g. Council, local or multi-authority Council Controlled Organisation, other),
- the type and standard of water services to be provided,
- the approach to maintaining and operating existing and new water infrastructure,
- the extent to which proposed investment in water services will respond to the challenges identified in this Asset Management Plan and QLDC's 30 Year Infrastructure Strategy,

[1] This statement is based on indications from Government and assumes that the necessary legislation will be passed to establish this requirement.

- mechanisms for funding three waters service provision, including what user and other charges will be amended or introduced to ensure the ongoing financial viability of service provision,
- the level of public consultation required in the development and adoption of the WSDP, and
- the environmental and economic regulatory standards set for local government by new and planned independent water regulators.

QLDC plans to update this Asset Management Plan and its 30 Year Infrastructure Strategy to reflect the outcome of the WSDP process and implementation of Local Water Done Well.

1.3. KEY ISSUES/CHALLENGES

This Asset Management Plan draws on the significant issues identified within the QLDC 30-Year Infrastructure Strategy:

- Rapid and sustained population growth
- Increased and increasing standards
- Resilience to shock events
- Climate emergency
- Historic infrastructure deficit

QLDC's response to these challenges is constrained by:

- Cost escalation
- Limited capacity to deliver
- Timing and investment of other infrastructure providers
- Long project incubation periods and barriers to implementation
- Limited availability of funding

Our Three Waters Programme has been developed to respond to these challenges as far as is practicable within the context of overarching constraints.

1.4. OUR ASSET MANAGEMENT STRATEGY

QLDC's asset management strategy builds on the newly developed QLDC Strategic Framework and the ongoing iterations of the organisation's 30 Year Infrastructure Strategy. The Strategic Framework describes the outcomes QLDC is seeking to achieve, the ten year investment priorities required to achieve those outcomes, and the ways in which the organisation will work. The 30 Year Infrastructure translates the Strategic Outcomes Framework into a suite of infrastructure investment objectives designed to guide investment in infrastructure to best deliver on the defined community outcomes. The 30 Year Infrastructure Strategy also defines the significant issues facing QLDC's infrastructure and charts a most likely course for the management of its infrastructure in response.

QLDC has developed its inaugural Strategic Asset Management Plan (SAMP), which seeks to translate this broader strategic direction into the strategic management assets. This Asset Management Plan (AMP) should be read in conjunction with the SAMP, QLDC Asset Management Policy, and 30 Year Infrastructure Strategy.

QLDC is committed to continuous improvement in order to effectively plan, manage, operate and deliver the three waters services. QLDC have focused investment in processes, data collection,

condition and demand monitoring, modelling and analysis. As our programme moves into a large delivery stage, attention is moving to network and benefits realisation. Our AMP Improvement Plan captures key actions, and these are tracked and updated regularly.

1.5. OUR PROGRAMMES

Our three waters ten-year investment plan consists of maintenance, operations, and renewals of our network, as well as improvements that address gaps in levels of service and enable new growth areas. This investment plan forms part of the 2024-2034 Long Term Plan (LTP24) which sets out QLDC's long-term direction and investment intentions.

QLDC plans to invest $1.3 billion of capital expenditure and $225 million of operating expenditure in three waters assets and services over the next ten years (Inflated to AP24/25). With inflation applied, **QLDC plans to invest $1.47 billion of capital expenditure and $279m of operational expenditure over the next ten years**.

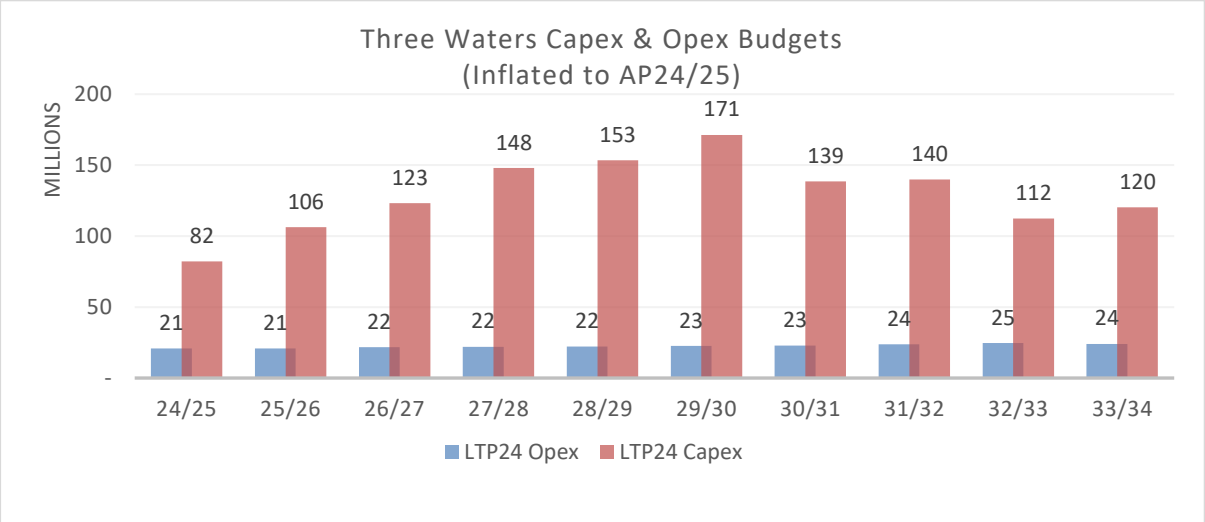


Figure 1:Capital and Operational Expenditure Three Waters 2024 – 34

1.5.1. MAINTENANCE, OPERATIONS PROGRAMME SUMMARY

Over the last three year cycle, QLDC's maturity in asset management has been reduced and this has been reflected in the maturity of some programme development. The loss of key staff has resulted in loss of knowledge of our data and systems, but this is acknowledged and being addressed. The operational side has been faced with a number of issues that have placed incredible pressure on the local teams, from storm events to cryptosporidium breakouts, but focus is prioritised to ongoing preventative maintenance. There are a number of actions in our AMP Improvement Plan which capture key actions, and these are tracked and updated regularly.

1.5.2. CAPITAL PROGRAMME SUMMARY

Investment in three waters accounts for around 60% of QLDC's total planned capital expenditure over the next ten years. Of the total planned three waters capital expenditure, approximately 48% will provide capacity for growth, 42.5% will deliver level of service improvements, and 9.5% will be spent on renewing existing assets. The relative distribution of this spend is reflective of QLDC's intent to invest in new Three Waters schemes for Te Putahi Eastern Corridor and Te Tapuae Ladies Mile (as well as other major infrastructure required to support key development areas), a wide-reaching programme of improvements that respond to the historic infrastructure deficit and service level requirements, and modelled renewal needs which are influenced by the low average age of QLDC's Three Waters assets and its historic prioritisation of maintaining the established asset base.

Planned investment will support QLDC to:

- achieve and maintain compliance with regulations and standards,
- maintain service levels within existing schemes in line with projected growth,
- provide enabling infrastructure that unlocks key development areas and connects existing settlements to reticulated schemes,
- maintain and optimise existing assets,
- improve the resilience of critical assets and services,
- promote the more sustainable supply of three waters services, and
- develop comprehensive, integrated, and agile plans to meet long-term servicing needs.

1.6. CLIMATE STATEMENT

QLDC's Climate and Biodiversity Plan highlights Water Supply infrastructure construction, along with Transport as one of the highest emissions emitting sectors. Wastewater treatment alone makes up 20% of emissions. The QLDC Three Waters programmes are underpinned by the goals and outcomes set out in the Climate and Biodiversity Plan.

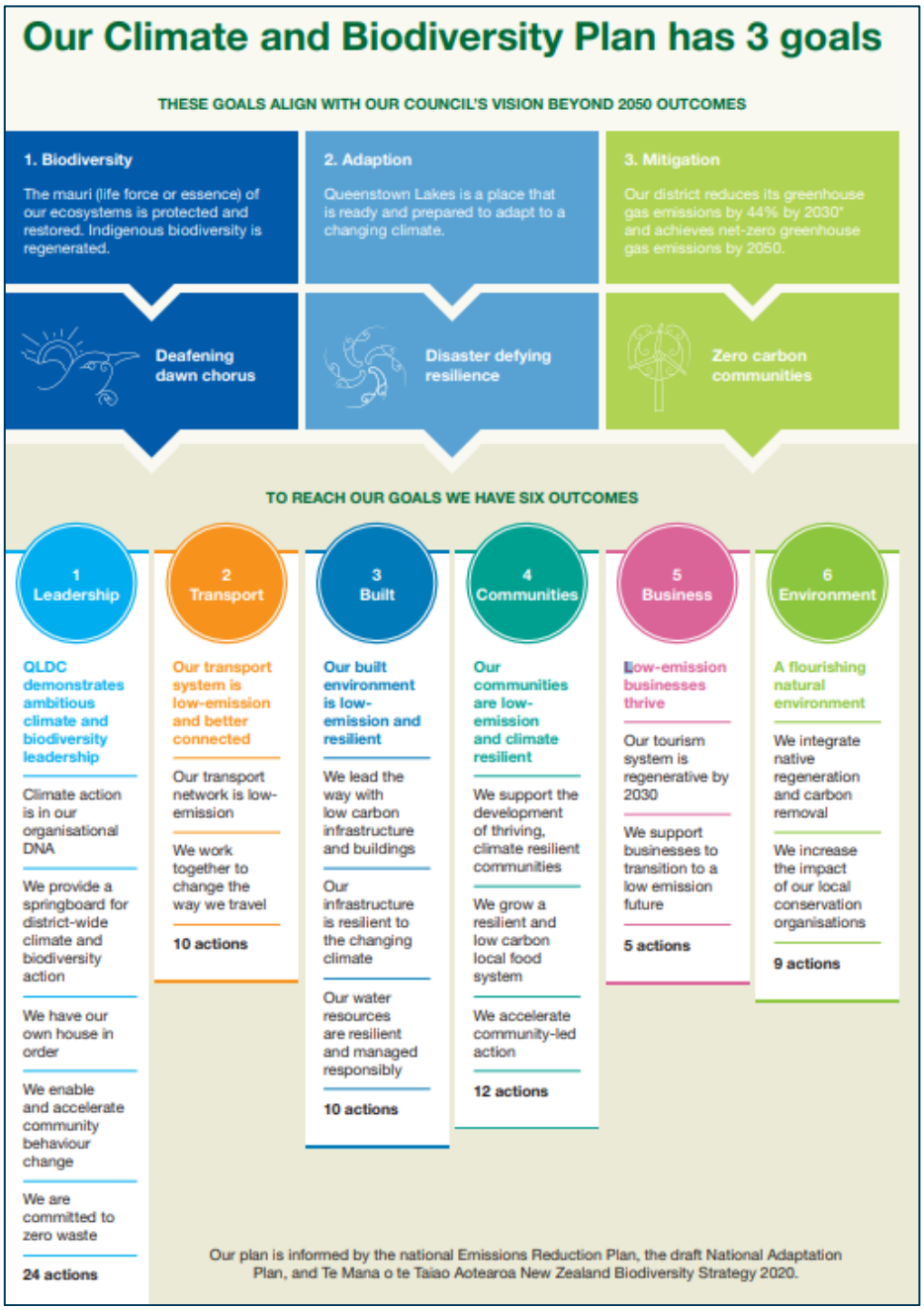


Figure 2: Climate and Biodiversity Plan

1.7. SERVICES PERFORMANCE OVERVIEW

Water Supply – Achieving compliance with new Drinking Water Quality Assurance Rules continues to be an area of focus. Council's recent cryptosporidium outbreak and response has seen protozoa barriers added to each of the surface water fed supply schemes, however, further investment will be required to achieve drinking water compliance across the district but is planned to be completed early in the LTP period.

Sustained high rates of population growth, coupled with high water usage and suboptimal storage capacity is putting pressure on the ability of some schemes to meet customer demand, as a result water restrictions are common through peak demand periods. A balanced response which increases capacity, increases stored water volumes, reduces leakage and manages customer demand is planned to ensure the district's water supplies can operate effectively into the future.

Wastewater – Significant and sustained investment is required to ensure treatment capacity can keep ahead of increasing wastewater flows driven by high rates of growth in the district. The Shotover wastewater treatment plant (WWTP), that services the wider Queenstown area, is the subject of a current abatement notice associated with the non-performance of the treated effluent disposal field. Responding to this will be a key priority into the next TYP period. The Hāwea WWTP currently lacks sufficient capacity to enable connection of all consented land, and as a consequence wastewater from a recent subdivision is being trucked to the Wānaka WWTP while the long-term solution is completed (pumping of wastewater to the Wānaka WWTP).

Capacity and resilience within the conveyance network is also being challenged as a result of the sustained high growth rates. Increasing the throughput of existing network connections (such as the CBD to Frankton rising main and the North Wānaka pump station)) as well as the provision of new conveyance routes to key growth nodes (Ladies Mile and Southern Corridor) are a focus of the investment programme.

Stormwater – Increasing numbers and severity of weather events is placing pressure on parts of the network performance, work is being done to better understand catchments and supporting infrastructure. QLDC currently has two active abatement notices from the Regional Council associated with Stormwater Discharges (Alpha Series discharge to Bullock Creek and the Hikuwai Discharge to the Clutha River via Rockabilly Gully).

Understanding and improving the quality of stormwater discharges will be another focus area, and necessary to stay ahead of the signalled requirement to obtain global consents for stormwater discharges under the next iteration of the ORC Land and Water Plan.

3 WATERS AMP AT A GLANCE

QUEENSTOWN LAKES DISTRICT COUNCIL

Our Vision

"To provide access to safe and reliable water supplies, waste disposal, and flood protection systems that protect health and ecosystems"

Council's Infrastructure Vision and Objectives

What we provide

3W services is made up of drinking water supplies, wastewater collection and treatment and stormwater management:

- **Water Supply** - Essential in that it provides clean drinking water to our communities. It is critical to the wellbeing and prosperity of our district that those services are safe reliable and cost effective.
- **Wastewater** – Contributes significantly to the collection, treatment & disposal of our city's sewerage to protect people health and prosperity and minimizing effects of the environment.
- **Stormwater** – keeps the district safe through flood protection and to reduce the impact of environmental changes. Effective management of rain through these systems is critical to limiting erosion & property damage, as well as ensuring public amenity of open spaces and protection of the environment.

Key issues/challenges

Significant Issues

- Historic Infrastructure deficit
- Rapid & sustained demand growth
- Resilience to shocks events
- Climate emergency
- Increased and increasing standard and expectations

QLDCs response to these challenges is constrained by:

- Cost escalation
- Limited capacity to deliver
- Timing & investment of other infrastructure providers
- Long project incubation periods & barriers to implementation
- Limited availability of funding

QLDC 3 Waters Programme

$1.3BN Total 3W Capital Programme 24-34 (Infl AP24/25)

$225.4m Total 3W Operational Expenditure (Infl AP24/25)

Healthy and fulfilled people	Provide infrastructure services that reliably protect people from harm Leverage investment in infrastructure to create opportunities for people to increase activity, recreation, and social connection
A good standard of living	Sustain timely infrastructure investment to support and strengthen the district's growing complex economy and associated employment opportunities Pursue efficiency, effectiveness, and funding opportunities that support the sustainability of infrastructure services
A healthy natural environment	Prevent contaminants associated with infrastructure services from entering the natural environment Reduce the impact of infrastructure on global emissions and resource extraction Identify and prioritise opportunities for environmental regeneration
An enabling built environment	Optimally sequence infrastructure interventions to maximise servicing capability for the district's growing population Enable access to essential services following a natural hazard event, and optimise the recovery of all services thereafter

52,800
8% INCREASE in QLD population from 2022 to 2023
2.1% growth for NZ

4.5% PA
Av. Population growth in QLD over 5 years compared to 1.3% PA NZ


We have 597km of mains pipes


We generate 5,277,230 m3 of wastewater each year


We maintain 7 public reticulated SW systems


We have 12 WS Treatment Plants


We have 5 WW Treatment Plants


We have 325km of mains/culverts

Local Water Done Well

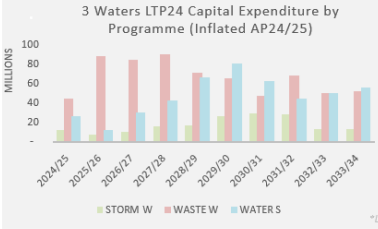
The Coalition Government's plan for a financially stable, locally delivered water infrastructure and service.
By mid 2025, Councils must submit a Water Services Delivery Plan (WSDP) to Government. It should detail: (1) current state of 3W assets and services, (2) type & level of investment required to ensure services are compliant to respond to projected growth, and (3) how it will be organised & funded to ensure ongoing financial sustainability. WSDP's are also expected to include key considerations such as: type and standard of water services to be provided, approach to maintaining and operating existing and new infrastructure and the extent to which proposed investment in water services will respond to challenges identified in this AMP and QLDCs 30YIS.

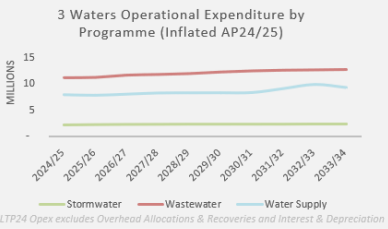
Taumata Arowai (TA):
TA is the water services **regulator for NZ** for drinking water in relation to the environmental performance of WW and SW networks.
Role: ensure everyone **has reliable access to safe drinking water**, this is done by regulating those who provide drinking water services by setting standards, helping with compliance and holding suppliers to account.

3 WATERS AMP AT A GLANCE

QUEENSTOWN LAKES DISTRICT COUNCIL

QLDC Transport Investment Programme





*LTP24 Opex excludes Overhead Allocations & Recoveries and Interest & Depreciation

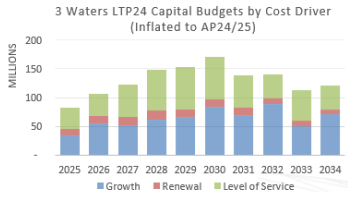
91% **INCREASE** in capital budget compared to 21-34

161% **INCREASE** in WW Capital Budget

17% **INCREASE** in Operational Budget

103% **INCREASE** in New Capital Projects

13% **INCREASE** in Renewals Budgets



QLDC LTP Programme

Investment in 3W accounts for approximately 60% of QLDC's total planned capital expenditure over the next 10 years.
Of the total planned 3W capital expenditure, approximately 49% will provide capacity for growth, 42% will deliver LOS improvements, and 10% will be spent on renewing existing assets.

The **2024-34 LTP** has focused on a programme that prioritises the following to invest in those things that we must do to meet our legal obligations and ensure service continuity: (1) Honour Existing Commitments, (2) Maintain Existing Levels of Service, (3) Essential Renewals, (4) Deliver Critical Enablers for Existing and Future Priorities, (5) Comply with High Impact Regulatory Requirements, and (6) Implement the 'Way we Work'.

Key DIA KPIs:

Programme	KPI	Target	Result 21/22	Result 22/23
Stormwater	Number of flooding events that occur in a territorial authority district	<7	0	1
Waste Water	Median response time to attend to sewerage overflows resulting from blockages or other faults of a municipal sewerage system	<60 mins	26 mins	22.5 mins
Water Supply	Average consumption of water per person per day	<505	<440.51	<507.99

Other Funding Sources

Further investment in 3W infrastructure over the next 10 years is inevitable. Built solutions alone will not respond to the challenges outlined in the AMP and it is no longer feasible to rely on traditional funding mechanisms to meet the districts 3W (and wider infrastructure) investment needs. Securing alternative funding sources, including generating new revenue streams will be an important component of meetings QLDC's 3W investment needs. Established funding sources in place to support 3W investment include: (1) IAF, (2) HIF, (3) Shovel ready stimulus funding (CIP), (4) Developer agreements.

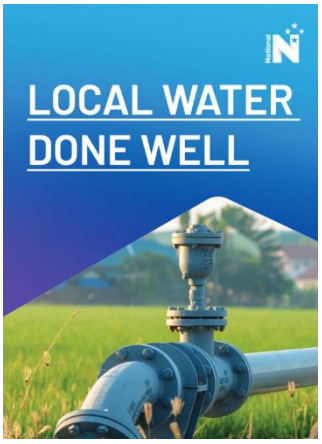
Te Tūāpapa Kura Kāinga Ministry of Housing and Urban Development · Kāinga Ora Homes and Communities · Crown Infrastructure Partners

Figure 3: Three Waters Investment 'At a Glance' 2024-2034

2. INTRODUCTION TO THE THREE WATERS AMP

This section provides an overarching strategy and approach for managing our Three Waters assets. It provides the scope, purpose and framework for the AMP and shows alignment with our organisational Strategic Asset Management Plan.

2.1. LATEST POSITION ON THREE WATERS REFORM / LOCAL WATER DONE WELL



Local Water Done Well is the current Governments plan to repeal and replace the previous governments Three Waters reforms.

Measures to be introduced through new legislation in mid-2024 will establish the Local Water Done Well framework and the transitional arrangements for the new water services system.

The measures include requirements for councils to develop Water Services Delivery Plans, steps towards future economic regulation, and streamlined processes for setting up water services council-controlled organisations (water services CCOs).

The overarching purpose of the Plans is for councils – individually or jointly – to publicly demonstrate their intention and commitment to deliver water services in ways that are financially sustainable, meet regulatory quality standards for water network infrastructure and water quality, and unlock housing growth.

Through the development of these Plans, councils will provide an assessment of their water infrastructure, how much they need to invest, and how they plan to finance and deliver it through their preferred service delivery model. Ringfencing of water services and revenue from other council activities is a key feature of the Plans.

The Plans will be a way for councils to provide transparency to their communities about the costs and financing of water services and empower them to make decisions about managing and delivering high-quality water services that reflect their local needs and circumstances. The Plans can also be prepared jointly and so provide an opportunity for councils to have conversations with other councils about joint arrangements for water services delivery.

The Plan covers information across three key areas:

Financial and asset information	Information about each councils financial and asset information and performance measures, pricing and other related policies, methodologies, and assumptions
Investment required	Planned levels of investment, approach to operations, and whether these are sufficient to deliver proposed level of service, meet infrastructure standards and meet regulatory standards
Service delivery arrangements	Councils proposed service delivery arrangements – including proposals for joint arrangements, across more than one council

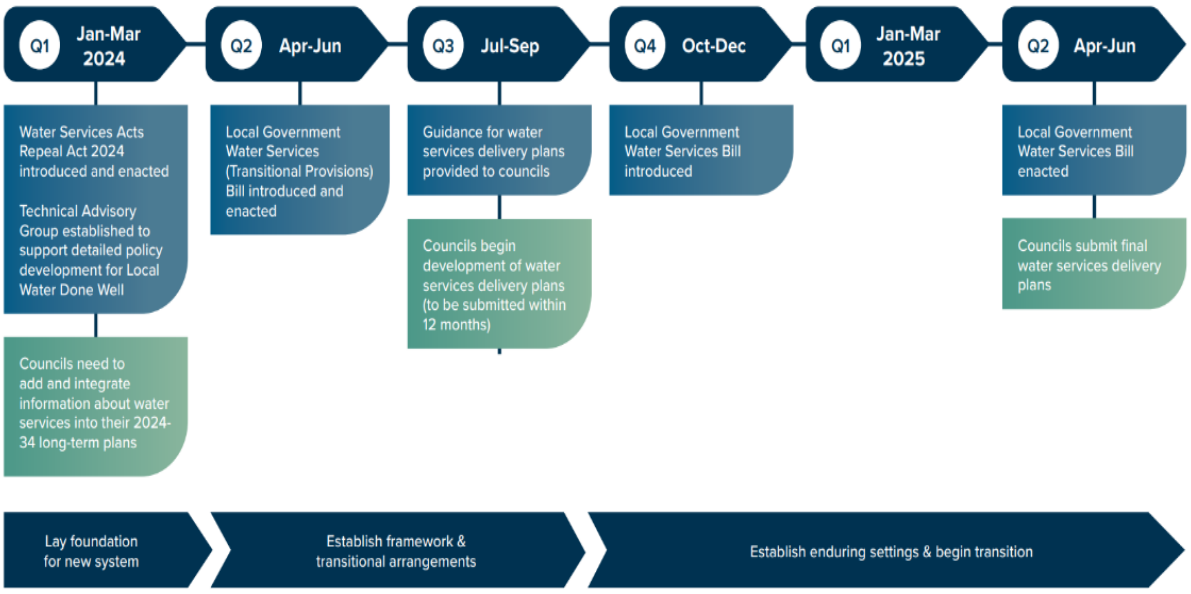


Figure 4: Local Water Done Well – Indicative Timeline April 2024

2.2. AMP PURPOSE & FRAMEWORK

This asset management plan (AMP) details QLDC's approach for delivering Three Waters services, cost-effectively to achieve long-term strategic goals and delivering the level of service desired by the community. The scope of the AMP demonstrates QLDC's role in supporting the Three Waters network to meet the community's wellbeing's.

The principal outputs from this AMP are:

- A description of Three Waters assets, activities and intended outcomes
- Strategic assessment of service levels
- Discussion on demand and operational changes
- A proposed investment programme for the next 10 years
- Identification of opportunities to improve business processes and asset management maturity
- Continuous improvement and a prioritised performance plan

The Business Case AMP Approach is embedded into our asset management planning and is reflected in this document alongside the IIMM framework. We have combined some sections of the IIMM manual where it seems sensible e.g., the state of the assets/asset portfolio section and the lifecycle management sections.

This AMP has been prepared internally based on the principles of maintaining, renewing, and improving our Three Waters network whilst considering a cost effective 'whole of life' approach, and understanding the impact of cost, risk, and level of service. It brings in a breadth of work from asset management specialists from across the industry.

QLDC declared a Climate Emergency in June 2019 and since that time, QLDC has embarked on a journey towards a major organisational behaviour shift ensuring climate change considerations are reflected in decision making, policy setting, projects, and service delivery. We are starting to mature our view of how carbon and adaptation fit into this framework. Any changes in funding levels required by the community through the Long-Term Plan (LTP) process, will be captured in the LTP and used to inform subsequent annual revisions of the AMP.

Changes to the planned investment programmes will be documented and described in alignment with QLDC's Risk Management Framework. This process will ensure the implications of changes in funding (increases or decreases) are clearly understood and captured in a consistent method.

2.3. STRATEGIC ASSET MANAGEMENT PLAN

QLDC has had an **Asset Management Policy** in place for a number of years now and this has again been reviewed in line with the Long-Term Planning process. The latest Policy is expected to be adopted in mid 2024 and sets out the vision and the strategic objectives by which Council intends to apply asset management to achieve its objectives.

In 2024 QLDC also introduced the first iteration of a **Strategic Asset Management Plan** (SAMP). This SAMP is a step in improved organisational asset management and outlines how QLDC intends to achieve its asset management objectives. It serves as a bridge between organisational objectives and the tactical plans that guide asset management activities.

The SAMP is a crucial piece of documented information used in translating organisational objectives into asset management objectives and providing the framework for planning, prioritising, and decision-making for implementing all other asset management activities to ensure alignment.

The SAMP is a planning tool that clarifies intentions, priorities, and specific practices to be adopted. It takes a long-term view and considers the combination of organisational needs, stakeholder expectations, and the realities of existing assets and asset management capabilities.

The SAMP is a companion document[2].

2.3.1. SAMP PURPOSE

The SAMP is a critical tool for top management to achieve its objectives while effectively managing its assets and asset management performance. The inaugural SAMP serves several critical purposes for QLDC as follows:

- Documents the role of asset management and the asset management system in supporting the organisation's objectives, providing clarity and direction to everyone in the organisation.
- Translates organisational objectives into strategic asset management objectives and reconciles them with other strategic objectives that may impact assets and asset management.
- Guides the approach for developing asset management plans and the asset management system, ensuring alignment with the asset management policy.
- Presents a plan for developing and improving the asset management system to ensure that the necessary capabilities and resources are available to achieve the asset management objectives.

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[2]  When this icon appears, further information is available in the companion document. It is not repeated in the AMP to negate repetition.

2.3.2. RELATIONSHIP BETWEEN DOCUMENTS

The relationship between asset management objectives, SAMP and the Asset Management Plans (AMPs) is shown in figure below.

The SAMP typically includes:

- the plan for the asset portfolio, i.e., the high-level activities to be undertaken on the assets to enable the delivery of organisational objectives
- the plan for the asset management system, i.e., the enhancements needed for the processes, resources, and other capabilities necessary for the effective implementation of the SAMP and the AMPs

Due to existing planning processes, the inaugural QLDC SAMP has an emphasis on the plan for the asset management system and building organisational asset management capability rather than the plan for the asset portfolio.

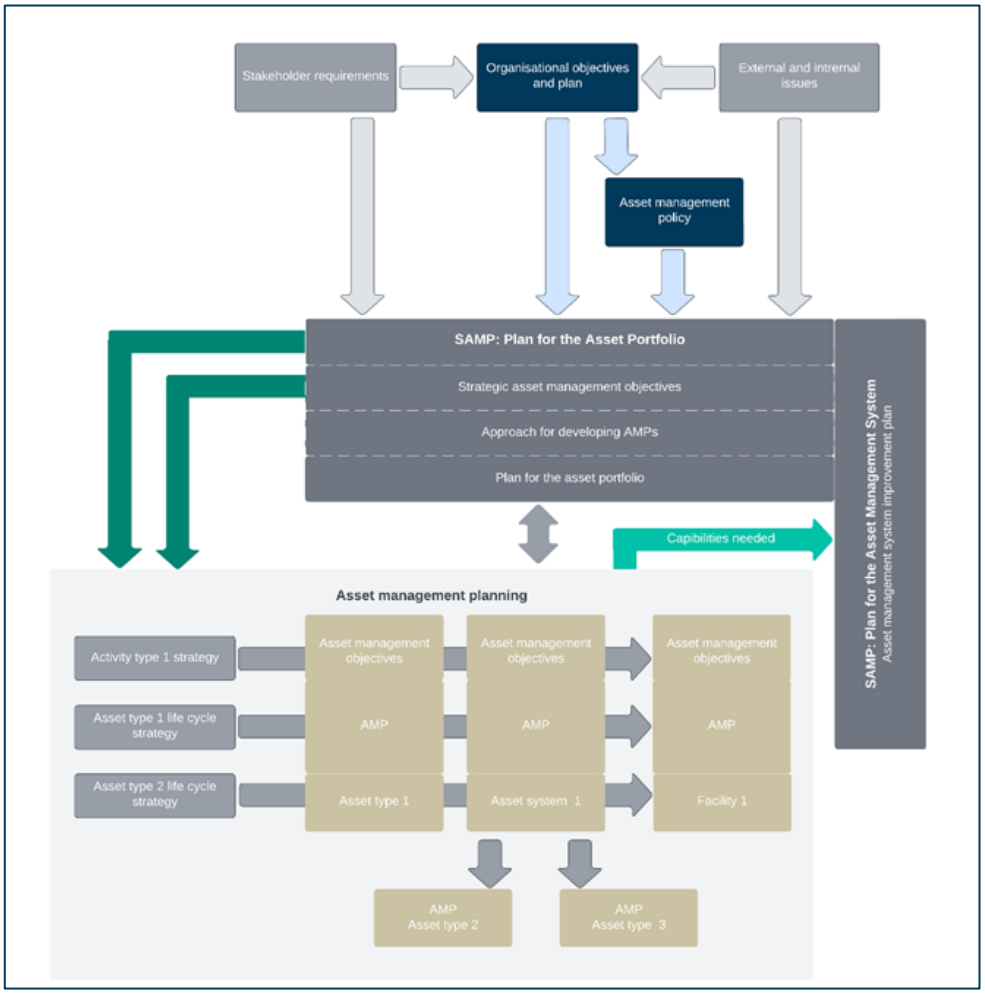


Figure 5: SAMP concept (Source: ISO 55002:2018)

2.4. IMPROVEMENT ACTIONS – STRATEGIC ASSET MANAGEMENT

Improvement Actions -Strategic Asset Management

A number of SAMP improvement items have been highlighted across all council activities. Three Waters has good maturity across many of these, the below however includes corporate consistency:

1. Better align budgeting/financial planning with activity/asset management planning.
2. Establish a performance framework for the strategic asset management objectives.
3. Establish common asset management objectives – portfolio level.
4. Confirm activity asset management planning requirements and revise and align the amp structure and content across all activities.
5. Execute an asset portfolio condition assessment plan.
6. Review asset life cycle responsibilities and align O&M responsibilities.
7. Improve performance monitoring of the asset management system, processes and asset management through internal and external audits, asset portfolio performance monitoring, and management review.
8. Establish processes and procedures for continually improving the AM system and asset management, including appropriate programme management, monitoring, reporting and management review.

3. STRATEGIC CONTEXT

STRATEGIC CASE

This section provides an overview of the external factors and influences that impact our Three Waters planning and sets the context for QLDC's asset management decisions

3.1. OUR PEOPLE

Queenstown Lakes District is part of Ngāi Tahu Iwi, which straddles both the Murihiku and Ōtākou Rūnanga. Our relationship with Murihiku has been traditionally strong, but our relationship with Ōtākou was less developed. However, at the beginning of 2017, the Mayor, Chief Executive, and executive team undertook a hīkoi to Dunedin. The visit symbolically expressed the Council's desire and intention to develop our relationship with the rūnanga of Ōtākou further. Subsequently, in August 2017 Mayor Boult signed a Memorandum of Understanding with Ōtākou to join Te Rōpū Taiao Otago. This was a key milestone and a significant step forward.

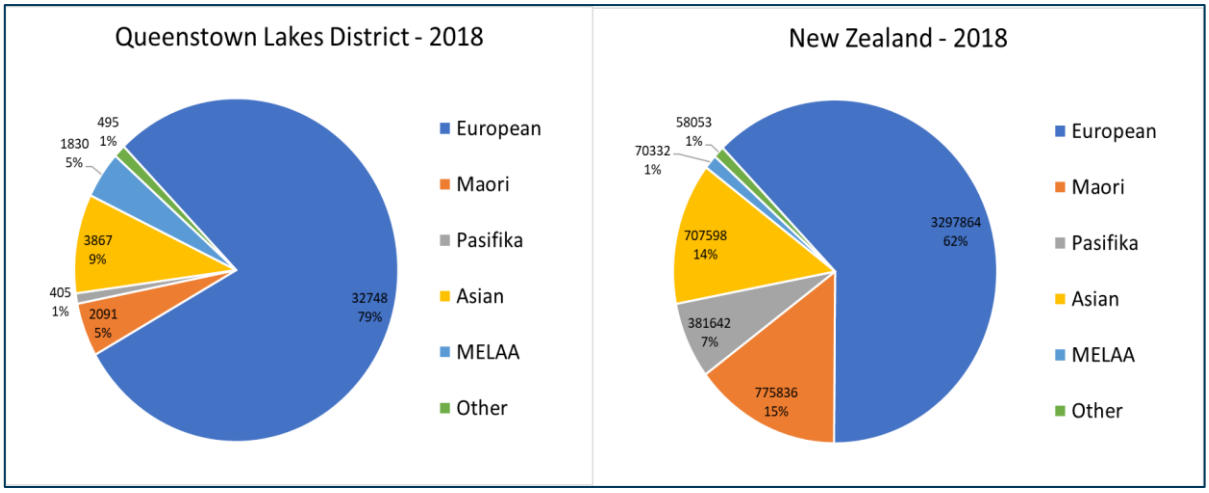


Figure 6: Ref. Infometrics QLDC Ethnicity Profile

One of the insights from COVID-19 was a recognition of the cultural diversity within the Queenstown Lakes District. As such QLDC has been developing the Welcoming Communities Te Waharoa ki ngā Hapori programme, a stocktake assessment has been completed on how QLDC and the community are currently meeting the needs of newcomers to the district. The Welcoming Communities programme represents an outcomes-based standard which helps benchmark what a welcoming and inclusive community looks like. The full stocktake report will be considered by our Welcoming Communities Advisory Group when developing the Welcoming Plan 2023-2026.

3.2. OUR DEMAND AND GROWTH

While the demand projections are indicative of what QLDC's strategic decision making is based on, it is with awareness that the projected change may take shorter or longer than 30 years. Consistent and regular monitoring of demand and growth forecasts is a key response to the challenges that QLDC face and is explored further in our Strategic Assessment section. More details of population growth, projections and demand for services are given in https://www.qldc.govt.nz/community/population-and-demand.

The following list identifies key areas of growth and demand, the impact of these changes in demand on the Three Waters network, and how Council proposes to deal with these.

Factors that influence customer demand on the Three Waters network include:

- Population growth and decline
- Demographic change
- Visitor numbers
- Economic growth and decline
- Dwelling growth
- Changes in land use
- Development of recreational areas
- Future customer expectations

The 2022 and 2024 Demand Projections Methodologies are companion documents.

The extent and speed of QLDC's growth means the community is facing numerous opportunities but is also faced with challenges. Prior to COVID-19, the district was experiencing its third population growth spurt of over 7% per annum, with predictions of 7+% per annum for the next 7 to 10 years. An increase in productivity meant a thriving economy; however, this also leads to lack of affordable housing, with education and health facilities at capacity.

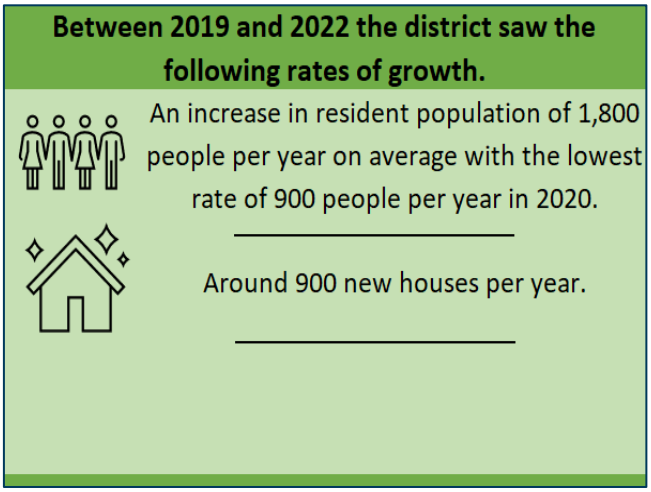


Figure 7: QLDC Demand Projection Insights (Source: QLDC Demand Projections 2022)

The economy has performed very strongly, with GDP growth over double the NZ average and there has been very low unemployment. Residents enjoy access to more and better services, supported by a larger population and more visitors. However, investment in infrastructure and housing has not been able to keep up with the rate of growth, there are problems with housing affordability and

congestion is worsening. The number of visitors before the COVID-19 pandemic was putting pressure on both the environment and community.

3.2.1. POPULATION / DEMOGRAPHIC

Huge increases in residential growth, alongside large visitor numbers had led to pressures on our Three Waters system. With a relatively small number of ratepayers supporting ever increasing visitor numbers, QLDC strives to address the issues stemming from rapid growth whilst protecting the liveability of our district. The consequences of changes in demand and growth are one of our biggest challenges and summarised below in specific areas. Further analysis can be seen in our Strategic Assessments Section.

- Queenstown-Lakes District's total population was 52,800 in 2023, up 8.0% from a year earlier. Total population grew by 2.1% in New Zealand over the same period.
- Population growth in Queenstown-Lakes District averaged 4.5%pa over the 5 years to 2023 compared with 1.3%pa in New Zealand.
- Since 1996, growth in Queenstown-Lakes District reached a high of 9.0%pa in 2018 and a low of 1.0%pa in 2021.

Over the past 30 years, the Queenstown Lakes has grown steadily from 15,000 residents to its current population of 52,000, alongside significant growth in visitors to the area. Migration, both from overseas and within New Zealand, has been the key driver of population growth. Auckland, Southland, and other parts of Otago were the key sources of internal migrants. This growth has been driven by the attractive scenery and climate, clean environment, outdoor lifestyle, strong economic opportunities, and improved national and international connectivity.

- Migration is the main driver to population growth. The main difference between these projections and the Stats NZ projections is the use of migration rates, rather than numbers.
- 2023 saw a surge in international migration which led to that 8% population increase as visa rules were relaxed.

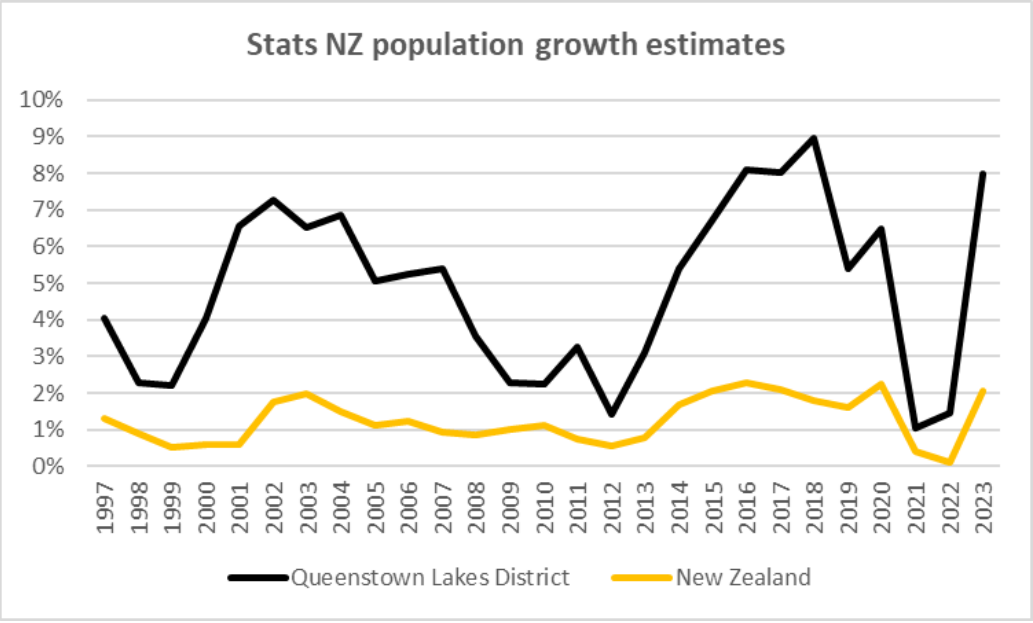


Figure 8: Stats NZ growth estimates. Source: Infometrics

Key points to note from the 2022 Projections are:

- By 2051 82,700 residents are forecasted.
- By 2051, 39,000 visitors are forecast on an average day, and 117,000 on a peak day.
- Analysis of Data Ventures data suggests that previous projections were over-estimating visitor numbers, especially on a peak day by as much as 5-10%. 2021 levels were also adjusted with the much slower than anticipated return of international visitors due to the delayed border reopening, offset by higher than anticipated domestic tourism.
- With Covid-19 not affecting the housing market as anticipated along with factors such as inexpensive debt, the updated 2021 estimate was 600 houses higher than in 2020.

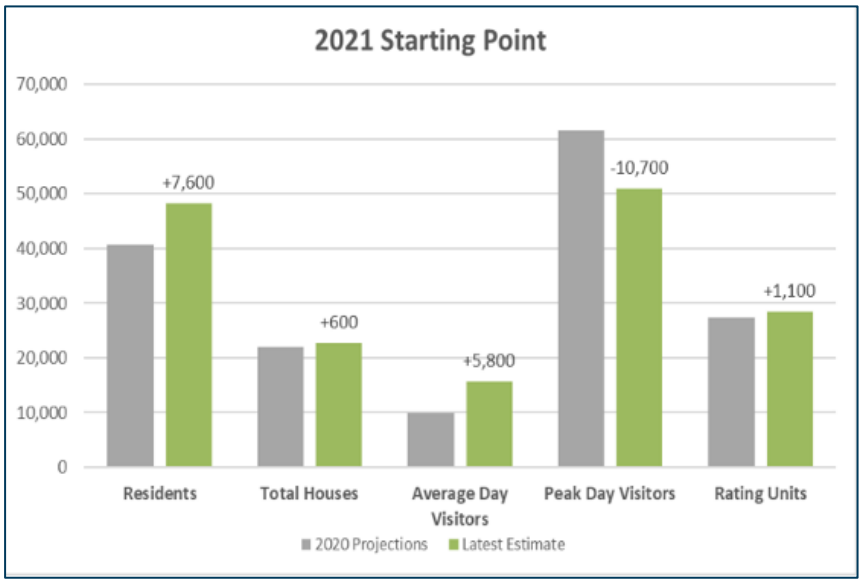


Figure 9: 2022 Projections vs 2020 as a Starting Point (Source: 2022 QLDC Demand Projections)

The key changes from the previous 2020 projections are:

- Stats NZ has revised its current resident population estimate for the district to 48,300, some 7,600 more than previously forecast.
- Data from Data Ventures has indicated higher than forecast domestic visitors, offsetting the slower than anticipated international border reopening.
- Continued population growth along with cheap debt, among other factors, has seen housing demand remain steady.

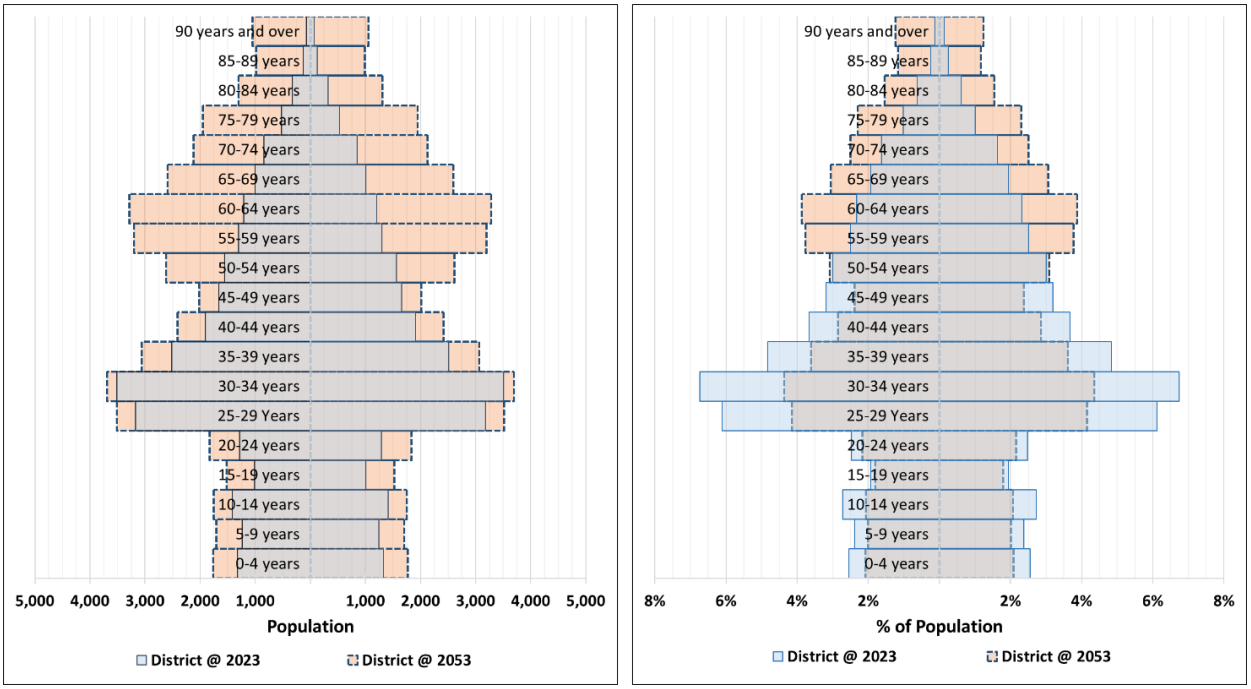


Figure 10: 2023 Queenstown Lakes Age Pyramid - Number and Portion of Residents Based on Age. (Source: QLDC Demand Projections 2022)

3.2.2. VISITOR DEMAND

Queenstown's economy is heavily dependent on the tourism market, within which there has been significant recent growth. This growth has stimulated an increase in resident population, which is forecast to continue growing. Infrastructure has struggled to keep up with this surge in demand and places financial pressure on the ratepayer base to subsidise visitors' use of infrastructure.

QLDC have produced a Regenerative Tourism Plan as an output and priority initiative of the Grow Well | Whaiora Spatial Plan. A Destination Management Steering Group (DMSG) comprised of Destination Queenstown, Lake Wānaka Tourism, and Queenstown Lakes District Council developed this plan with input from the Department of Conservation and Kāi Tahu. The process has ensured that the values and vision of local communities, including iwi, are strongly represented in the resulting strategy.

As a heavily touristed area, relying on resident numbers alone would result in an undersupply of key infrastructure. A truer reflection of the actual demand on infrastructure needs to include both the resident and visitor numbers.

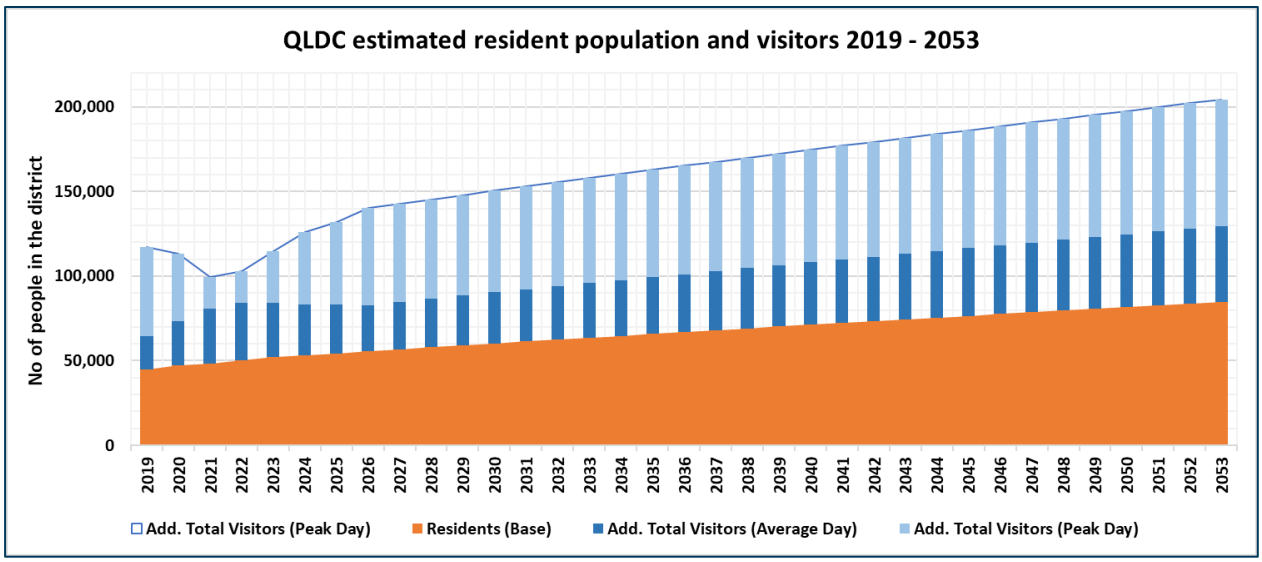


Figure 11: QLDC estimated resident population and visitors 2019-2053 (Source: QLDC Demand Projections 2022)

Airport passenger movements are often used as a proxy for the health of the tourism industry in Queenstown, and airport numbers show the impacts of and bounce back from COVID-19.

Economic forecasts used at the time of the previous projections predicted mass job losses for the district and a subsequent large-scale departure of residents. These didn't occur and the Queenstown Lakes District population has continued to grow. Domestic tourism has been greater than expected, offsetting the delayed international border reopening. The result is greater than previously forecast average day visitation, with a lower peak.

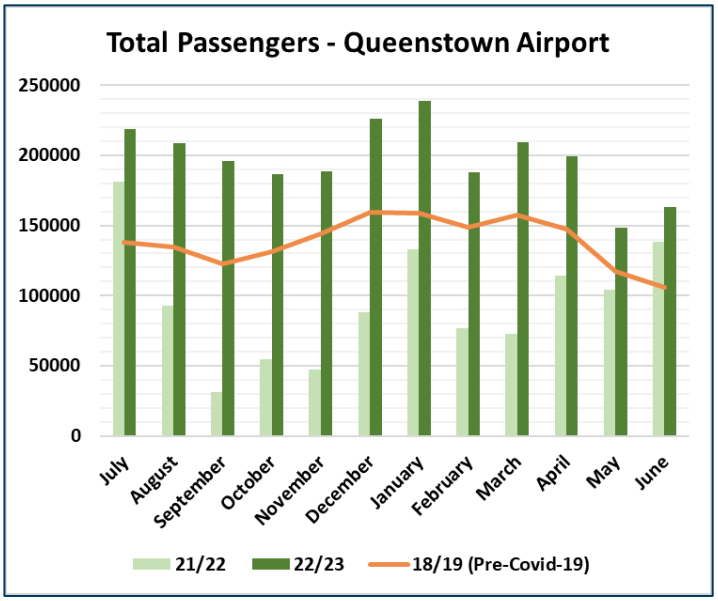


Figure 12: Queenstown Airport Passenger Movements Year to July 2023 and pre-COVID-19 (Source: Queenstown Airport)

3.2.3. THE ECONOMY

Queenstown Lakes has been the fastest growing part of the country over recent years, both from a population and employment growth perspective.

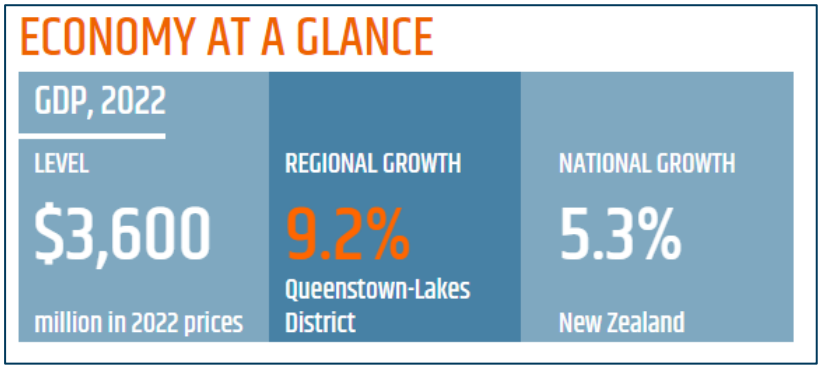


Figure 13: Gross Domestic Product Growth (Source: Infometrics Sept 2023)

The post-COVID bounce back has been substantial and above the overall New Zealand levels.

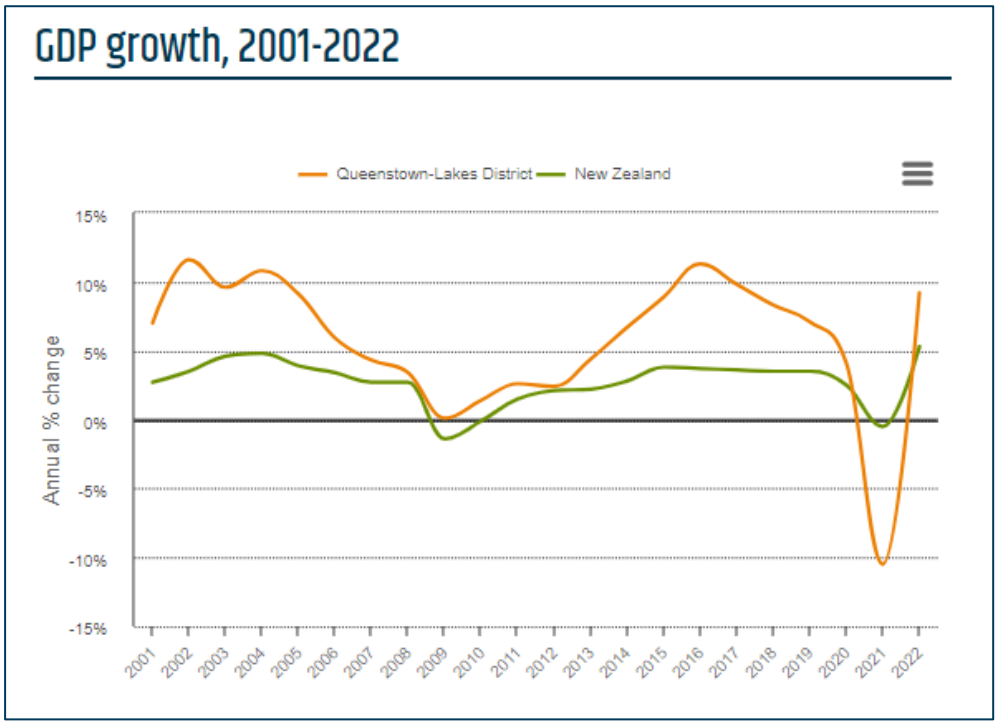


Figure 14: Queenstown-Lakes GDP Growth (Source: Infometrics Sept 2023)

Tourism GPD shows the post-covid tourism recovery is well underway, however, still highlights our lack of economic diversification.

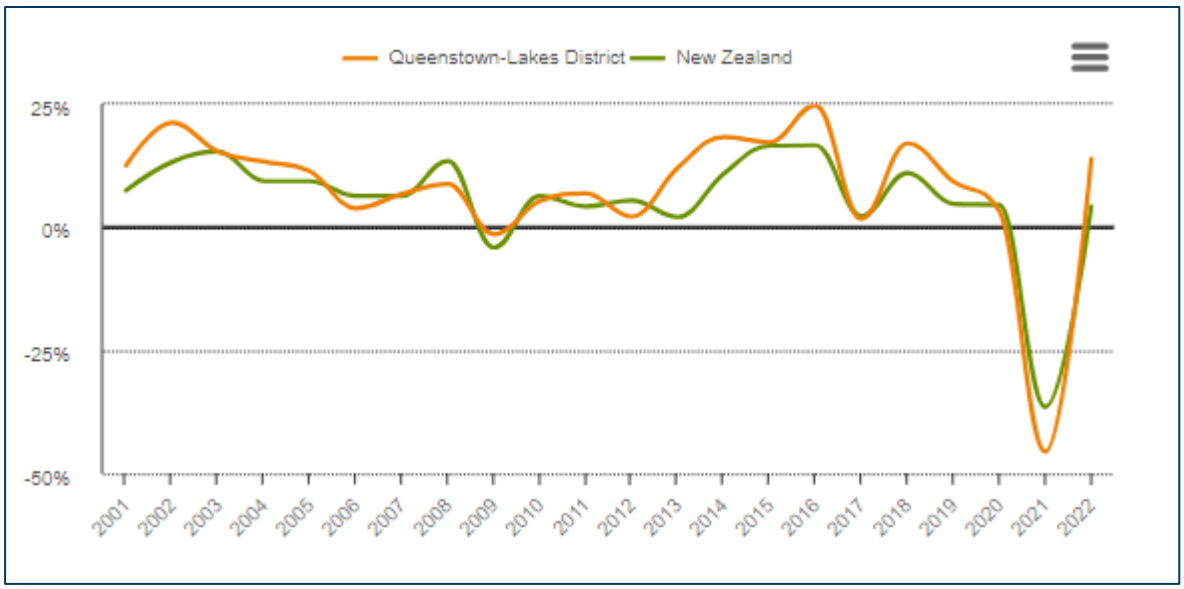


Figure 15: Queenstown-Lakes Tourism GDP (Source: Infometrics Sept 2023)

The graph below shows that QLDC are making small steps to diversify the local economy, however there is still a long way to go.

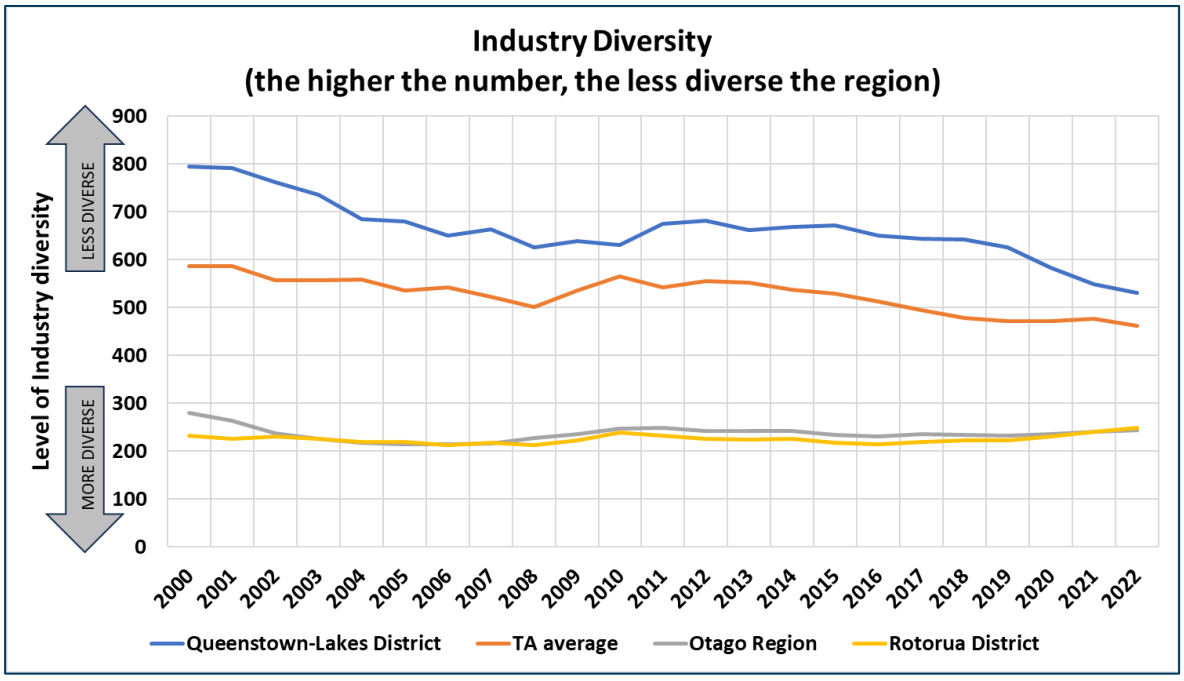


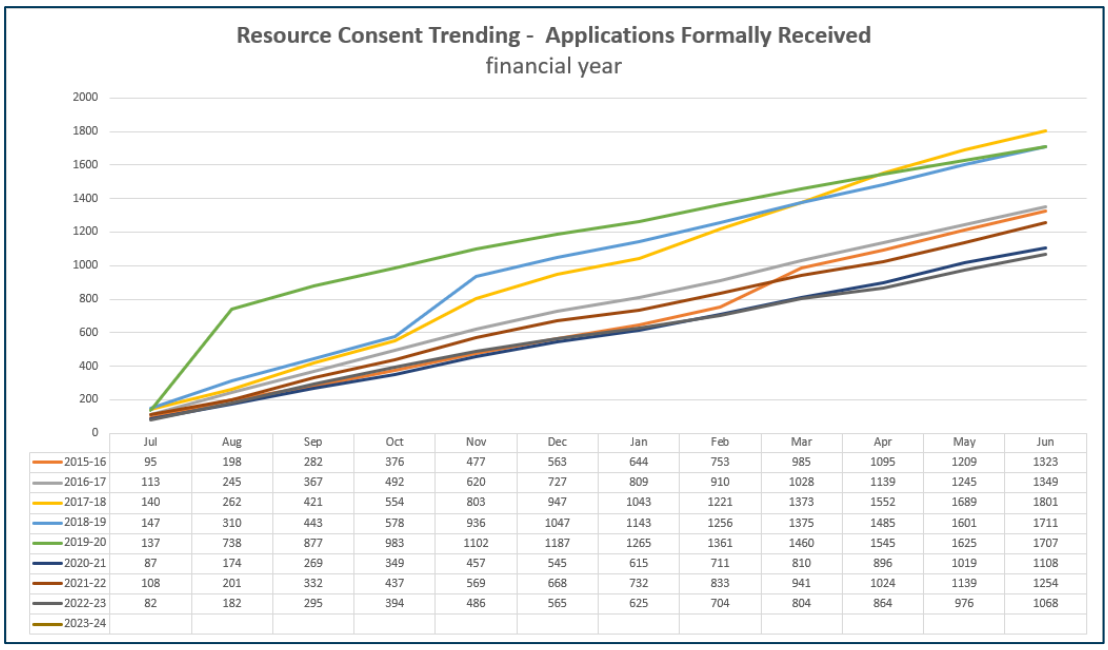
Figure 16: Industry Diversity (HH Index); 2000-2022

Productivity has been held down by tourism's large share of the local economy. This lower productivity is reflected in poor wages, but household incomes sit higher than national averages due to more multi-income households, and earnings from investments and self-employment. Refer to Section 4.5.6 for detail on the new QLDC Economic Diversification Plan.

3.2.4. LAND AND DEVELOPMENT GROWTH

The increase in population and visitor numbers has resulted in an increase in demand on our three water networks. The creation of new subdivisions in many towns required extensions to the existing network and planning to ensure they can be integrated into the greater network. In some of our smaller township it has resulted in new schemes being created to service existing population and the new developments increasing our asset inventory.

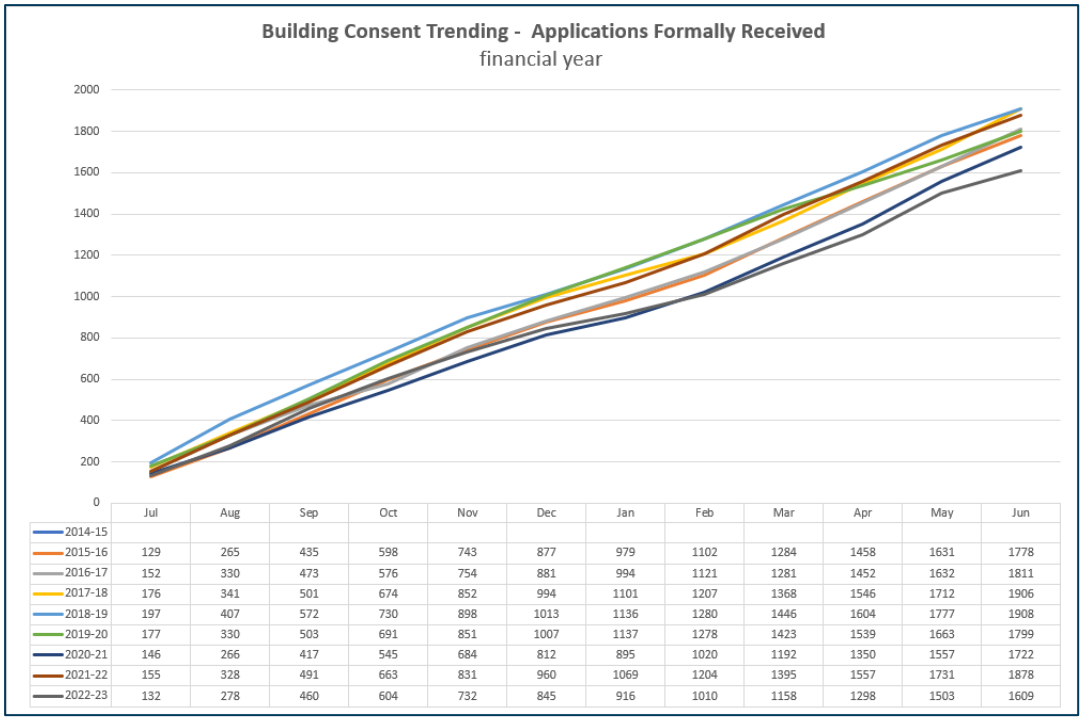
Numbers of Resource Consent and Building Consents received continue to grow as seen in the graphs below.



	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
2015-16	95	198	282	376	477	563	644	753	985	1095	1209	1323
2016-17	113	245	367	492	620	727	809	910	1028	1139	1245	1349
2017-18	140	262	421	554	803	947	1043	1221	1373	1552	1689	1801
2018-19	147	310	443	578	936	1047	1143	1256	1375	1485	1601	1711
2019-20	137	738	877	983	1102	1187	1265	1361	1460	1545	1625	1707
2020-21	87	174	269	349	457	545	615	711	810	896	1019	1108
2021-22	108	201	332	437	569	668	732	833	941	1024	1139	1254
2022-23	82	182	295	394	486	565	625	704	804	864	976	1068
2023-24												

Figure 17: Resource Consents Received by financial year

Building consents demonstrate consistent growth is continuing post COVID.



	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
2014-15												
2015-16	129	265	435	598	743	877	979	1102	1284	1458	1631	1778
2016-17	152	330	473	576	754	881	994	1121	1281	1452	1632	1811
2017-18	176	341	501	674	852	994	1101	1207	1368	1546	1712	1906
2018-19	197	407	572	730	898	1013	1136	1280	1446	1604	1777	1908
2019-20	177	330	503	691	851	1007	1137	1278	1423	1539	1663	1799
2020-21	146	266	417	545	684	812	895	1020	1192	1350	1557	1722
2021-22	155	328	491	663	831	960	1069	1204	1395	1557	1731	1878
2022-23	132	278	460	604	732	845	916	1010	1158	1298	1503	1609

Figure 18: Building Consent Applications Received by Financial Year

3.3. OUR LAND – OUR NATURAL ENVIRONMENT

The dramatic landscape and environment that draws people to the district, provides challenges in delivering Three Waters services. The topological relief of the district is often steep and winding and with a climate of extremes of temperature, whilst weather patterns provides challenges to service delivery. The risk and consequences of natural disasters hugely impacts our resilience and ability to respond.

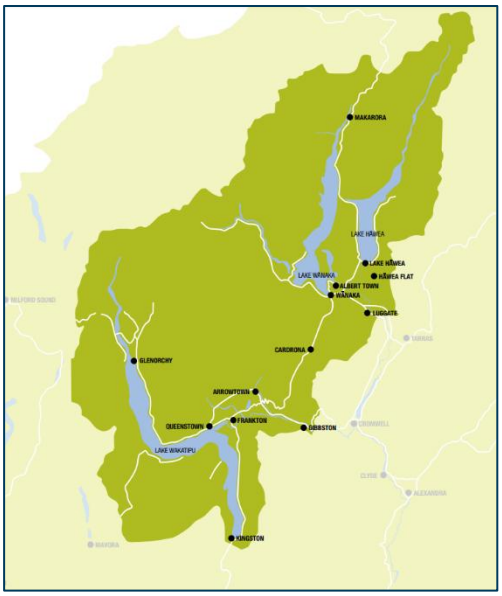


Figure 19: Queenstown Lakes District - map

- **Topography**: The Queenstown Lakes District covers a total area of 9,357 km² and includes a number of significant lakes (Lake Hāwea, Lake Whakatipu, and Lake Wānaka). The district is world-renown for its unspoiled natural environment and commerce-oriented tourism, especially adventure and ski tourism and has New Zealand's highest public sealed alpine pass. The natural environment of the Lakes District consists of a variety of systems including rivers, lakes, basins, wetlands, bush remnants, uplands, and shorelines. The hilly nature of parts of the district and urbanisation is leading to much more asset density.
- **Settlements**: The district includes urban centres of Wānaka, Queenstown, and Frankton, which support smaller townships of Arrowtown, Kingston, Glenorchy, Lake Hāwea, Cardrona, Makarora, and Luggate, with growing communities in the southern corridor such as Hanely Farm.
- **Geology:** Queenstown Lakes District is a geologically unstable area given the proximity to the Alpine Fault and various other (moderate) faults through the district situated within the Southern Alps, part of the Pacific Ring of Fire. Uplift has been most rapid during the last 5 million years, and the mountains continue to be raised today by tectonic pressure, causing earthquakes on the Alpine Fault and other nearby faults. Hāwea and Wānaka sit on glacial silt which has poor drainage. Other areas are alluvial, with good drainage. The Stormwater master planning process need to give special consideration to glacial areas.
- **Climate:** The climate is cold with snow and ice year-round at the highest points, as one of the coldest places in New Zealand with an average temperature of 10.7°C ranging from - 10°C to 35°C with ground frosts over 130 days per year. The clear winter days have a low average rainfall of 636mm per year and create a unique climate within New Zealand. It is expected the climate will become less predictable, winters and summers may become colder and warmer. Average temperatures have increased by 0.7°C over the past 50 years and are expected to increase by 0.9°C within the next 30 years. It is expected that soils will dry out and irrigation will be less effective. Parts of the Queenstown Lakes District are semi-arid environments which increases the amount of water used for irrigation. In addition, extended dry periods and warmer than normal temperatures have occurred in the district during the past five to ten years.

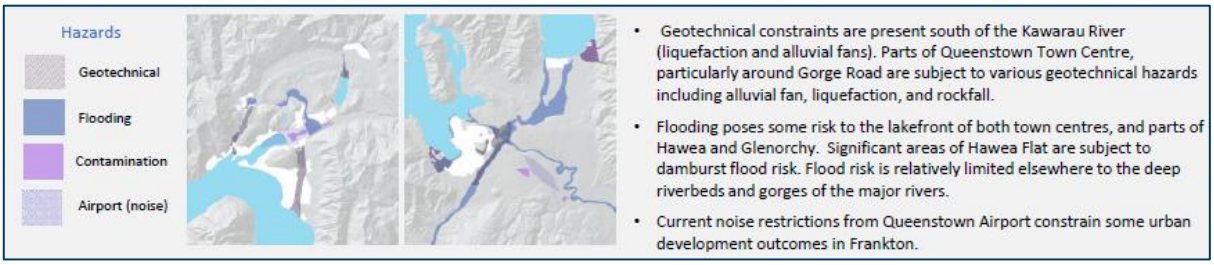


Figure 20: Land Hazards map

3.3.5. CLIMATE CHANGE IMPACTS

Council recognises the challenges of climate change and commissioned Bodeker Scientific to report on climate change implications for the Queenstown Lakes District to increase understanding and help council prepare and adapt. The report includes an analysis of both historical and projected changes in the district's climate, an assessment of potential implications for council services (including three waters), potential changes in the snowpack, and implications for industries including tourism. Potential impacts identified in the report for water supply include (Bodeker Scientific, 2019):

- increased demand for potable water as temperatures rise
- an increased risk of drought occurring with the increasing temperatures, changes in rainfall patterns and dwindling snowpack
- an increased set-in speed and intensity of droughts

3.4. IMPROVEMENT ACTIONS – STRATEGIC CONTEXT

Improvement Actions – Strategic Context

1. AMP demand figures are based on adopted 2022 figures, which is 2021 data. Projections have been updated in 2024, however these are yet to be incorporated into this AMP. Further work required to utilise more recent data.
2. Monitor central government reform landscape.
3. Update this AMP and its 30 Year Infrastructure Strategy to reflect the outcome of the WSDP process.

   Work with the QLDC Strategic Advisor Māori to update the T Ao Māori perspective

4. STRATEGIC DIRECTION

STRATEGIC CASE

Section 0 and 5 form the Strategic Case which outlines the overarching strategic drivers, vision and high-level objectives that guide the management and development of our three waters assets.

4.1. LEGISLATION

The Three Waters strategic framework aligns with legislation to ensure compliance and regulatory standards, it promotes sustainable water management practices and addresses public health and environmental protection requirements:
Three Waters strategic framework aligns legislation ensure compliance and regulatory standards, it promotes sustainable water management practices addresses public health and environmental protection requirements:

- Local Government Act 2022
- Water Services Act 2021
- Water Services Bill 2022
- Water Services Economic Efficiency & Consumer Protection Act 2023 (Repealed)
- Health & Safety t Work Act
- Health Act 1956 & Amendments
- Waste Minimisation Act
- Hazardous Substances & New Organisms Act
- Civil Defence Emergency Management Act

4.2. NATIONAL DRIVERS AND GUIDANCE

4.2.1. THREE WATERS REFORMS

The Government repealed the previous governments Three Waters Reform. This is a constantly evolving situation which QLDC will be monitoring closely and will respond to accordingly.

4.2.2. LOCAL WATER DONE WELL

Local Water Done Well is the Coalition Government's plan for financially sustainable, locally delivered water infrastructure and services. Local Water Done Well is expected to introduce a requirement for QLDC to submit a Water Service Delivery Plan to Government by mid-2025. This requirement is discussed further in the introductory section of this Asset Management Plan.

4.2.3. TAUMATA AROWAI

Taumata Arowai (TA) is the water services regulator for New Zealand. They are the regulator of drinking water, with a role in relation to the environmental performance of wastewater and stormwater networks. Taumata Arowai is a standalone Crown entity with a Minister-appointed Board. Alongside the independent Board is a Māori Advisory Group (Te Puna) which advises on Māori interests and knowledge.

Taumata Arowai became the water services regulator in November 2021 when the Water Services Act 2021 came into force. Up until that date, the Ministry of Health was the drinking water regulator, administering provisions in the Health Act 1956.

The role of Taumata Arowai is to ensure everyone has reliable access to safe drinking water, and this is done by regulating those who provide drinking water services, by setting standards, helping with compliance, and holding suppliers to account.

Taumata Arowai's role in relation to wastewater and stormwater networks.

As well as being the regulator for drinking water supplies, TA have a role in how certain wastewater and stormwater networks are managed, regulated and perform. This includes monitoring and reporting on environmental performance to enhance transparency and enable New Zealanders to make comparisons of performance locally, regionally, and nationally.

TA also do a range of things to support improvements in the environmental performance of those networks, including:

- Setting network environmental performance measures, targets, or standards
- Providing guidance such as best practice guidelines, advice, and information
- Supporting the development of knowledge through research, education, and training.

TA works closely with regional councils, which are responsible for environmental planning, resource consents, and related monitoring and enforcement, e.g. for the discharge of wastewater and stormwater to the environment under the Resource Management Act 1991 (and its replacement legislation).

4.2.4. DRINKING WATER STANDARDS & DRINKING WATER QUALITY ASSURANCE RULES

As the primary water supplier to the district, QLDC are required to provide a supply of water to homes and businesses that is safe for human consumption. Safe and reliable drinking water supplies are recognised as being crucial to the wellbeing and prosperity of our district.

Private Water Supply Schemes – As part of Central Government's proposed changes to drinking water regulation private suppliers will be required to comply to new or enhanced regulatory requirements. Territorial authorities will be expected to inform themselves of the nature of community drinking water supplies in their districts. Where problems are identified, Council will need to work with supply owners to reach a sustainable solution. It is possible that Councils will be required to take ownership of these drinking water supplies. Council has commenced work to understand the scale and nature of private water supply networks in the district; to understand the risks and investment cost of the requirement.

The new drinking water regulator (Taumata Arowai) came into effect in 2021. Non-compliance risk mitigation activities will continue to be prioritised, implemented, and monitored through our Water Safety Plans, until full compliance is achieved throughout the district.

4.2.5. TE WAIHANGA, THE NEW ZEALAND INFRASTRUCTURE COMMISSION

Te Waihanga is a key advisor to government on infrastructure. This advisory role includes developing a 30-year infrastructure Strategy, an Infrastructure Action Plan, and advice and support for major project procurement.

Te Waihanga will monitor and report on progress towards the actions and objectives of the Strategy and Action Plan and continue to prepare updated infrastructure strategies every five years.

QLDC has begun engaging on with Te Waihanga on the latest initiative to develop a multi-sectoral 30 year infrastructure pipeline.

4.2.5.1 NEW ZEALAND INFRASTRUCTURE STRATEGY & ACTION PLAN

The New Zealand Infrastructure Strategy sets out a roadmap for an infrastructure system that works for everyone. The Strategy sets out the major challenges New Zealand is facing and details 68 recommendations for how we overcome these.

The Action Plan demonstrates what the Government is doing and will do to turn this strategic vision into reality over the next few years. It outlines the key work programmes the Government is progressing to meet the infrastructure deficit and be smarter about the way New Zealand plans, delivers, and uses infrastructure.

4.2.6. NATIONAL LIFELINES

Recognises the essential infrastructure and services that support our community (i.e. water, wastewater and stormwater, electricity, telecommunications and transportation networks including roads). Representatives of these 'lifelines' collaborate regionally with scientists, engineers and emergency managers to reduce vulnerabilities to regional scale emergencies with an emphasis on pre-event planning.

4.2.7. NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT (NPS)

The NPS for Freshwater Management provides direction on how local authorities should carry out their responsibilities under the RMA for managing fresh water. It was recently amended in January 2023.

The Government announced a plan to improve New Zealand's waterways so that 90% are 'swimmable'by 2040. Our lakes and rivers will take time and there is more we need to do in the years ahead to make it happen. The Clean Water package is an important step in achieving our goal of better water quality for New Zealanders.

Te Mana o Te Wai is the objective of the National Policy Statement for Freshwater Management 2020 (NPSFM) and gives priority to protecting the health and mauri of freshwater. Second priority provides for essential human health such as drinking water. Third priority is for other uses that provide for the social, economic, and cultural well-being of people and communities. Council respects the fundamental concept of Te Mana o Te Wai and in particular the need to restore and preserve the balance between the water, the wider environment, and the community.

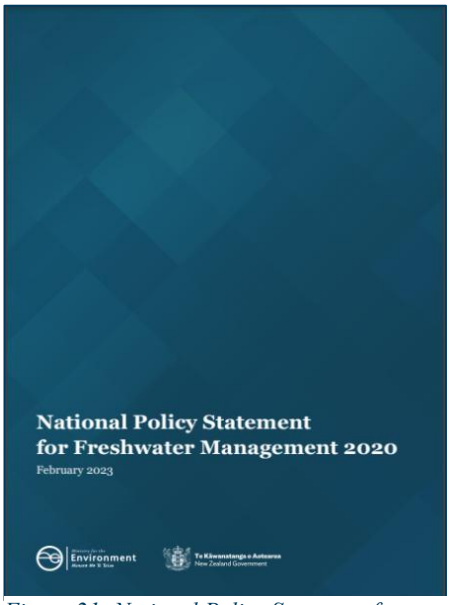


Figure 21: National Policy Statement for Freshwater

4.2.8. NATIONAL POLICY STATEMENT ON URBAN DEVELOPMENT 2020 (NPS UD)

The NPS-UD on Urban Development is about ensuring New Zealand's towns and cities are well-functioning urban environments that meet the changing needs of our diverse communities. It removes overly restrictive barriers to development to allow growth 'up' and 'out' in locations that have good access to existing services, public transport networks and infrastructure.

This NPS-UD stipulates that closer working relationships between planning and infrastructure providers must occur. In summary, the NPS-UD recognises the national significance of:

- Having well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future
- Providing sufficient development capacity to meet the different needs of people and communities

To support well-functioning urban environments, the NPS-UD requires local authorities to make informed decisions about planning for growth to improve the responsiveness and competitiveness of land and development markets.

In particular, the NPS-UD requires local authorities to provide sufficient plan-enabled, infrastructure-ready, and commercially feasible development capacity so that more homes can be built in response to demand. To demonstrate feasible development capacity, the NPS-UD requires Tier 2 Councils, such as QLDC to develop a Housing Business Capacity Assessment (HBA).

The HBA is an important evidence-based document for both QLDC and ORC and is used as a foundational document that goes on to inform a variety of plans and investment decision making, including the Future Development Strategy (or Spatial Plan in Councils case), RMA plan changes/variations, infrastructure strategies, and Long-Term Plans.

Responding to the HBA evidence base, the Queenstown Lakes Spatial Plan (Spatial Plan) sets out the strategic growth plan for the district, with key priorities aimed at ensuring future growth happens in the right places and is supported by the right infrastructure and services – those within the control of the Council and wider utility and service providers. The Spatial Plan does this by spatially identifying the key locations in which development capacity will be provided over the long term in both existing and future urban areas. It also identifies the development infrastructure and additional infrastructure required to support or service that development capacity. The Spatial Plan, therefore, is Councils key strategic document that both identifies and priorities existing and future growth areas and directs infrastructure requirements with the Council's Long-Term Plan and Infrastructure Strategy responding to this direction.

For QLDC, understanding the importance of the three-waters and the transport networks on the ability to impact land-use change is key to improving integrated land-use planning as well as ensuring that there is a strategic alignment in regard to investment planning and prioritisation of areas to be serviced.

4.2.9. THE RESOURCE MANAGEMENT REVIEW - 2019

The Government has indicated they will repeal the previous governments RMA 2.0 legislation and introduce a fast-track consenting regime. QLDC will be monitoring this situation closely and will respond accordingly.

New Zealand's key environmental statute is the Resource Management Act 1991 ("RMA"). Its purpose is "to promote the sustainable management of natural and physical resources" where sustainable management means "managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety…" Natural and physical resources are defined under the RMA and include water.

The RMA sets in place a framework for managing the effects of resource use and production processes, requires that activities avoid remedy and mitigate effects on the environment and includes a requirement to promote "the efficient use and development of natural and physical resources". It also sets in place a hierarchy of policies, standards and plans to be prepared by both Government and local authorities. These include national policy statements, national environmental standards, regional policy statements and regional and District Plans. The RMA confers on regional council's jurisdiction to allocate the taking and use of water through provisions in regional plans.

4.2.10. RESOURCE MANAGEMENT ACT (MEASUREMENT AND REPORTING OF WATER TAKES) REGULATIONS 2010

The Resource Management Act (Measurement and Reporting of Water Takes) Regulations 2010 seeks to achieve the following objectives:

- Ensure consistent measuring and reporting of actual water taken at national, regional and

catchment levels.

- Enable water users and regulators to easily determine compliance with water take consents.
- Provide accurate information about actual (consented) water taken in any catchment (including the catchments of groundwater resources).
- Improve allocative efficiency through accurate measurement of water abstracted for consumptive uses.
- Ensure the comprehensive uptake of water measuring in a cost effective and timely way.

The Regulations are intended to achieve these objectives by requiring qualifying consent holders to meet minimum requirements to measure their water takes. The regulations will also require water use data to be reported to regional councils. Since 10 November 2014 all water takes with a rate of take 10 litres/second and larger need to comply with these regulations. Water takes with a rate of take from 5 to less than 10 litres/second will need to comply with these regulations from 10 November 2016. The minimum requirements cover:

- How records are kept
- Specific water measuring device/system requirements
- Verification
- Reporting requirements

4.2.11. NATIONAL EMISSIONS REDUCTION PLAN

Aotearoa New Zealand's first emissions reduction plan sets the direction for climate action for the next 15 years.

Components of the Plan regarding Three Waters include but are not limited to:

- Providing information about our land, water and biodiversity across different temporal scales, spatial scales and social contexts that improves our evidence base for selecting transition and adaptation options.
- The planning system and infrastructure investment can support the use of nature-based solutions or blue/green infrastructure – such as water-sensitive urban design, rain gardens and urban trees – which may support carbon removals and improve climate resilience.
- Regenerative agriculture practices aim to increase soil carbon, improve soil health, and contribute to improved freshwater quality, reduce the climate footprint of food systems and enhance biodiversity.

Figure 22: Te hau marohi ki anamata

- Improving waste data and building our understanding of waste sector emissions will help to identify future opportunities, including those around farm fills and wastewater treatment.
- Some nature-based solutions can also reduce emissions indirectly, for example, using water-sensitive urban design, which mimics natural processes and uses soil and vegetation to manage stormwater and reduce the need for carbon-intensive concrete pipes

4.3. REGIONAL DRIVERS

4.3.1. OTAGO REGIONAL POLICY STATEMENT 2021

The Proposed Otago Regional Policy Statement 2021 (Proposed RPS 21) sets the direction for future management of Otago's natural and physical resources and was notified in June 2021. The purpose of the Proposed RPS 21 is to provide high-level guidance by way of policies and objectives and establish the framework for Otago's regional and district plans in which more specific resource management policies, objectives and rules will sit.

The Proposed RPS 21 objective for land and freshwater is to give effect to Te Mana o Te Wai. The first policy under this objective sets the prioritisation for the management of fresh water in Otago. This prioritisation has implications for the use of freshwater in Council's water supply schemes (e.g. irrigation of grassed areas would be a lower priority than the use of water for drinking and bathing). The three priorities for fresh water are:

1) first, the health and well-being of water bodies and freshwater ecosystems, te hauora o e wai and te hauora o te taiao, and the exercise of mana whenua to uphold these,

2) second, the health and well-being need of people, te hauora o te tangata; interacting with water through ingestion (such as drinking water and consuming harvested resources) and immersive activities (such as harvesting resources and bathing), and

3) third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

The third policy under land and freshwater relates to the integrated management of fresh water and land in accordance with tikaka and kawa. Four aspects of integrated water management are particularly relevant to water demand management:

- manages the effects of the use and development of land to maintain or enhance the health and well-being of fresh water and coastal water,
- encourages the coordination and sequencing of regional or urban growth to ensure it is sustainable,
- has regard to foreseeable climate change risks, and
- has regard to cumulative effects and the need to apply a precautionary approach where there is limited available information or uncertainty about potential adverse effects.

The Proposed RPS 21 includes visions for each of the FMUs and rohes, as required by the NPS-FM. Council's nine water supply schemes are located within two "rohe" ("area" in Te Reo), under the Clutha Mata-au Freshwater Management Unit (FMU). The Queenstown and Wānaka water supply schemes are primarily under the Upper Lakes Rohe. The remaining water supply schemes are located within the Dunstan Rohe. The vision for the under the Clutha Mata-au FMU vision includes an objective to that "sustainable abstraction occurs from main stems or groundwater in preference to tributaries".

4.3.2. OTAGO REGIONAL COUNCIL - LAND & WATER REGIONAL PLAN

Otago Regional Council (ORC) is developing a new Land and Water Regional Plan (LWRP) to implement the NPSFM and, in doing so, support the Government's goal to improve water quality within one generation and enable the region's waterways to be healthy and safe, from the mountains to the sea or ki uta ki tai. The new LWRP will sit under the new RPS. The new LWRP is required to be publicly notified by the end of 2023 and ORC have programmed the full review of the existing plan and development of the LWRP to be completed by this date.

The new LWRP will set clear environmental outcomes and limits with input from communities, as well as rules and limits on resource use to achieve these. The new plan will address climate change, resource needs and over-allocation of water. The plan will also actively manage some land uses for the first time.

The Proposed RPS 21 states that the new LWRP must include limits on resource use that:

- differentiate between types of uses, including drinking water, and social, cultural, and economic uses, in order to provide long-term certainty in relation to those uses of available water
- for water bodies that have been identified as over-allocated, provide methods and timeframes for phasing out that over-allocation
- control the effects of existing and potential future development on the ability of the water body to meet, or continue to meet, environmental outcomes
- manage the adverse effects on water bodies that can arise from the use and development of land

All the above requirements have implications for the management of water demands from Council's water supply schemes and for future water take abstraction consents. ORC is visiting communities from November 2021 until early 2023 to seek local knowledge and views on waterways. Community goals and preferences for local waterways, combined with the science collected by ORC, and input from iwi, will guide how ORC proposes to manage water and land in each area.

The Upper Lakes Rohe Consultation survey was completed in early December 2021. ORC and Kāi Tahu will discuss a preferred approach to water and land management with the Upper Lakes Rohe in February 2022. Consultation for the Dunstan Rohe will run from March to December 2022.

4.3.2.1 OTAGO REGIONAL COUNCILS 'PLAN CHANGE 7'

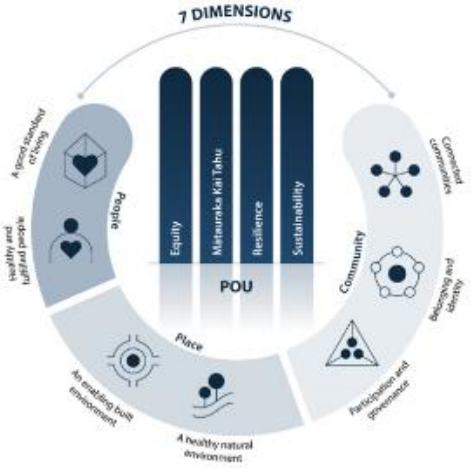
ORC proposed a plan change to the existing Regional Plan: Water for Otago to add a new chapter with objective, policies, and rules to provide an interim planning and consenting framework for the assessment of resource consent applications to renew deemed permits expiring in 2021, any other water permits expiring prior to 31 December 2025 and new water take permits.

The Water Permits Plan Change 7 (PPC7) is an interim approach to strengthen the plan's existing policy framework for water permits, in advance of completing the new LWRP. PPC7 provides for a consent duration of no more than six years and consents for a longer duration will only be granted where the adverse effects on the ecology and the hydrology of the surface water body (and any connected water body) are no more than minor.

Council's water take consent for Arrowtown expired in 2021 and was lodged before notification of

PPC7. Council initially requested a 35-year term of consent to provide security of supply to the Arrowtown community and to enable long term planning for the implementation of water saving measures. Council amended their application to reduce the consent term to 15 years to address the concerns of affected parties. ORC awarded the new Arrowtown water take consent with the same conditions as the renewed consent plus a modest increase to the annual water take volume. ORC's assessment of the water take consent application was that the effects of the increase in the annual take limit would be no more than minor. ORC also concluded that the proposed use of the water is efficient in terms of the provision of a community supply and QLDC is undertaking ongoing programmes to reduce waste and improve efficiency.

4.3.3. WELLBEING FRAMEWORK FOR OTAGO



Since the Vision Beyond 2050 and the Spatial Plan were developed, QLDC has worked with ORC and Councils across Otago to create a Wellbeing Framework for Otago. The Wellbeing Framework includes four cross cutting POU that underpin the seven dimensions of wellbeing in the Otago Wellbeing Framework. The four POU are not distinct dimensions of wellbeing but are principles or ways of looking at wellbeing that cut across the seven dimensions.

The Wellbeing Framework's seven dimensions have been adopted as the Community outcomes for the 2024-34 LTP and are what the Council wants to achieve for the Community.

Figure 23: Wellbeing Framework for Otago

4.4. LOCAL DRIVERS

QLDC has a number of strategic plans and frameworks that form part of the asset planning ecosystem, these should be read in conjunction with this AMP and can be found in summarised form in the SAMP. A summary of QLDC's Spatial Plan is also held in the SAMP. QLDC's entire Three Waters programme has been developed in response to these strategic priorities.

- Long Term Plan (LTP) | He Mahere Kahurutaka
- Vision Beyond 2050
- Spatial Plan | Whaiora
- Climate and Biodiversity Plan
- District Plan
- Code of Practice

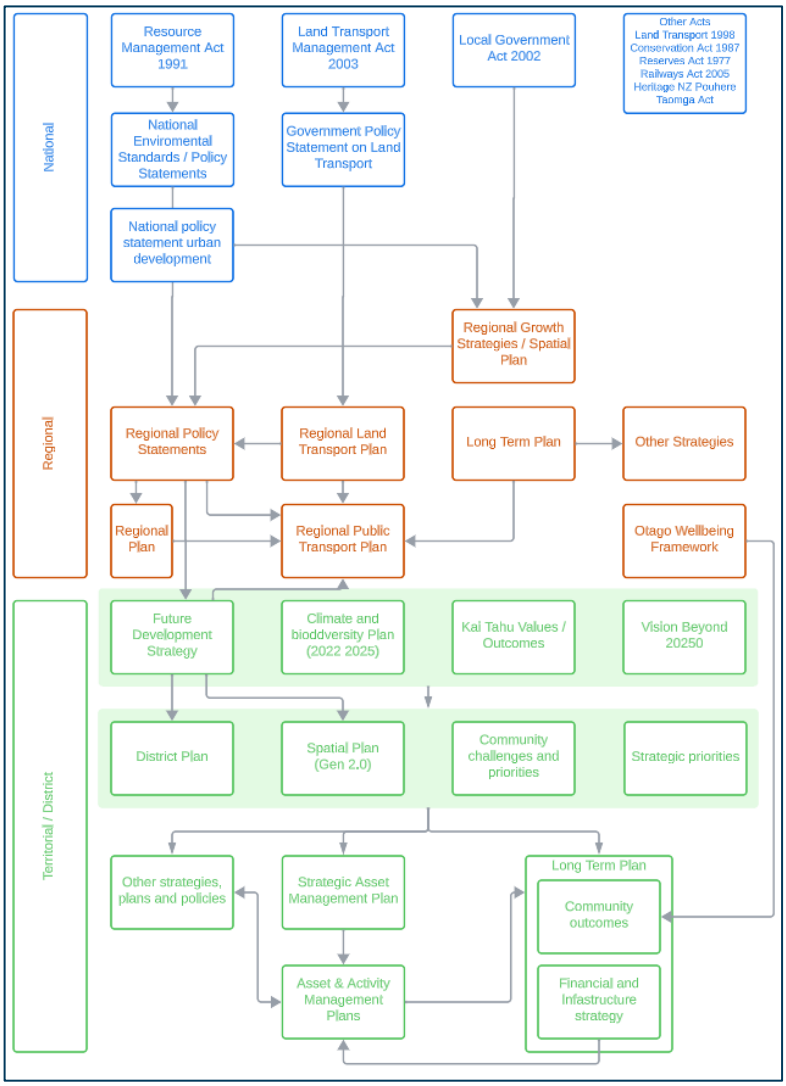


Figure 24: Planning Framework

4.4.1. QLDC STRATEGIC FRAMEWORK

Recently, an opportunity was identified to consolidate a number of frameworks and documents that are being used across QLDC into one that shows a shared vision, a set of outcomes and priorities that align across the organisation, and that are underpinned by a shared purpose, values and ways of working.

The resulting Strategic Framework will help everyone to understand QLDC's organisational vision, see a clear connection between the work we do and how we need to work as an organisation to deliver it, thus aligning our work and efforts towards a common end goal.

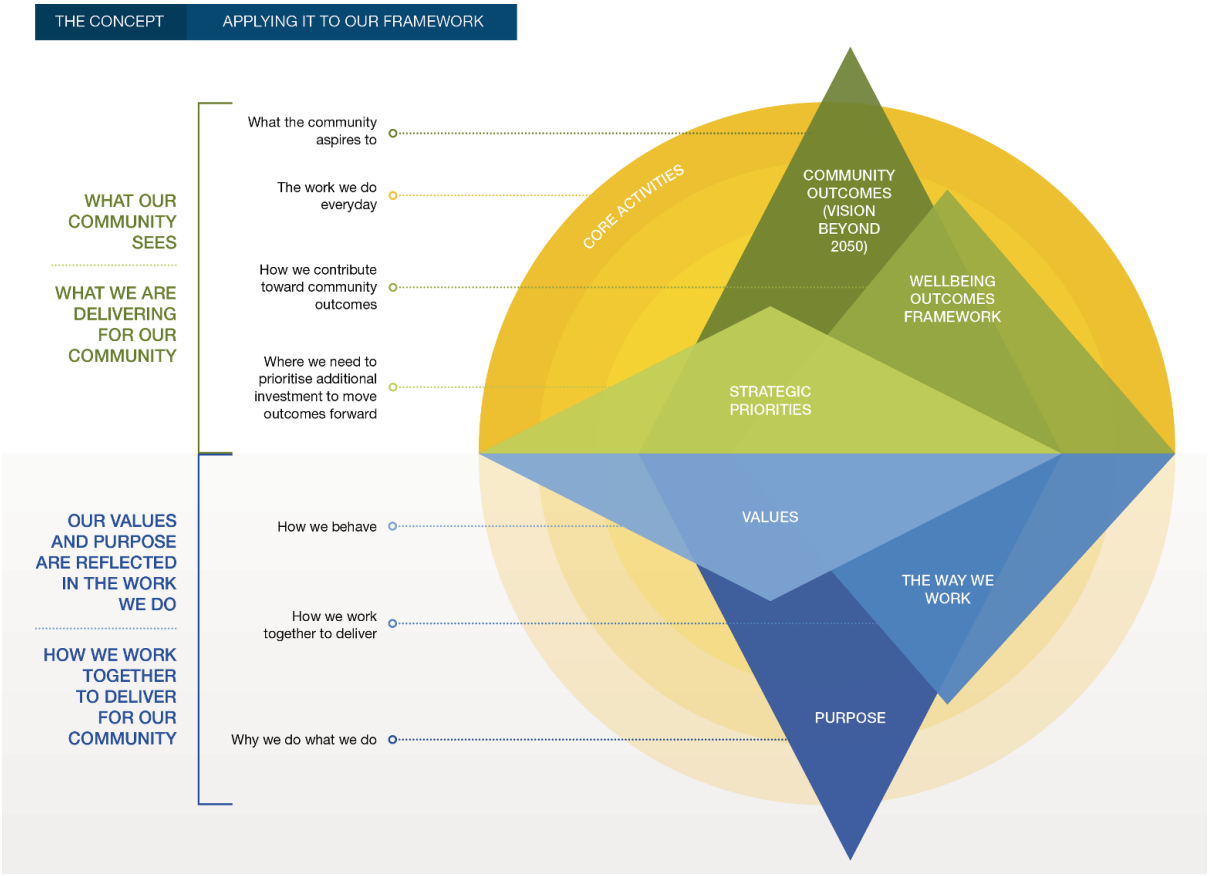


Figure 25: QLDC Strategic Concept

What the community sees

This part of the framework represents the work we deliver. It outlines how the community's aspirations and wellbeing drive what QLDC does, as well as those areas that need to be prioritised to address specific issues and make meaningful project towards outcomes.

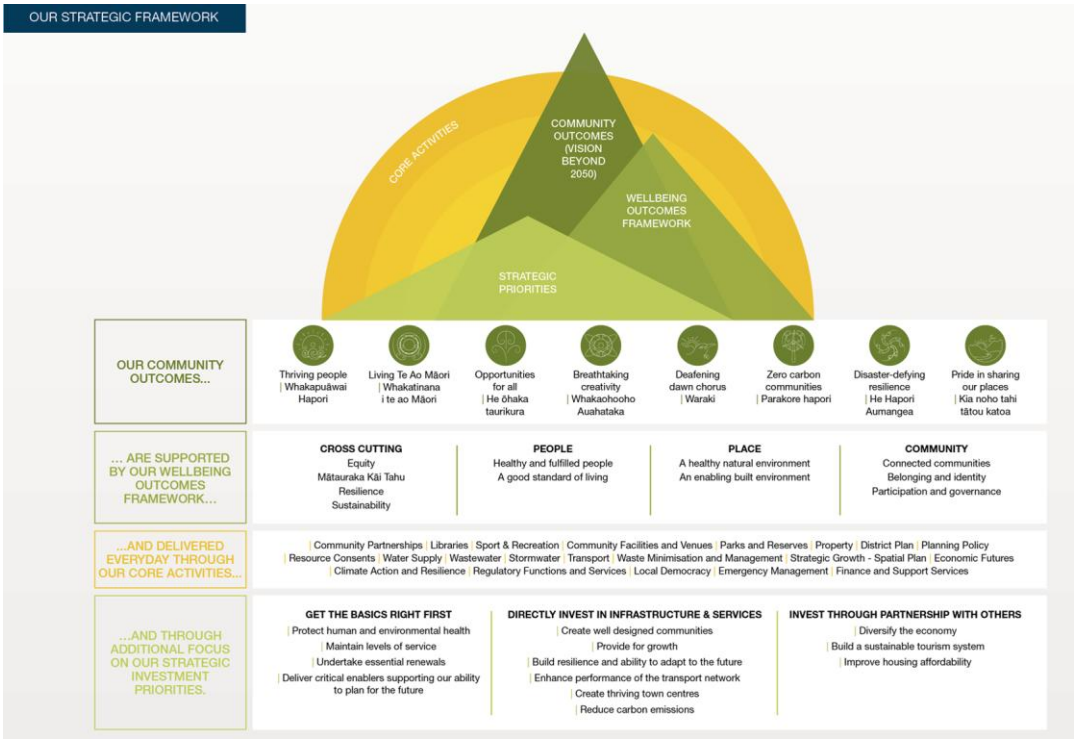


Figure 26: QLDC Strategic Framework

Community Outcomes Community outcomes were defined with the community, in Vision Beyond 2050, and reflect the community's aspirations for itself. These extend beyond the things that Council delivers and have been incorporated in many community-driven initiatives and strategies.

Wellbeing Outcomes Framework Community outcomes are supported by the wellbeing outcomes framework, which drives how Council contributes to wellbeing across the community. This provides a common set of outcomes to help us ensure all aspects of Council work are focussed on a shared understanding of community wellbeing. This is based on the Wellbeing Framework for Otago developed by Otago Regional Council in conjunction with Otago's district and city councils.

Strategic Priorities Strategic priorities are those areas that require specific investment or partnerships over the next ten years to make meaningful progress towards achieving outcomes. These do not cover everything Council does, rather they are those areas where additional focus and attention is required.

Strategic priorities are changeable over time and drive investment over the ten-year period of the Long Term Plan (short and medium term). The LTP capital programme has been built taking these priorities into account, including legislatively mandated responsibilities and the financial constraints that Council is under.

The values and purpose reflected in the work we do

This part of the framework represents what motivates our people, and the behaviours and values that drive how we work. How we work and behave reflects our commitment to enabling community aspirations.

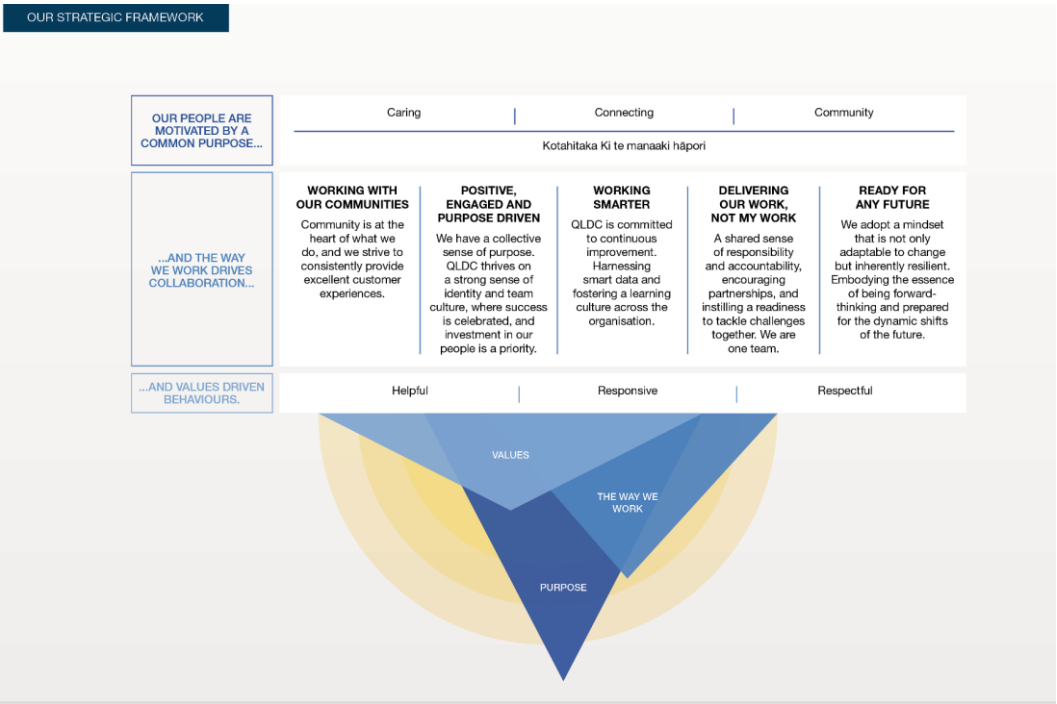


Figure 27: QLDC Strategic Framework

4.4.2. QLDC 30 YEAR INFRASTRUCTURE STRATEGY

The 30 Year Infrastructure Strategy (30IS) sets the strategic direction for the provision of infrastructure in the Queenstown Lakes District. The 30IS identifies significant infrastructure issues for the district over the next 30 years, the principal options for managing those issues, and the implications of those options. It draws together information from the Queenstown Lakes Spatial Plan 2021, national guidance, QLDC's Strategic Framework, Asset Management Plans, Master Plans, Long Term Plan, and other key strategic documents. It draws together information from the Queenstown Lakes Spatial Plan 2021, national guidance, QLDC's Strategic Framework, Asset Management Plans, Master Plans, Long Term Plan, and other key strategic documents.

Through the 30IS, a suite of infrastructure-specific objectives have been distilled to guide how investment in, and management of, Council's three waters, transport, and waste infrastructure gives effect to the Wellbeing Outcomes Framework component of the QLDC Strategic Framework. The cross-cutting principles of the Wellbeing Outcomes Framework – Equity, Matauraka Kai Tahu, Resilience, and Sustainability – are embedded within the objectives below that guide investment in infrastructure, and in QLDC's approach to planning, delivering, and operating assets and services.

Outcome area	QLDC Infrastructure Objectives
Healthy and fulfilled people	Provide infrastructure services that reliably protect people from harm Leverage investment in infrastructure to create opportunities for people to increase activity, recreation, and social connection
A good standard of living	Sustain timely infrastructure investment to support and strengthen the district's growing complex economy and associated employment opportunities Pursue efficiency, effectiveness, and funding opportunities that support the sustainability of infrastructure services
A healthy natural environment	Prevent contaminants associated with infrastructure services from entering the natural environment Reduce the impact of infrastructure on global emissions and resource extraction

	Identify and prioritise opportunities for environmental regeneration
An enabling built environment	Optimally sequence infrastructure interventions to maximise servicing capability for the district's growing population Enable access to essential services following a natural hazard event, and optimise the recovery of all services thereafter

There are some key external factors coming out of the 30IS that will directly impact our Three Waters network, these have been drawn out in detail in our strategic assessments.

This 30IS draws together information from national guidance, Council's strategic framework, QLDC's Spatial Plan, Asset Management Plans, Master Plans, Long Term Plan, and other key strategic documents.

The 30IS is a companion document.

4.4.3. INTEGRATED THREE WATERS BYLAW 2020

Council's Integrated Three Waters Bylaw 2020 commenced in July 2021 with a strengthened emphasis on water demand management when compared to Council's previous water supply bylaw 2015.

Seven of the 14 objectives of the Integrated Three Waters Bylaw are related to improving the stewardship and sustainable use of water. The seven objectives relevant to this WDMP are listed below:

1. Recognise the status of water and its various uses as part of Aotearoa New Zealand's natural, built, social and cultural environment.
2. Integrate Water Stewardship into community and business culture to protect the environment and improve the use of water resources within our district to the benefit of nature and downstream communities.
3. Consider the three waters – water supply, Stormwater and Wastewater, which includes Trade Waste – in an integrated and holistic manner that efficiently and effectively provides Water Services for the District in a manner sustainable for both Occupiers and the environment.
4. Encourage the community and business to adopt efficient and sustainable use of water supplied from Council's water supplies.
5. Provides a system for an equitable share of the Water Services costs.
6. Incorporate procedures that facilitate emergency and natural hazards management, and climate change mitigation and adaptation.
7. Recognise Te Mana o Te Wai (the first right to water under the National Policy Statement for Freshwater Management) in freshwater management.

The Integrated Three Waters Bylaw also widens the requirement for metering of water supply connections by stating that "an ordinary use of water may be metered" (the previous water supply bylaw 2015 also included the wording "but is not required to be metered"). The definition of ordinary use of water is "a category of On Demand Supply used solely for domestic purposes."

Clause B1 of the Integrated Three Waters Bylaw Administration Manual provides Council's position with respect to customer metering as described in the paragraph below.

Council is currently investigating the cost benefit of introducing universal water metering and potential volumetric pricing in the future. The introduction of District-wide water metering and charging is a significant undertaking, and the introduction of any form of widespread Customer metering and charging would only occur when the financial and other benefits from doing so can be clearly demonstrated and the approach has been adopted formally by Council. Due to the presence of the algae Lindavia intermedia in Lakes Whakatipu and Wānaka, customer meters are unlikely to function properly in the Queenstown and Wānaka networks until upgraded water treatment plants are constructed at both sites (current expected completion date 2024). A comprehensive project plan, risk assessment and a communication plan will be prepared in advance of any District-wide metering roll out.

Clause B7.3 of the Integrated Three Waters Bylaw relates to demand management and states "The Occupier must abide by the requirements of Council with respect to water demand management. When water supply restrictions apply, Council will take all practicable steps to ensure that an adequate supply for sanitary purposes is provided to each Point of Supply."

Clause B10.2 of the Integrated Three Waters Bylaw relates to meter installation and states that "Metering must be in accordance with the Council's Land Development and Subdivision Code of Practice."

Council's Land Development and Subdivision Code of Practice (LDSC) 2020 states that "All meters shall be in accordance with QLDC's water metering policy or as agreed in writing by QLDC's Asset Planning and Strategy and Asset Planning teams."

4.4.4. QLDC WATER METERING POLICY 2017

Council's current Water Metering Policy (2017) applies to all water meters installed as a requirement of its Land Development and Subdivision Code of Practice. The purpose of this policy is to establish a framework of principles to be applied to the management, use, functionality, and specification of water meters. The key principle of the metering policy is the requirement for individual water meters for each new or redeveloped unit to improve Council's understanding of the efficiency of water use and the water network performance.

All new or redeveloped residential and non-residential units, whether individually titled or not, must have individual water meters installed for each individually occupied unit or premises; unless the property is managed by a legal entity (i.e. body corporate) in which case a bulk meter at the boundary is acceptable.

The current 2017 Water Metering Policy (and the previous version 3 adopted in July 2015) requires the installation of AMR (automatic meter reading) technology under the first clause 'h' in Section 7 on Water Meter Specifications:

h. The installation of automatic meter reading (AMR) technology is required by QLDC, where the AMR enables the automatic collection of consumption, diagnostic, and status data from a water meter, transferring that data to a central QLDC approved database.

Appendix A of the policy includes a table of Accepted Meters for Water Supply, the first table is for mechanical meters and the second table is for remote meters (remote meters being defined earlier

under Section 5g “Where it is not practical to install all the meters within the road reserve (i.e. multiple dwellings of three levels or greater), QLDC may at its sole discretion, consent to remote water meters being installed within the property, where they are readily accessible for reading, maintenance or replacement”).

The acceptable remote meters in the table are a mix of AMR technology that use either a wireless mesh network (e.g. Inovonics) or the unlicensed radio spectrum (e.g. Itron) for data transfer.

Under QLDC’S Rating Structure for Water Supply, six of the 12 water supply schemes (Queenstown, Wānaka, Arrowtown, Arthurs Point, Glenorchy and Hāwea) have a two-tier rate approach for water rates. In 2018, the two-tier rate approach applied to Queenstown, Wānaka and Arrowtown only but Council proposed in the 2018 LTP to gradually shift the smaller schemes to the two tier flat water rate structure to reduce subsidisation by the smaller water consumers.

The current rating structure for these six schemes is a targeted flat rate per separately used or inhabited part of every connected rating unit (SUIP) plus a targeted differential water supply rate based on land use and the rateable capital value (cents per $ of capital value). The targeted flat rate per rating unit differs by scheme and the targeted differential rate differs by scheme and customer category (i.e. land use).

For example, a single-family dwelling in Queenstown with a rateable value of $1million will pay $464 in 2021/22 ($300 flat rate plus $164 differential rate based on $0.000164 X $1million). Glenorchy has the highest water supply rates. A single-family dwelling in Glenorchy with a rateable value of $1million will pay $917 in 2021/22 ($460 flat rate plus $457 differential rate based on $0.000457 X $1million). The water supply rates are higher for residential or country dwelling properties with a flat (e.g. AirBnB) as the number of SUIPs is increased on these properties by each additional inhabitable unit. The water supply rate increase for a residential visitor accommodation (see Glossary for definition) varies depending on the number of days per year that the accommodation is let to visitors.

Luggate and the two Lake Hayes schemes have a targeted water supply flat rate for each connected SUIP, and a half charge for each serviceable (but not connected) SUIP. The targeted flat rate for a connected SUIP in Luggate is $540 and $512 in the two Lake Hayes schemes. Properties in Luggate and Lake Hayes that have a dwelling plus a flat are charged the targeted rate multiplied by a factor of 1.5.

The current water rating structure provides little incentive for water conservation and efficiency of use, especially for extraordinary use properties in Luggate and Lake Hayes as they are charged the same rate for each SUIP. As stated in the Integrated Three Waters Bylaw, Council is currently investigating the cost benefit of introducing universal water metering and potential volumetric pricing in the future.

4.4.5. QLDC ACQUISITION AND VESTING OF PRIVATE 3 WATERS SCHEME POLICY 2021

Councils current Acquisition and Vesting of Private 3 Waters Scheme Policy sets out the material aspects that are to be agreed between Council and private scheme owners in the vesting and acquisitions of existing private schemes and informs applicants of the level of acceptance for new 3-water schemes for future vesting in Council.

This Policy applies to all existing private 3-waters networks including potable water supply, wastewater and storm water schemes in the Queenstown Lakes district that may be vested in or acquired by Council. This policy does not supersede the standard approach for vesting assets for a new

development as part of the subdivision process. However, the policy does provide guidance to newly constructed schemes that may initially remain in private ownership.

The applicability of the Policy to existing 3-waters schemes is to establish a baseline of expectations in the process for negotiations that sets out with fairness to 3-waters scheme owners and prudence to ratepayers in how the performance, condition, capacity and value will be considered.

Where private schemes cannot be avoided, private schemes operators are encouraged to design and implement in such a way that does not preclude vesting and acquisition in the future. Even insofar that is not the intention to ever vest in Council–this approach will reduce costs and need of rework if ever it is needed.

The Water Services Act now requires that all drinking water supplies comply with the drinking water standards within specific timeframes. The timeline for full compliance is:

- Registered water supplies – must comply immediately with the new provisions of the Water Services Act
- Unregistered water supplies - 4 years for the registration of currently unregistered supplies and up to 7 years before compliance is required with most obligations under the Act

Pursuant to the policy, a legal addendum was adopted to provide a guiding framework for representatives and agents of private scheme asset owners to follow in pursuing a proposal to vest assets into Council.

The Acquisition and Vesting of Private 3 Waters Scheme Policy 2021 and the associated Process Summary are companion documents.

4.4.6. QLDC ECONOMIC DIVERSIFICATION PLAN

QLDC have developed a QLDC Economic Diversification Plan It is important we seek to diversify our district's economy. A diversified range of businesses, jobs and exports spread across more industries will result in a community that is more able to withstand disruptions. Diversification will not only offer future options for our young people but will foster new career and income opportunities for everyone. There are a variety of local businesses and individuals already creating income streams outside of the norm, as well as formal and informal groups leading activities to build a more sustainable, diverse, and productive economy.

Figure 28: New pathways to a thriving

The Draft Economic Diversification Plan seeks to further support the diversification work already happening across the district, working towards the goal of '*a resilient and sustainable economy offering a diverse range of career and income opportunities by 2050'.*

NEW PATHWAYS TO A THRIVING FUTURE			
Goal	A resilient and sustainable economy offering a diverse range of career and income opportunities by 2050		
Keystone project	A World of Connections		
Strategic pillars	**PILLAR 1:** Creating conditions to enable economic diversification	**PILLAR 2:** Diversification in travel-reliant industries and growth of adjacent businesses	**PILLAR 3:** Growing niche industries for a diversified and resilient economy
Objectives	› Grow the skills and career opportunities of people so best-fit businesses and their workers can thrive. › Build the capability of businesses and niche industries to start, thrive and operate in a regenerative way. › Advocate for the business and household infrastructure to support economic diversification.	› Foster business opportunities that create solutions for the visitor industry. › Increase the scale and value of the Queenstown Lakes film and screen sector. › Support diversification by building skills relevant to best-fit businesses and offering training outside the region.	› Facilitate connection and collaboration between businesses to create synergies and scale. › Foster potential niche industries across Queenstown Lakes.
Projects	› Project 1: Think Again › Project 2: New Skills › Project 3: A World of Connections › Project 4: Launch and Grow Here › Project 5: Future-Focussed Infrastructure › Project 6: Innovate Here	› Project 7: Tourism and Hospitality Tech › Project 8: Diversified Visitor Economy › Project 9: Grow Screen › Project 10: Film Here › Project 11: Learn Queenstown Lakes	› Project 12: Advanced Manufacturing / Outdoor Economy › Project 13: Food Queenstown Lakes › Project 14: Conservation and Biodiversity Sectors › Project 15: Queenstown Lakes Tech
	Foundations for Success		
	Objectives › Establish prioritisation, reporting, and accountability. › Create ways of working alongside Māori to support diversification. › Evolve the place branding to encompass economic diversification opportunities. › Develop capacity to support delivery of the plan. › Explore funding opportunities to support the delivery of diversification projects.	**Projects** › Foundational Project 1: Economic Diversification Oversight › Foundational Project 2: Support Māori Economic Diversification › Foundational Project 3: Queenstown Lakes 2.0 › Foundational Project 4: Capacity Build › Foundational Project 5: Invest in Queenstown Lakes	

Table 1: Draft Diversification Plan - 'on a page'

4.4.7. QLDC URBAN BOUNDARIES

"Urban environment" is defined in the National Policy Statement - Urban Development as:

"*Means an area of land containing, or intended to contain, a concentrated settlement of 10,000 people or more and any associated business land, irrespective of local authority or statistical boundaries*".

In Council's view, there are two 'urban environments' in the district that are made up of the following sub-areas:

Queenstown Urban Environment: Sunshine Bay, Queenstown Bay, Queenstown Hill, Frankton, Frankton East, Arthurs Point, Kelvin Heights, Lake Hayes South, Arrowtown, Hanley's Farm and Jacks Point; and

Wānaka Urban Environment: Wānaka, Albert Town, Luggate and Hāwea.

In the Whakatipu Basin the pattern of urban settlement is dominated by large mountains, lakes and rivers with significant landscape values, making it complex to apply the NPS-UD. Although not a 'concentrated settlement' in the phrase's ordinary dictionary meaning, the urban environment of Queenstown is grouped around and interrupted by these natural features. Council considers that the most practical approach to the anomaly presented by how Queenstown has developed in its particular physical geography and landscape, is to treat the collection of areas that together function as a single urban environment as a 'concentrated settlement' for the purposes of the NPS-UD definition of 'urban environment'. This includes Arrowtown given its location within the Whakatipu Basin and that practically it functions as part of this same Queenstown 'urban environment'. This urban environment

falls within the extent of the Queenstown-Whakatipu and Arrowtown Wards (SNZ), which are collectively referred to as the Whakatipu Ward for this report.

To a lesser extent compared to Queenstown, the pattern of urban settlement in the Upper Clutha Basin is also dominated by large mountains, lakes and rivers, again making the application of the NPS-UDC to the local geography, difficult. The urban area at the southern extent of Lake Hāwea and in Luggate function as part of Wānaka, and in the Council's view form part of the Wānaka urban environment. However, Makarora does not function as part of Wānaka and is excluded.

The above approach helps define the urban environment for the purpose of the Housing Business Capacity Assessment (HBCA). The first principal for defining the urban environment was the land within the Urban Growth Boundaries (UGB) defined in the PDP. Zones outside these boundaries were then included on the basis of their economic and social relationships with the UGB areas; whether they contained urban-like densities; their proximity to existing urban areas; or levels of existing or planned servicing. These zones include the non-rural zones in Hāwea (but excluding Hāwea Flat), Luggate and also the Low Density Residential (LDR) zone adjacent to Lake Hayes.[3]

The geographic scope of the detailed modelling and analysis of business demand and capacity in QLD, identified in this report, is limited to this urban environment[4.] Other areas that have not been modelled but are reported on at a high-level in terms of business land capacity, include the Kingston and Glenorchy Township Zones, Kingston Special Zones within the Operative District Plan, Cardrona' s Operative and Special Zone and commercial capacities within the approved Special Housing Areas (SHAs): Bridesdale, Queenstown Country Club and Arrowtown Retirement Village. These are discussed further in sections 2.4 and 2.5. Council acknowledges although not technically falling within the definition of "urban environment" these areas have a zoning which is anticipated to result in development of an urban nature.

[3] A ruling of the Environment Court has extended Lake Hāwea's Urban Growth Boundary significantly to the south of the established township. The new UGB is not shown in the supporting image.

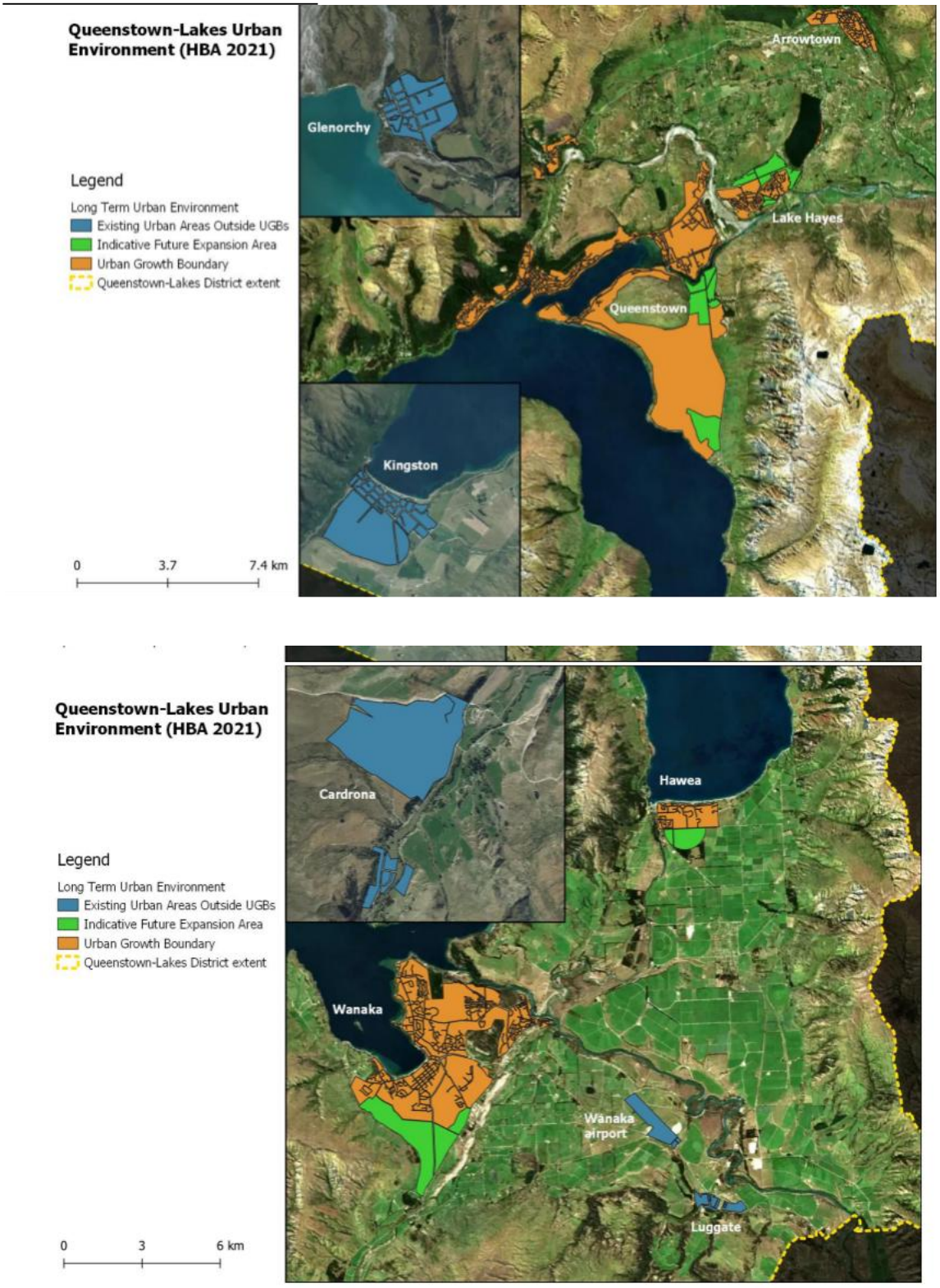


Figure 29: QLDC NPS-UD Urban Environment Study Area - 2020 Housing Development Capacity Report

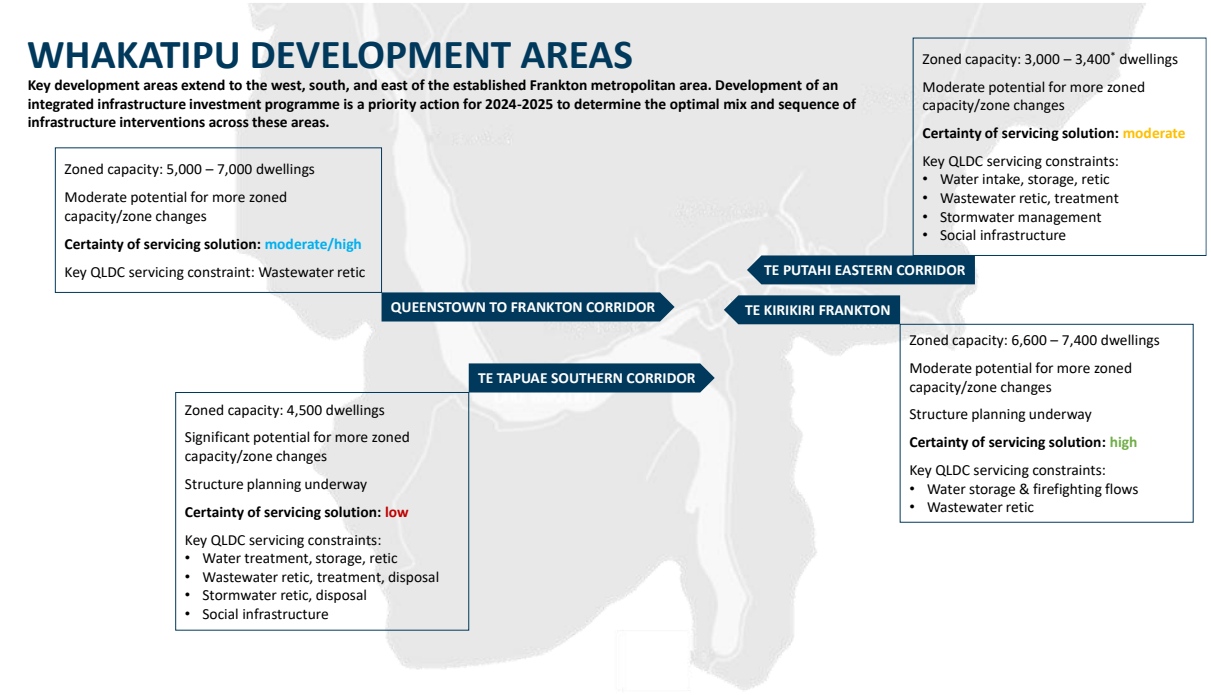
Capacity outside of the urban environment has not been modelled in any detail but is discussed at a high level.

4.4.8. QLDC DEVELOPMENT AREAS

The charts below provide the latest view of key development areas with associated information about capacities, servicing constraints, and status of servicing solution.

WHAKATIPU DEVELOPMENT AREAS

Key development areas extend to the west, south, and east of the established Frankton metropolitan area. Development of an integrated infrastructure investment programme is a priority action for 2024-2025 to determine the optimal mix and sequence of infrastructure interventions across these areas.



UPPER CLUTHA DEVELOPMENT AREAS

Key development areas within the Upper Clutha span the central, western, and southern areas of Wānaka, as well as the emerging development area of Hāwea (following an extension to the Urban Growth Boundary). QLDC's structure planning programme will determine a high-level, integrated infrastructure servicing approach, following which a detailed integrated infrastructure investment programmes will be developed.

4.5. IMPROVEMENT ACTIONS – STRATEGIC DIRECTION

Improvement Actions – Strategic Direction

1. Continue to develop the new 2024 QLDC Strategic Framework into infrastructure planning.
2. Continuously monitor RMA and Three Waters Reform legislation for changes and review internal systems/documentation where required.
3. Update Water Metering Policy.
4. Add a more comprehensive discussion around the impacts of QAR. These are far more onerous and broader, compared with the under the previous DWS. This has required (and continues to require) resourcing and investment by QLDC to work towards achieving.
5. Update Strategic Drivers sections to ensure they talk to specific impact for three waters.

5. STRATEGIC ASSESSMENT

STRATEGIC CASE

The Strategic Case evaluates the broader issues, objectives and priorities related to our three waters infrastructure. It considers the consequences, responses and benefits of addressing these.

Section 0, 5, 6 form the Strategic Case

5.1. KEY STRATEGIC ISSUES AND RESPONSES

The district's attractive scenery and climate, clean environment, outdoor lifestyle, strong economic performance and opportunities, and national and international connectivity makes the area a highly desirable place to live and visit. This attractiveness also comes with challenges; the 30 Year Infrastructure Strategy distils these challenges into the following five significant issues for QLDC's infrastructure:

- Rapid and sustained population growth
- Increased and increasing standards
- Resilience to shock events
- Climate emergency
- Historic infrastructure deficit

The strategic assessments to follow focus on how the five key issues in the 30YIS directly impact our Three Waters networks. The intent is to capture the problems, benefits, consequences as well as our strategic responses and programmes to these issues.

5.1.1. RAPID AND SUSTAINED DEMAND GROWTH

Understanding growth is a key challenge for QLDC; fluctuations, whether increases or declines impacts on many parts of QLDC's assets and activities. Demand drives a huge number of our responses and programmes, many of which were developed to address gaps in level of service arising from our recent rapid growth. The key strategic response for QLDC is monitoring and understand demand and usage of our assets and being agile to the impacts.

RAPID AND SUSTAINED DEMAND GROWTH
Strategic Response • Organisational co-ordination • Prioritising high growth area infrastructure upgrades • Optimising operational efficiency • Leveraging technology for smart water management • Fostering collaboration with local communities • Engaging in transparent communication about reforms • Actively participating in regulatory compliance to ensure a sustainable and resilient water service delivery system.
Benefits of Addressing • **Improved infrastructure** – upgrading water infrastructure enhances systems reliability, reduces leaks and ensures efficient service delivery, contributing to long term sustainability. • **Operational efficiency** – optimising operations through technology and efficient practices leads to cost savings and more effective resource utilisation. • **Community engagement** – building positive relationships with communities fosters trust, encourages public support for reforms and provides valuable insights for better decision making. • **Environmental sustainability** – adhering to environmental standards and sustainable practices safeguards natural resources, supporting long term health. • **Resilience** – strategic responses help build resilience against challenges like climate change, population growth and unforeseen disruptions, ensuring continuity in water service provision. • **Regulatory compliance** – staying compliant with regulations promotes legal adherence, mitigates risks, and enhances Councils credibility and reputation. • **Innovation and technology** – embracing technology and innovation can lead to more efficient monitoring, data driven decision making and overall improvement in water management services. • **Financial stability** – a well-planned approach to growth ensures financial sustainability, attracting potential investors and securing funding for necessary initiatives.

RAPID AND SUSTAINED POPULATION GROWTH		
	Consequence	**Programme Response**
Population Growth	• Inability to meet demand and compliance appropriate	• Improve strategic planning • Closely monitor population projections
Visitor Growth	• Building for peak demand is expensive	• Demand management strategies

RAPID AND SUSTAINED POPULATION GROWTH		
	Consequence	**Programme Response**
Construction Growth	• demand places considerable price pressure on the market and an ongoing demand for additional supply of both land and housing • Lead times to consent and build treatment and disposal. •	• Awareness of affordability constraints influences optioneering
Land Use Change & Urbanisation	• Wastewater provision is a constraint/enabler for growth	• Closely monitor growth and work across organisation to coordinate – through Spatial Plan.

5.1.2. RESILIENCE TO SHOCK EVENTS

Resilience covers a number of activities, from societal and economic resilience down to resilience in our network infrastructure. The post COVID-19 economic situation highlighted the vulnerability of the economy in our district, although a previously known risk; the reality of COVID-19 has caused the district to make significant changes and strategies. QLDC has moved to drive Community led initiatives for a more resilient economy. Understanding risks and planning and adapting to future scenarios.

RESILIENCE TO SHOCKS EVENTS
Strategic Response • Adherence and delivery of the Climate & Biodiversity Plan and Emissions Masterplan • Infrastructure upgrades – invest in robust infrastructure improvements to withstand extreme weather events, ensuring the continued functionality of water supply, wastewater, and stormwater systems. • Climate resilient design – incorporate climate resilient design principles in infrastructure projects to adapt to changing climate conditions, such as increased precipitation, drought, and wind. • Integrated planning – adopt an integrated approach to planning that considers the interconnections between water supply, wastewater, and stormwater systems, allowing for a holistic and coordinated response to climate challenges. • Smart technology implementation – utilise smart technologies for real-time monitoring and data analysis, enable proactive responses to changing conditions and optimising the efficiency of the water management systems. • Diversification of water sources – explore and implement diversified water sources to reduce reliance on a single source, enhancing resilience against water scarcity, contamination, and supply disruptions. • Community engagement and education – engage with communities to raise awareness about climate related challenges and educate residents on water conservation practices, fostering a sense of shared responsibility. • Emergency response planning – develop comprehensive emergency response plans that address potential disruptions to water supply, wastewater treatment and stormwater management, ensuring swift and effective actions during crises. • Green infrastructure integration – incorporate green infrastructure solutions, such as permeable pavements, green roofs and natural drainage systems to manage stormwater,

reduce flooding and enhance overall climate resilience.

- Policy development and compliance – establish and enforce policies that align with climate resilience goals, ensuring regulatory compliance and creating a framework for proactive adaptation measures.
- Collaboration and stakeholders – foster collaboration with other councils, environmental organisations, and other stakeholders to share expertise, resources and knowledge, enhancing collective resilience efforts.

Benefits of Addressing

- **Continuity of Service** - robust infrastructure upgrades and integrated planning ensure the continued provision of water supply, wastewater, and stormwater services during and after extreme weather events, minimizing disruptions.
- **Risk Mitigation** - proactive measures, such as climate-resilient design and emergency response planning, help mitigate risks associated with climate change, reducing the potential impact of water supply and management disruptions.
- **Operational Efficiency** - smart technology implementation and real-time monitoring optimize operational efficiency, allowing for timely responses to changing conditions and improving overall system performance.
- **Resource Conservation** - diversifying water sources and implementing green infrastructure contribute to resource conservation, reducing the environmental impact and promoting sustainable water management practices.
- **Community well-being** - community engagement and education foster a sense of shared responsibility, enhancing public awareness of climate-related challenges and promoting water conservation practices for the well-being of local communities.
- **Environmental Protection** - green infrastructure integration helps protect ecosystems, mitigate flooding, and reduce water pollution, contributing to overall environmental health and biodiversity.
- **Adaptability** - integrated planning and collaboration with stakeholders foster adaptability, allowing the water management system to evolve in response to changing climate conditions and emerging challenges.
- **Regulatory Compliance** - establishing and enforcing policies aligned with climate resilience goals ensures regulatory compliance, enhancing the credibility of the organization and its commitment to sustainable water management.
- **Community Trust** - demonstrating a commitment to resilience and adaptation builds public trust, garnering support for the organization's efforts and reinforcing its role as a responsible steward of water resources.
- **Cost Savings** - while initial investments may be required, the long-term benefits include potential cost savings through efficient operations, reduced emergency response expenditures, and minimized damage to infrastructure.

RESILIENCE TO SHOCK EVENTS		
	Consequence	**Programme Response**
CLIMATE CHANGE Projected increases in frequency and size of weather events, daytime temperatures, increased wind and decreases in snow days.	• Additional costs required to mitigate impacts, such as improving/ protecting critical infrastructure or increased maintenance costs. • Quicken the set-in speed and intensity of droughts. • Increased likelihood of landslides and flooding which may increase the potential for greater damage to assts. • Stretch the capacity of storm water infrastructure. • Increased variability in river flows and lake levels. Lake level and valleys prone to flooding and alluvial re-direction i.e. Kinloch. • Increased overflows into storm water and road drainage systems • A reduction in the volume of water from snowmelt being available through the spring melt season.	• Adaptations and mitigations Into Land Development & Subdivision Code of Practice and all design -such as allowing for more stormwater capacity. • Monitoring and modelling of risks • Increased cleaning and maintenance of drainage infrastructure, focus on high-risk assets. • Emergency management awareness • Increased monitoring of assets • Better understanding of stormwater catchments and risk
NATURAL HAZARDS, PANDEMICS Natural hazards impact on networks	• Pressure on existing infrastructure • Vulnerability of pipes in key areas	• Develop resilience, criticality for prioritisation. • Monitor known risks and weakness' • Develop Incident Management Plans
ECONOMY RELIANT ON TOURISM Heavy reliance on tourist economy (over 60% population directly / indirectly	• More exposed to the economic fallout from pandemics / border closures such as COVID-19 than the rest of New Zealand.	• Diversification initiatives such as Destination Management Plans and 'Diversifying the Queenstown Lakes District economy'.

5.1.3. CLIMATE EMERGENCY

Climate change is the biggest environmental challenge of our time. It affects our communities, businesses, native ecosystems, infrastructure, health, and biosecurity, and if left unchecked, will have broad and ongoing implications for all New Zealand. The most recent Intergovernmental Panel on Climate Change (IPCC) special report SR15 (2018) confirms we must target 1.5°C with 'no or limited overshoot', and underscores the need for urgent and transformative climate action as climate impacts increase in scale, frequency, and intensity. The Climate Change Response (Zero Carbon) Act 2019 was recently adopted in New Zealand. The purpose of this Act is to provide a framework by which New Zealand can develop and implement clear and stable climate change policies that limit the global average temperature increase to 1.5°C. The Climate Change Commission (CCC) was also established and has the role of providing the government with independent advice from experts on achieving targets set in the Zero Carbon Act, as well as monitoring them. QLDC have declared a Climate Emergency and developed a Climate & Biodiversity Plan in response.

There have been various changes to climate change policy and legislation over the past three years, with more to come. The Climate Change Response (Zero Carbon) Amendment Act 2019 enacted several key changes including establishing a Climate Commission and national emissions budgets and directing the development of New Zealand's first National Risk Assessment and National Adaptation Plan, all of which provide guidance and direction for local infrastructure provision.

CLIMATE EMERGENCY

Strategic Response

- Climate emergency declared – Climate and Biodiversity Plan Adopted.
- QLDC to integrate carbon reduction into all decisions regarding infrastructure, exploring / understanding / futureproofing through the Business Case.
- Update QLDC Land Development & Subdivision Code of Practice to meet new requirements.
- Implement carbon accounting framework.
- Increased monitoring of at-risk assets.
- Engage in advocacy for supportive policies at local, regional, and national levels, advocating for climate friendly regulations and measures.
- Develop strategies to adapt water infrastructure and management practices to the changing climate, considering factors like altered precipitation patterns and extreme weather events.
- Implement resilience measures to mitigate the impacts of climate change, such as improving infrastructure durability, securing water sources, and enhancing emergency response capabilities.
- Promote and implement water conservation initiatives to address potential changes in water availability and demand, encouraging sustainable water use practices.
- Adopt an integrated approach to water resource management, considering the interconnectedness of water systems and ecosystems to ensure holistic climate resilience.
- Invest in green infrastructure solutions, such as sustainable drainage systems and natural water retention areas, to manage stormwater and reduce the impact of extreme weather events.
- Develop and implement policies that align with climate change goals, addressing issues like changing precipitation patterns and temperature variations in the planning and management of water resources.
- Educate communities about impacts of climate change on water resources and involve them in sustainable practices, fostering a sense of shared responsibility for climate-resilient water management.

CLIMATE EMERGENCY
• Utilise advanced data monitoring and modelling techniques to predict and understand the effects of climate change on water systems, aiding in informed decision making.

Benefits of Addressing

- **Resilience** – enhancing infrastructure and implementing resilience measures increases the system's ability to withstand and recover from the impacts of climate related events, ensuring continuous water service provision.
- **Sustainability** – embracing water conservation initiatives and green infrastructure supports sustainable water management, preserving resources for future generations and minimising environmental impact.
- **Adaptability** – climate responsive policies and adaptation planning allow for flexibility in managing water resources, accommodating shifts in precipitation patterns and other climate related changes.
- **Community wellbeing** – educating an engaging community in sustainable practices fosters a sense of shared responsibility and promotes overall community wellbeing, especially during extreme weather events.
- **Reduced risk** – proactive measures help mitigate risks associated with climate change, reducing the likelihood and severity of disruptions to water supply and wastewater systems.
- **Environmental protection** – green infrastructure and integrated water resource management contribute to the protection of ecosystems, maintaining biodiversity and mitigating the environmental impacts of water management activities.
- **Operational efficiency** – implementing advanced monitoring and modelling techniques enhances data driven decision making, optimising operational efficiency and resource allocation.
- **Policy alignment** – aligning policies with climate change goals ensures regulatory compliance, enhances credibility, and positions the Council as a responsible steward of water resources.
- **Public trust** – demonstrating a commitment to addressing climate change instils public trust, garnering support for reforms and creating a positive perception of the council's dedication to environmental and community wellbeing.

CLIMATE EMERGENCY		
	Consequence	**Programme Response**
Action to Reduce Emissions	• Understand power usage • Monitor carbon generated through networks	• Tactically mange network to reduce carbon emissions
Protect and promote biodiversity	• Additional planning and cost for structures replacement	• Structures over waterways must enable fish migrations
The targets for waste diversion that are set within the Waste Minimisation Strategy are not met	• Increasing the value of carbon credits due.	• Carbon credits will be effectively managed in accordance with the Emissions Trading Scheme. Carbon accounting under way

5.1.4. INCREASED AND INCREASING STANDARDS

Uncertainty and change caused by central government reform and other settings such as immigration and health service decisions. The uncertainty stemming from reforms can influence the overall direction and effectiveness of three waters initiatives.

INCREASED AND INCREASING STANDARDS AND EXPECTATIONS
Strategic Response • Introduction of a QLDC Reform Manager to keep oversight of change. • Close monitoring of a changing Regulatory environment • Engagement and advocacy – this will be crucial from our elected members, involving themselves in policy discussions, providing insights and influencing decisions to align with local direction. • Flexible planning – programme to adopt for flexible 'Adaptive' planning approaches, allowing for adjustments based on policies or funding priorities. • Scenario planning – considering multiple potential outcomes of reforms, to enable us to develop strategies that are adaptable to different policy directions.
Benefits of Addressing • **Improved efficiency** – reforms may streamline processes, reducing bureaucratic hurdles and enhancing overall efficiency of infrastructure systems. • **Reforms** - often encourage collaboration between local, regional, and central government agencies and community stakeholders, fostering a more integrated and cohesive three waters network.

INCREASED AND INCREASING STANDARDS AND EXPECTATIONS		
	Consequence	**Programme Response**
3WATERS REFORM	• 3Waters reform may impact debt headroom which leads to uncertainty around available finances for infrastructure programmes • Increased Regulation increasing levels of service required and priorities of sequencing of upgrades	• Alignment of data with stormwater • Delayed investment
RMA Reform	• Changes to consenting processes	• Monitor changes

5.1.5. INFRASTRUCTURE DEFICIT

The challenges outlined above and corresponding strategic responses require us to do more, but our ability to do more has been, and will continue to be, constrained by a range of factors. This is consistent with Te Waihanga's view that there is currently a large infrastructure deficit across New Zealand that cannot be resolved with built solutions alone.

INFRASTRUCTURE DEFICIT
Strategic Response • Engagement with other government agencies and suppliers (visibility and informative of road map of projects) to potentially pool resources, share expertise and enhance project feasibility. • Develop and implement strategic plans that prioritise projects based on available resources, focusing on critical initiatives that align with overall goals. • Investing in innovative technology solutions to optimise, improve efficiency and reduce costs. • Explore innovative financing solutions to secure additional resources.

• Workforce development initiatives and strategic planning to address skill gaps. • Prioritise sustainable and cost-effective design and construction practices to maximise the longevity and efficiency of three waters infrastructure within budgetary constraints. • Implementing water conservation measures and exploring alternative water resources
Benefits of Addressing • **Efficient infrastructure** - can lead to cost savings and reduced environmental impact. • **Water conservation measures** - contribute to sustainable resource use and ecosystem preservation. • **Exploring alternative sources** - ensures resilience in the face of changing conditions. • **Investing in innovative technologies** - can enhance system performance and reliability. • **Collaboration and community engagement** - foster trust and inclusive decision-making • **Ongoing monitoring** - allows for adaptive management, ensuring the long-term viability of wastewater, water supply, and stormwater systems while promoting environmental stewardship and community well-being.

INFRASTRUCTURE DEFICIT		
	Consequence	**Programme Response**
AFFORDABILITY & DOABILITY Huge potential programme of works, but constrained finances.	• Continued delays in delivering proposed programmes, affecting timelines and delivery schedules. • Pressure on struggling communities. • May necessitate a reassessment of project priorities with some initiative postponed or scaled down in favour of more financially viable option	• Weight low-cost solutions • Challenge the actual need and solutions for projects. • Consider non-infrastructure programmes such as demand management. • Council reviews its budget annually in the Ten-Year Plan/Annual Plan process, may adjust work programmes & budgets to smooth any fluctuations in the Ten Year Plan revaluation amounts.
The alpine terrain, extent of Natural Landscapes and Features protections as well as open space limit urban development and increase risk	• High cost to connect centralised systems • High vulnerability in hazard prone areas	• Develop criticality and resilience plans. • Centralised systems where appropriate. • Consider best cost options for communities
LOCATION & SUPPLY CHAIN The terrain and remoteness add challenges to infrastructure investment and delivery.	• Higher cost, fewer tenderers • Haulage and transport costs increased	• Smart buyers and procurement approaches • Close engagement with supply chain
WORKFORCE Workforce shortage impact market capacity to deliver infrastructure projects on time	• Vulnerability of workforce • Higher cost to entice. • Lower skilled workforce	• Diversification initiatives in place • Close engagement with supply chain

5.2. IMPROVEMENT ACTIONS – STRATEGIC ASSESSMENT

Improvement Actions – Strategic Assessment

1. Work with corporate Strategy Directive to align with changes to strategic framework
2. Respond to a QLDC Property & Infrastructure reorganisation
3. Further development in these strategic assessments is required, as they were a late addition to this 2024 May version of the AMP
4. Utilise monitoring programmes to quantify assessments where possible

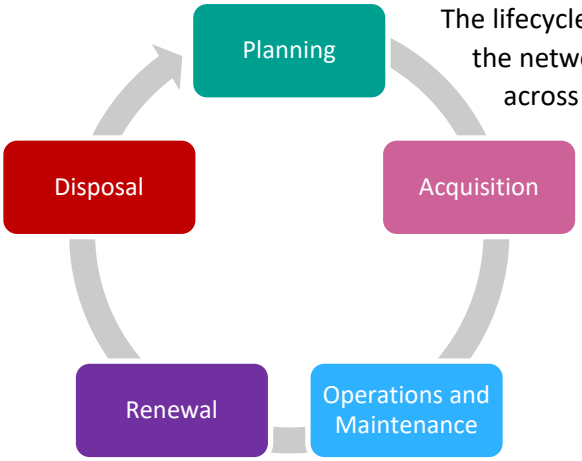
6. ASSETS AND ACTIVITIES – LIFECYCLE MANAGEMENT

PROGRAMME BUSINES CASE

The Programme Business Case section covers the portfolio of three waters assets and activities, including the strategies and lifecycle management applied by QLDC.

Sections 0 & 0 form the Programme Business Case

Lifecycle asset management is about considering all activity management options and strategies to deliver the agreed level of service and to inform decision-making for asset renewal, replacement, upgrades and disposal. With a move to activity management rather than just asset management this now includes focusing on the outcomes and benefits achieved through this planning. Effective lifecycle planning is about making the right investment at the right time to ensure that the asset delivers the desired level of service over its full-expected life, at the minimum total cost.



The lifecycle management plans detail how the Council plans to manage the network of assets and key activities at the agreed levels of service across the asset lifecycle shown below.

Figure 30: Asset Lifecycle

6.1. ASSET ACQUISITION

New assets may be acquired by Council as part of a Council Capital works project, subdivision or land development, or as part of a third party such as Waka Kotahi. These create new assets that did not previously exist or works which upgrade or improve an existing asset beyond its existing capacity.

Some of the Council projects are supported with external funding, through Central Government initiatives such as the Housing Infrastructure Fund, the Infrastructure Acceleration Funds, or Tourism Infrastructure Fund. Others are undertaken by other Council departments such as Parks and Reserves or the roading team.

As directed by the QLDC Acquisition and Vesting of Private 3 Waters Scheme Policy, schemes acquired by Council will require a special consultative procedure under the following conditions:

- The scheme supplies more than 100 people and / or has a gross replacement value of $1.0m or more
- Or, is deemed significant by the Chief Engineer as specified Council's Significance and Engagement Policy Feb 2021

Acquisitions below these thresholds will still require public consultation before formal approval through the annual planning or long-term planning consultative process.

Asset Aquisition		
Subdivisions and Developments	Council Capital Works Projects	Third Party e.g. Central Gov.

Table 2: Asset Acquisition

6.1.1. CAPITAL PROJECTS

A large proportion of QLDC's asset acquisition is made up from the Capital Improvement Programme. These projects are informed from a wide variety of planning, political and community engagement processes, including:

- Master Planning and Strategies
- Annual plan submissions
- Community Associations
- Subdivision standards
- Political projects
- Engagement with other relevant Council departments over needs
- Asset network assessments

6.1.2. VESTED ASSETS

A large number of assets are acquired from land and subdivision development and Council has seen a significant growth in assets over the last ten years.

Private water, wastewater and stormwater schemes are commonplace in New Zealand however with legislative change and greater regulation of non-compliance, many private schemes may require increased investment and more thorough management to comply.

There is a likelihood that many of the private 3-waters schemes may not have the capacity or capability to comply, leading to an increased risk to public health. Some may choose to divest schemes into Council's control to reduce their health and safety risks and/or to avoid the increasing operational costs and liabilities under the new regulatory framework.

QLDC has an adopted Acquisition and Vesting of Private 3-waters Scheme Policy, the purpose of which is to;

- Foremost, minimise the public health risks to the community from 'non-compliant' 3-waters schemes

- Secondly, minimise financial prejudice to the Council and indirectly, ratepayers from the transfer of privately owned assets by establishing guidelines for assessing requests to transfer assets to the Council by balancing equity, fairness and administrative efficacy for existing ratepayers and prospective ratepayers

As directed by the QLDC Acquisition and Vesting of Private 3 Waters Scheme Policy, schemes to be vested in Council will typically not require a special consultative procedure unless deemed significant by the Chief Engineer as specified by Council's Significance and Engagement Policy Feb 2021. Before formal approval of the vesting of 3W assets, consultation through the annual planning or long term planning process will be necessary if:

- The scheme supplies more than 100 people and / or has a gross replacement value of $1.0m or more
- Or, is deemed significant by the Chief Engineer as specified Council's Significance and Engagement Policy Feb 2021

6.2. OUR THREE WATERS NETWORK

As a custodian of our district and its pristine and nationally treasured landscape, we aim to provide access to safe and reliable water supplies, waste disposal, and flood protection systems that protect health and ecosystems. These are critical lifelines that support the social and economic wellbeing in our district.

Each network is covered below in detail.

6.2.1. OVERVIEW OF ASSET STATISTICS

QLDC maintains assets across the Three Waters networks, a summary of which can be found below in the table below. A programme of asset data improvements and updates is constantly being undertaken to improve the network understanding and to ensure the collection of quality data for new assets generated by the rapid growth in the district.

Activity	Asset Type	Units	Total
Water	Mains	km	642
	Mains Average Age	Years	26
	Demand Units	Units	26,607
	Water Production	m^3/Year	11,901,168
	Treatment Plants	No	14
	Treated Water Reservoirs	No.	31
	Raw water Reservoir	No.	1
	Pump Stations	No	35
Wastewater	Mains	km	516
	Mains Average Age	Years	28.5
	Demand Units	Units	26,107
	Wastewater Generation	m^3/Year	5,277,230
	Treatment Plants	No	14
	Pump Stations	No	74
Stormwater	Mains/Culverts	km	465
	Mains Average Age	Years	29.5
	Pump Stations	No	0

Table 3: Asset Details as of 30 June 2023

Asset Group	Asset Type	2023	2022	Change (quantum)	Change (%)
Wastewater	Pipe	608,096	593,833	14,263	2.4%
	Non-Pipe	8,856	8,683	173	2.0%
Water Supply	Pipe	600,438	590,358	10,080	1.7%
	Non-Pipe	26,022	25,291	731	2.9%
Stormwater	Pipe	423,113	408,552	14,561	3.6%
	Non-Pipe	8,292	8,028	264	3.3%
Facilities	Facilities	5,443	4,565	878	19.2%

Table 4: Change in Asset Quantities (2023 Valuation report)

6.2.2. ASSET DATA CONFIDENCE

Based on the data used for the 2023 valuation, an overall confidence rating of B-C (±20%) has been assigned.

Asset Group	Asset	Quantity	Unit Cost	Life Expectancy	ODRC
Water Supply	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Wastewater	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Stormwater	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Facilities	WS and WW Facilities	B	C	B-C	B-C

Table 5: Assessment of Confidence Levels (Source: 2023 Valuation Report)

Confidence ratings were assigned to the valuation source data and unit cost rates and to other items as appropriate. The confidence ratings used are summarised in table below.

Grade	Label	Description	Accuracy
A	Highly Reliable	Data based on sound records, procedures, investigation, and analysis which is properly documented and recognised as the best method of assessment.	± 5-10%
B	Reliable	Data based on sound records, procedures, investigation and analysis which is properly documented but has minor short comings, for example the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.	± 10-20%
C	Uncertain	Data based on sound records, procedures, investigation, and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which Grade A or B data is available.	± 20-30%
D	Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.	± 30-40%
E	Unknown	Based on a best guess from an experienced person.	± 50-60%

Table 6: Confidence Levels (Source: 2023 Valuation Report)

6.3. DRINKING WATER ACTIVITIES

6.3.1. WATER SUPPLY NETWORK OVERVIEW

As the primary water supplier to the district, QLDC are required to provide a supply of water to homes and businesses that is safe for human consumption. QLDC provides a reticulated water supply to more than 28,497 demand units in the district, via fourteen water treatment plants. QLDC owns and manages 642 km of pipes that require 35 pump stations to move the water through the network and to your property from 31 reservoirs.

Resource consents are required for the abstraction of raw water that is used for public supplies. These stipulate the amount of water than can be taken on a daily, weekly, monthly and annual basis and a maximum rate of extraction (litres per second). QLDC currently has 21 water take consents issued by the Otago Regional Council. As the primary water supplier to the district, we are required to provide a supply of water to homes and businesses that is safe for human consumption.

Due to the geography of the district, the smaller townships have their own distinct schemes, which are supplied from local bores takes. Our larger towns, Queenstown and Wānaka, are predominately serviced by lakes intakes from 2-Mile, Kelvin Heights, Beacon Pt and Western. The new Shotover Country supply, which is intended to supply the greater Frankton area, extracts water from bores adjacent to the Shotover river. The new Cardrona water supply scheme is sourced from Pringles Creek and Cardrona River intakes.

The district is fortunate to have access to very high quality water sources to utilise as our public drinking water supply. However, treatment is still required to ensure the water provided into homes and businesses is safe for those using it. Within the district the majority of the water sources are treated through a combination of Ultraviolet (UV) disinfection and chlorination. Some sites include additional treatment steps such as filtration or pH correction based on the quality of the source water. QLDC supports the need for a multi-barrier approach to water safety and couples treatment with source water protection, network monitoring, backflow prevention and network access procedures to protect the safety of the water.

Only around half of all New Zealanders receive fluoridated drinking water. Until now, it has been up to local authorities to make decisions around fluoridating their water supplies. Recently directives have been issued by the Director-General of Health requiring some drinking water supplies to be fluoridated. Whilst QLDC has not received a directive at this time, it has been anticipated that such a directive may be forthcoming and a capital allowance to respond has been included within the Ten Year Plan.

Taumata Arowai replaced the Ministry of Health as the Water Services Regulator in November 2021. The Water Services Act 2021 provides legislation for drinking water regulations and standards in New Zealand. Whilst QLDC continues to have a number of water supplies that are unable to fully comply with the Drinking Water Standards and Quality Assurance Rules, significant progress has been made over the last three years. Where non-compliances exist, the risk mitigation steps are employed and monitored in accordance with the Water Safety Plans. Achieving compliance requires significant investment to upgrade the water treatment infrastructure, this includes investment to address the problem of lake algae which is affecting the lake feed schemes supplied directly from Lakes Wānaka and Whakatipu.

In 2023 a community outbreak in Queenstown of Cryptosporidium led to a boil water notice being issued for the Queenstown Supply. The boil water notice was issued due to the absence of a Protozoa Barrier at the Two Mile treatment plant, around which the outbreak was centred. Taumata Arowai

issued a compliance order to QLDC requiring the boil water notice to remain in place until an appropriate protozoa barrier was installed. This event provided a catalyst to accelerate the delivery of protozoa treatment barriers (in the form of UV filtration) across the district for supplies that did not currently have this level of water treatment. To date the response has seen protozoa barriers added to each of the surface water fed supply schemes, and this programme of work will continue over the coming years.

Sustained high rates of population growth, coupled with high water usage and suboptimal storage capacity is putting pressure on the ability of some schemes to meet customer demand, as a result water restrictions are common through peak demand periods. A balanced response which increases capacity, increases stored water volumes, reduces leakage and manages customer demand is planned to ensure the district's water supplies can operate effectively into the future.

Further investment is required for several of our smaller schemes, mainly Luggate, Glenorchy, Kingston, and Cardrona where the investment is a combination of upgrades to existing schemes and the provision of all new schemes.

Our long-term strategy provides for the following significant investments:

- Wānaka – The provision of upgraded water treatment plants (WTP) and supporting reticulation upgrades to distribute compliant water across Wānaka and to remove algae from the network.
- Queenstown – The provision of upgraded water treatment plants (WTP) and supporting reticulation upgrades to distribute compliant water across Queenstown and to remove algae from the network.
- Completion of our UV rapid deployment programme
- Filtration for our surface water intakes (Wānaka & Queenstown/Two Mile)
- New water supply scheme for Ladies Mile
- New water supply scheme for Southern Corridor
- New water supply scheme for Kingston, including the later extension of this scheme to service the existing township
- Major upgrades to provide for growth within existing schemes
- Rollout of a district wide water demand management programme

6.3.2. OVERVIEW OF WATER SUPPLY SCHEMES

Council maintains twelve public water supply schemes as listed in Table . 85% of the district's rateable properties are connected to these public water supply schemes. The population and visitor numbers are discussed in Section 3.2.4. The schemes with the oldest pipes are Arrowtown and Queenstown followed by Luggate and Glenorchy. Queenstown has the highest length of asbestos cement (AC) pipe (30km), followed by Wānaka (10km) and Arrowtown (8km).

Scheme	Water Source	2020/21 Annual Water Abstraction (ML)	2021 Pipe length (km) Asset Value (2021 LTP)	Pipe Condition 75th tile Age / Condition rating[4]	Demand Units
Cardrona	River and Bore	Nil	13	2 1	261
Queenstown	Lake & bore[5]	4,843	205 km $86 million	36 years 3.2	11,733
Wānaka	Lake	3,519	258 km $87 million	22 years 1.9	7,878
Arrowtown	Bore	988	41 km $11.4 million	45 years 3.5	1,665
Lake Hayes Water	Bore	319	62km (length includes Lake Hayes Estate)	19 years 1.0	514
Shotover Country	Bore	698	23km $34 million (incl. LHW)	8 years 0.3	1,983
Hāwea	Bore	479	34km $13 million	20 years 1.7	1,018
Arthurs Point	Bore	191	12km $5.7 million	19 years 1.0	593
Glenorchy	Bore	206	11km $3.7 million	26 years 2.2	282
Luggate	Bore	94	9km $3.3 million	26 years 2.3	255
Corbridge	Bore	TBC	TBC	TBC	TBC
Wānaka Airport	Bore	TBC	TBC	TBC	TBC
		11,337	**655km** **$244 million**	26 years **2.3**	**25,921**

Table 7: Key network parameters for the water supply schemes

NB: The water supply network pipe lengths are based on the 2021 LTP but the pipe condition and age are from the 2021 pipe renewal model. The Lake Hayes water supply scheme was separated into the Lake Hayes Water scheme and the Shotover Country scheme after 2018. The length of the Lake Hayes

[4] The pipe condition ratings and age are based on the number of pipe records and have not been adjusted for the length of each pipe.
[5] Shotover Bore - not yet operational as of May 2024

Estate network needs to be estimated and included under Shotover Country instead of Lake Hayes Water.

The QLDC demand projections 2002, shows the estimated 2021 usually resident population along with the average day and peak visitors for each scheme, in order from highest to lowest resident population.

Queenstown has the highest number of visitors, followed by Wānaka then Shotover Country and Arrowtown. Glenorchy has slightly higher visitors as a percentage of the population than Queenstown. The high peak and average day visitor populations have a significant impact on the scheme water demands.

Schemes	Usually resident population	Peak day visitors	Total peak day population	Peak day visitors as % of peak day population	Average day visitors	Total average day population	Average day visitors as % of average day population
Cardrona							
Queenstown	14,660	23,010	37,670	61%	8,890	23,550	38%
Wānaka	12,080	11,700	23,770	49%	2,900	14,980	19%
Shotover Country	5,480	2,520	8,000	32%	440	5,920	7%
Arrowtown	3,290	3,060	6,350	48%	780	4,070	19%
Hāwea	1,720	1,330	3,060	44%	260	1,980	13%
Arthurs Point	1,410	1,400	2,810	50%	470	1,880	25%
Glenorchy	380	650	1,030	63%	240	620	38%
Luggate	600	340	950	36%	60	660	9%
Lake Hayes Water	400	350	750	47%	70	460	14%
Totals	**40,020**	**44,370**	**84,390**	**53%**	**14,110**	**54,130**	**26%**

Table 8: QLDC Demand Projections 2022

6.3.3. PRIVATE DRINKING WATER SUPPLIES

Owners of private drinking water supplies are responsible for maintaining, monitoring, and treating their own supply. Council adopted a policy in 2021 for the vesting and acquisitions of private three waters schemes for consistency across the district and which takes a balance sheet approach to such proposals and sets out a 'fund-it, or fix-it' requirement with respect to depreciation, sinking funds, and asset value to mitigate financial risk to the residents ratepayers in proposed acquisitions. The policy makes allowance for contributions from Council to the asset owner where there is wider benefit (such as increased capacity) and process to conduct valuations for such proposals.

6.3.4. WATER TREATMENT

In our district we are fortunate to have access to very high quality water sources to utilise as our public drinking water supply. However, treatment is still required to ensure the water we provide into homes and businesses is safe for those using it. Within the district the majority of our water sources are treated through a combination of Ultraviolet (UV) disinfection and chlorination. Providing multiple treatment barriers is necessary to ensure the safety of our water. In a small number of schemes additional treatment steps may also be included such as filtration and pH correction.

Fluoridation

Only around half of all New Zealanders receive fluoridated drinking water. Until now, it's been up to local authorities (councils) to make decisions around fluoridating their water supplies. The Director-General of Health now has the authority to decide if community drinking water supplies should be fluoridated. QLDC is one of 27 local authorities notified in November 20021 that the Director General actively considering a direction to fluoridate in relation to one or more of our drinking water supplies. QLDC currently do not add fluoride into any water supplies.

Filtration

A small number of our treatment facilities incorporate filtration as an additional treatment barrier to supplement UV disinfection and chlorination. Filtration is a physical process which prevents the passage of solid particles (both organic and inorganic). In our treatment plants filtration is utilised as a primary treatment process upstream of UV disinfection which ensure the UV disinfection can be as effective as possible.

UV-Disinfection

Disinfection with UV light is a simple and effective method of addressing any bacteria and/or protozoa that may be present in the raw water. The high frequency UV light waves disrupt the DNA of the organisms, rendering them harmless. The effectiveness of UV treatment is a factor of the intensity of the light radiated, the clarity of the water (UV transmissivity & turbidity), as a result this method of treatment is ideal for high quality raw water sources. However, UV treatment alone does not provide a robust barrier against viruses. The table below provides the status of the UV water treatment upgrades

pH-Correction

Some of our raw water sources have low pH levels. pH is deemed as an aesthetic determined under the New Zealand Drinking Water Standards, however, when the pH is too low the plumbosolvency of water increases which can cause issues with older private plumbing. To address low pH chemical additives are dosed into the water. Within the district we utilise either lime or soda ash for this purpose.

Chlorination

The addition of chlorine to the water provides a barrier against bacteria and viruses (not protozoa). Chlorine disinfection kills the pathogens by breaking chemical bonds in the molecule. A unique advantage of chlorination is that it provides a residual treatment capability as the water passes through the reticulation to the end users. This is vital to help address the risks arising from potential contamination points in the network. The Water Services (New Zealand Drinking Water Standards) Regulations 2022 requires that there is a minimum residual at the end of the network. QLDC operates their treatment plants such that the applied dose at the treatment plant is as low as possible so as to ensure the minimum level is achieved whist maintaining an appropriate factor of safety.

Schemes	Source	Treatment Type	Upgrades to meet full DWQAR compliance	Expected Timeframe
Arrowtown	Bore(s)	UV and Chlorination	Fully compliant	N/A
Arthurs Point	Bore(s)	UV and Chlorination	Fully compliant	N/A
Cardrona	River Intakes	Membrane Filtration, and Chlorine	Fully compliant	N/A
Glenorchy	Bore(s)	Chlorination	Treatment barrier for protozoa Programmed for this calendar year, deployment of a fully compliant , semi-permanent, containerised UV disinfection system at the Glenorchy Reservoir facility. UV equipment re-purposed from the soon-to-be-made-redundant Lake Hayes Estate WTP.	2024
Hāwea	Bore(s)	UV and Chlorination	Fully compliant	N/A
Lake Hayes	Bore(s)	UV, Chlorination, Lime (pH correction)	Fully compliant	N/A
Queenstown	Lake Intakes	Chlorination at both intakes and UV at Kelvin Heights	Treatment barrier for protozoa at Two Mile treatment plant A temporary fully compliant containerised UV disinfection system has been deployed at the Fernhill No.1 reservoir site. This temporary solution will be replaced by a permanent fully compliant UV disinfection system at the Two Mile intake this calendar year	N/A and later in 2024 for the permanent installation .
Wānaka	Lake Intakes	Chlorination and UV	Treatment barrier for protozoa A fully compliant UV disinfection system has been installed within the existing Beacon Point WTP building. A temporary containerised UV disinfection system has been deployed at the Western Intake site. This temporary solution will be replaced by the containerised UV disinfection system currently at the Fernhill No.1 reservoir site. The Fernhill containerised system has greater treatment capacity and can be deployed at Western on a semi-permanent basis. The existing Western containerised UV system will be relocated to Luggate in due course.	N/A
Shotover Country and Lake Hayes Estate	Bore(s)	Filtration, UV and Chlorination	Fully compliant The existing LHE WTP will be made redundant by the soon-to-be-commissioned Shotover Country Borefield and WTP. The redundant UV disinfection equipment from the LHE WTP will be repurposed within the	N/A

Schemes	Source	Treatment Type	Upgrades to meet full DWQAR compliance	Expected Timeframe
			Glenorchy semi-permanent containerised system, as noted above.	
Luggate	Bore(s)	Chlorination, soda ash (pH correction)	Treatment barrier for protozoa Programmed for early 2025, Luggate will receive the fully compliant containerised UV system currently at the Western intake, as noted above this relies on; the permanent installation at the Two Mile Intake; and the relocation of the temporary containerised system at Fernhill No.1 to the Western Intake.	2025
Corbridge Downs	Bore(s)	Chlorination	Planning to deploy fully compliant, semi-permanent, containerise UV disinfection systems to this calendar year	2024
Wānaka Airport	Bore(s)	Chlorination	Planning to deploy fully compliant, semi-permanent, containerise UV disinfection systems to this calendar year	2024

Table 9: Water Treatment Upgrades

6.3.5. WATER SAFETY PLANS & SOURCE WATER RISK MANAGEMENT PLAN

QLDC have prepared Water Safety Plans (WSP) for all of QLDC's drinking water supply schemes to comply with the requirements of the Water Services Act 2021 (WSA 2021), utilising the guidelines from the World Health Organisation and the New Zealand Drinking-water Safety Plan Framework.

All suppliers are required to have a WSP and a Source Water Risk Management Plan (SWRMP) in place under the Water Services Act. QLDC has embedded the SWRMP within the WSP.

In developing this WSP QLDC has embraced the six principles of drinking water safety in New Zealand.

- Principle 1: A high standard of care should be embraced.
- Principle 2: Protection of source water is of paramount importance.
- Principle 3: Maintain multiple barriers to contamination.
- Principle 4: Change precedes contamination.
- Principle 5: Suppliers must own the safety of drinking water.
- Principle 6: Apply a preventative risk management approach.

With respect to Principle 3, the World Health Organization, Guidelines for Drinking-water Quality (2006) states that:

'Safety is increased if multiple barriers are in place, including protection of water resources, proper selection and operation of a series of treatment steps and management of distribution systems (piped or otherwise) to maintain and protect treated water quality. The preferred strategy is a management approach that places the primary emphasis on preventing or reducing the entry of pathogens into water sources and reducing reliance on treatment processes for removal of pathogens.'

QLDC's overall strategy in terms of risk management provides for the provision of the four levels of barriers to contamination, these being:

- Preventing hazards entering the source water (Source water barrier)

- Removing particles and hazardous chemicals from the water (Treatment barrier)
- Killing or inactivating pathogens in the water (Treatment barrier)
- Maintaining the quality of the water in the distribution system (Distribution barrier).

The WSPs set out the means by which QLDC intends to meet the requirements of the Water Services Act 2021, which includes compliance with the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 (DWSNZ), the Drinking Water Quality Assurance Rules, and the Aesthetic Values, which have effect from 14th of November 2022. Where there are gaps in compliance, the actions required to achieve full compliance and associated timeframes are set out within the WSP.

The WSPs include:

- QLDC's leadership commitments to provide safe & secure drinking water,
- Describes the resourcing & management processes that support delivery; and
- Structured assessment of risks and controls across the entire drinking-water supply system from source to tap.

QLDC owns all the assets that make up the water supply system. QLDC's Property & Infrastructure team delivers the following functions:

- Contract & operations management
- Securing Consents & ensuring regulatory compliance
- Asset management planning – including replacement and renewal strategies
- Capital Project Delivery

QLDC's Planning & Development team defines the District Plan and administers the Building and Resource Consenting processes. This includes providing Engineering Review and Acceptance for works to ensure compliance with QLDC's Land Development and Subdivision Code of Practice and any relevant Resource Consent Conditions.

6.3.6. WATER MONITORING

Each of the QLDC managed community supply water schemes are monitored regularly in accordance with the Water Quality Assurance Rules 2022. Water quality is monitored at each treatment plant for pH, turbidity, free available chlorine (FAC), total coliforms and Escherichia coli (E. coli). This is to ensure that the treatment process meets compliance requirements and also that the results comply with the Maximum Acceptable Values (MAVs) in the standards. The water is again sampled for the same parameters at sampling points within the distribution system.

The supply source for each water scheme is monitored for a wide range of parameters, the latest results are available on the QLDC website, link here:

https://www.qldc.govt.nz/services/water-services/water-supply/supply-and-treatment/

- Two Mile, Shotover Country, Lake Hayes and Wānaka supplies

- Arthurs Point, Arrowtown, Glenorchy, Kelvin Heights, Luggate, Hāwea, Glendhu Bay and Wānaka Airport supplies

6.3.7. WATER DEMAND MANAGEMENT

QLDC is surrounded by pristine lakes and rivers and there is often a misperception that water is 'free' and there are no limits on its availability. However, there is a clear financial, environment and cultural cost to water extraction and the reticulation of treated water direct to the user.

Four of Council's water supply schemes (Wānaka, Hāwea, Lake Hayes and Luggate) experience peak daily demands in the order of at least three times higher than shoulder season demands. This can occur for as little as a 7-day period over the Christmas and New Year break.

Building water supply capacity to supply the high demands experienced over a short usage period is comparable to building a six lane motorway to service one week of summertime visitors. With a disproportionately low number of ratepayers to visitors, infrastructure must be appropriately sized to service these peaks, but not so large as to create a financial and construction burden on the community.

The capacity of infrastructure must be sized to meet Council's agreed levels of service and consented water takes whilst providing for very high population growth. This requires substantial and ongoing investment in infrastructure capacity. A large proportion of Council's 3-waters capital programme is for capacity upgrades. Reducing per person demand has a direct benefit to the sizing and timing of these investments.

There are also potential impacts on the environment from high water abstraction volumes, coupled with the Council's requirement to pay regard to Te Mana o Te Wai, under which the priority is to protect the health and mauri of freshwater (as prescribed under the National Policy Statement for Freshwater Management 2020).

6.3.7.1 WATER DEMAND MANAGEMENT PLAN 2022

A Demand Management Plan (WDMP) is a key input into the activity management planning process and is a condition of existing abstraction resource consents. QLDC introduced the first Demand Management Plan in 2018, with an update in 2022.

The Water Services Act 2021 requires that drinking water suppliers give effect to Te Mana o Te Wai as it relates to the supply of drinking water and the WDMP aims to achieve this through identifying recommended actions for QLDC to improve water efficiency in the twelve water supply schemes. The primary objectives of this district wide WDMP are to:

- To understand current demands and forecast future demands within Council's existing schemes.
- To understand the current and future risks to service levels and to whole of life costs from current and future demands
- To identify actions to manage demand where it is most cost-effective.

This plan also establishes expectations of asset and resource efficiency private schemes wishing to vest in Council. There is a clear legislative and policy framework within which the Council provides water supply services within its District, and this is described in Appendix A of the WDM Plan.

The Water Demand Management Plan 2022 is a companion document.

6.3.7.2 CURRENT WATER DEMAND

QLDC holds limited data on actual water consumption per connection, however, the amount of water that is abstracted / produced per connection is very high.

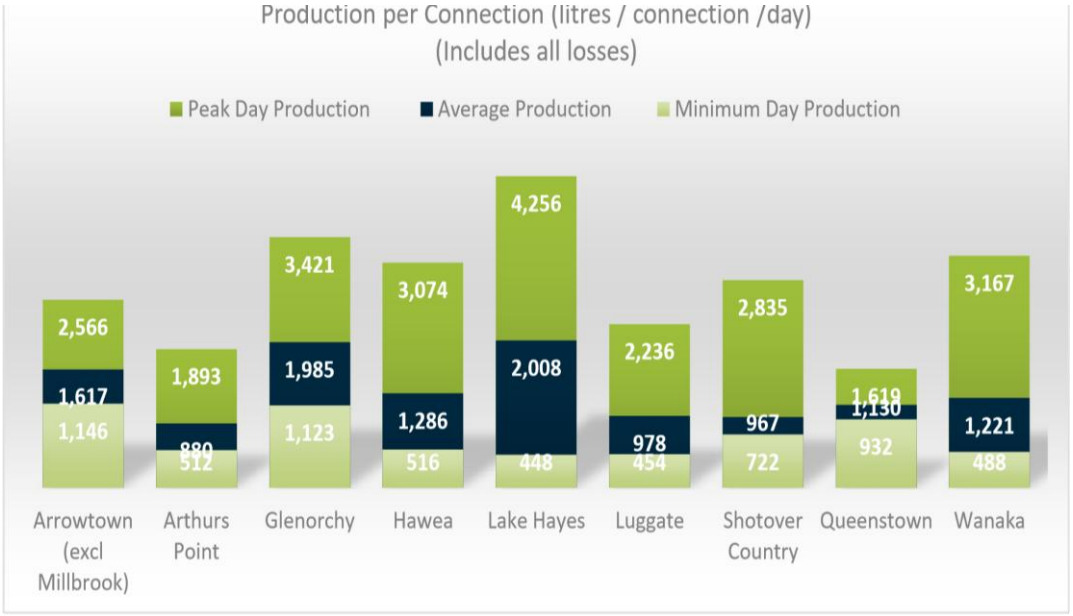


Figure 31: Production per Connection

Water use in summer is driven more by changes in weather, than by population. Priority needs to be given to reducing the amount of potable water being used for irrigation through education and incentives. This could include introducing water restrictions earlier in the summer and peak visitor periods.

The District's water use is very high when compared to other Councils across New Zealand as show in the figure below. WaterNZ produces an annual water performance report for Council's. For the 2019/20, financial year, QLDC recorded the fourth highest residential water use of all respondents. QLDC's recorded residential use was 384 litres per connection per day, 37% higher than the national average of 279 litres per connection per day.

The bars in dark blue represent Council schemes that incorporate water metering.

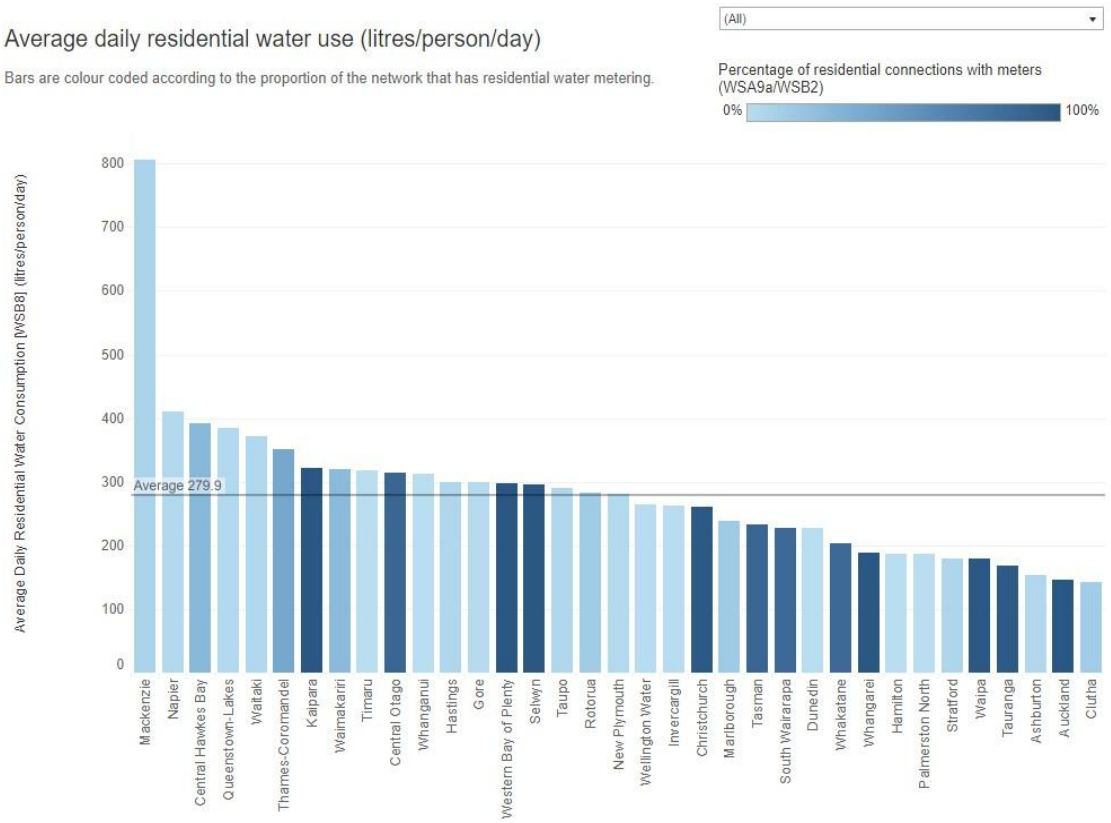


Figure 32: Average Daily Residential Water Use compared to New Zealand Councils

An increase in visitor numbers taking the average day total population to nearly 121,700 people.

6.3.7.3 WATER RESTRICTIONS

Council staff drafted a proposed Water Restrictions Procedure in August 2018. The purpose of the water restrictions document is to clarify the procedure around the use of water restrictions to manage peak demand. The document sets out Council's approach to implementing restrictions, including the following:

- The levels of restrictions available.
- Who can approve putting restrictions in place.
- Contractor's roles and responsibilities.
- Community messaging.
- The trigger points on a scheme by scheme basis.
- The options available for enforcing the restrictions.

The water restrictions imposed under the alert levels are shown in the Table below. The trigger points for each alert level are also shown in the table. These are applied to each scheme's peak supply capacity.

Alert Level	Restrictions imposed	Trigger points
Water Alert 1	Hand-held hosing to a minimum at any time. Sprinklers only from midnight to 6am.	Two consecutive days exceeding 80% of the scheme's supply capacity
Water Alert 2	Hand-held hosing to a minimum at any time. No sprinklers at any time. No construction or temporary water takes.	Two consecutive days exceeding 85% of the scheme's supply capacity
Water Alert 3	No use of outside water systems. No sprinklers or hand-held hoses at any time. No construction or temporary water takes.	Two consecutive days exceeding 90% of the scheme's supply capacity

Table 10: Water restrictions by alert level

In addition to the above rules, Council have provided the following educational information on the high water use from outdoor watering.

Watering lawns and gardens uses more water than any other domestic activity. On average, a sprinkler uses 1300 litres an hour, and a hand-held hose uses on average 400 litres an hour. Water evaporates quickly in the heat of the day, so it's much more efficient to water overnight or in the early morning.

Council introduced water restrictions for the Lake Hayes Estate, Shotover Country, Arrowtown, Glenorchy and Arthurs Point during extended dry weather in the 2017/18 summer to help reduce the high demand on local water supplies. Water restrictions have only been required once since the 2017/18 summer and were imposed on the Luggate water supply scheme only for two weeks in January 2020. Upgrading of the Arrowtown bores has addressed the supply capacity limitations in this scheme and removed the frequent need for water restrictions.

QLDC have implemented water restriction level to improve communication with the stakeholders and the community. As we continuously monitor water production versus usage reservoir levels across all our water schemes and alert levels will be lifted once usage drops to an acceptable level, normally coinciding with cooler and wetter weather.

Whakatipu Restrictions Map

Whakatipu Restrictions Map (PNG, 946KB)

Upper Clutha Restrictions Map

Upper Clutha Restictions Map (PNG, 993KB)

Figure 33: Water restrictions level maps

6.3.7.4 NETWORK LEAKAGE

Queenstown Lakes District Council (QLDC) holds a number of resource consents to abstract water from groundwater and lakes. Three of these consents (Table 1) include a condition to report to the Consent Authority (Otago Regional Council) by February each year.

The Kelvin Heights water take consent (2004.552) does not require an annual report, however it does require reasonable action to be taken to minimise leakage (condition 3 and 4). Therefore, it has also been included within this report.

Area	Name	Scheme	Source	Consent
Whakatipu	Queenstown (Two Mile)	Queenstown	Lake	2007.665
	Queenstown (Kelvin Heights)	Queenstown	Lake	2004.552
Wānaka	Wānaka (Beacon Point)	Wānaka	Lake	2008.460
	Wānaka (Western)	Wānaka	Lake	2008.459

Table 11: QLDC Water Abstractions

QLDC undertakes a number of activities as part of the overall leak management:

- **Leakage Management Report**

Council produce a Leakage Management Report annually. As Consent Holders, QLDC needs to ensure that leakage from the water delivery system is minimised through an ongoing leak detection programme, with commitment to upgrades of the system as necessary, and implementation of a public awareness programme encouraging consumers to prevent leakage of water from their connected systems, and inefficient usage. QLDC should report on the outcomes of these requirements to ORC by February each year.

- **Leak Detection Programme**

Veolia carry out a night flow monitoring programme annually as part of the Three Waters maintenance Contract. This is a common method used to evaluate water loss in a water network. Night flow measurements in zones are a great way of identifying whether there are any unreported leaks worth looking for. Measurements are taken at times when night consumption is at its lowest.
Veolia June 2023 night flow monitoring results showed an overall increase in night flows despite a focused proactive leak detection campaign, similar to what was carried out in 2020. The detection report is only in relation to the Queenstown and Wānaka supplies, the night flow results also include the smaller supply areas in the district that Veolia manage.

The night flow monitoring narrows down areas for leak detection.

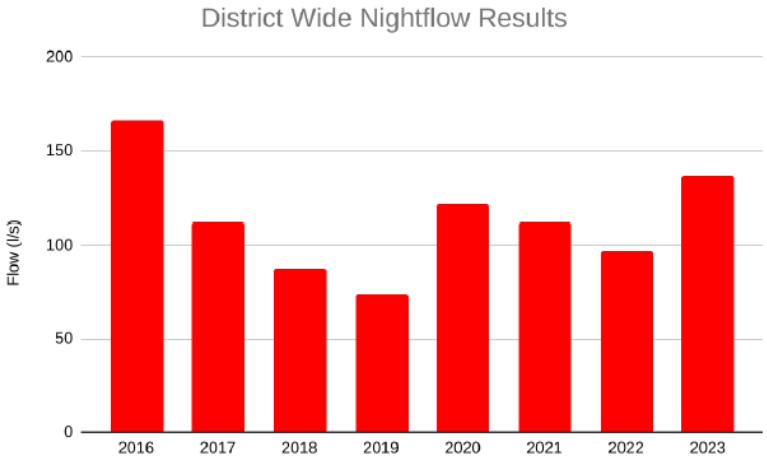


Figure 34: District Wide Night Flow

The table below breaks down the contractual requirements, amount completed in 2022-23 along with the target. Proactive leak detection has been prioritised in accordance with previous nigh flow reports. Therefore, the low priority areas are behind I overall targets. There were 48 km of practice leak detection carried out in the last year.

Township	Completed	To Date Target	Status
Queenstown	79.133	61.25	ABOVE TARGET
Wanaka/Albert Town	16.638	20.42	BELOW TARGET
Arrowtown	11.261	10.21	ABOVE TARGET
Hawea	21.862	10.21	ABOVE TARGET
Arthurs Point	11.078	6.13	ABOVE TARGET
Glenorchy	9.599	6.13	ABOVE TARGET
Luggate	8.054	6.13	ABOVE TARGET
Overall	157.625	120.46	ABOVE TARGET

Table 12: Leak detection status (2022-23 Annual Leak Management Report)

- **Maintenance**

The QLDC water supply daily operation and maintenance for the Queenstown and Wānaka networks is outsourced under contract to Veolia. The responsibilities of Veolia are contained within the latest Management, Operation and Maintenance of Utilities Contract document. Incidents affecting the water supply are reported in the Veolia monthly reports to Council. Separate incident reports are also supplied for any incidents that occur such as loss of supply or pressure to an area detailing action taken and resolution.

Water leaks are entered into the Council RFS system as RFS type 'Leak'. Veolia respond to the RFS and repair the leak as required.
Annual budget is allocated towards renewal projects in each rating area, to fund maintenance or upgrade work. Larger upgrades are budgeted for through Council's Long Term Plan process.

- **Water Conversation Education**

The Council promotes water conservation to the community through its website and newsletter Scuttlebutt, and also via social media.
An example of current material on the website can be found at **https://www.qldc.govt.nz/services/water-services/water-supply/water-conservation**. Any water restrictions are communicated via the website, through physical signage, and also via Facebook. A series of Wai Wise education material has been communicated over the 2023/2024 summer months, an example of communication about the Wai Wise Facebook posts can be found in Appendix 3.
A link is also provided on the website for the community to report through any water leaks **https://www.qldc.govt.nz/services/water-services/water-supply/water-leaks** . These are then recorded and resolved through the RFS system as noted in the section above.

6.3.7.5 WATER BALANCE

Leakage or real water loss represents the annual volume lost from the water supply network through all types of leaks and bursts on mains and service connections. Real losses can be assessed by any one of three different methods:

- The 'top-down' approach of the annual standard water balance (more suitable for metered schemes)
- The 'bottom-up' analysis of night flows
- Component analysis

Glenorchy, Lake Hayes Water, Arrowtown and Queenstown have very high estimates for leakage and should be prioritised for further investigation, as well as asset renewals/repair and/or pressure management. Shotover Country and Hāwea had leakage estimates above the median benchmark of 230 L/connection/day. The remaining schemes are a lower priority for network leakage reduction.

Annual night flow monitoring of water use has been ongoing since 2008. The night flow monitoring programme provides a "snap-shot" estimate for the volume of leakage in each scheme and sub-zone at the time of the test (during the low demand month of May).

The Infrastructure Leakage Index (ILI) is a recommended measure for metric benchmarking between water suppliers and is one of Taumata Arowai's new drinking water network environmental performance measures. The ILI is the ratio of the current level of leakage against the theoretical unavoidable annual level of leakage or UARL. It is most suitable for networks with at least 2,000 connections, i.e. Queenstown and Wānaka, therefore is not expected to be a good indicator for the smaller networks. The 2020/21 estimates are shown in the figure below, compared to the World Bank

rating system for developed countries. There is significant room for leakage improvement in Glenorchy, Arrowtown, Shotover Country and Queenstown.

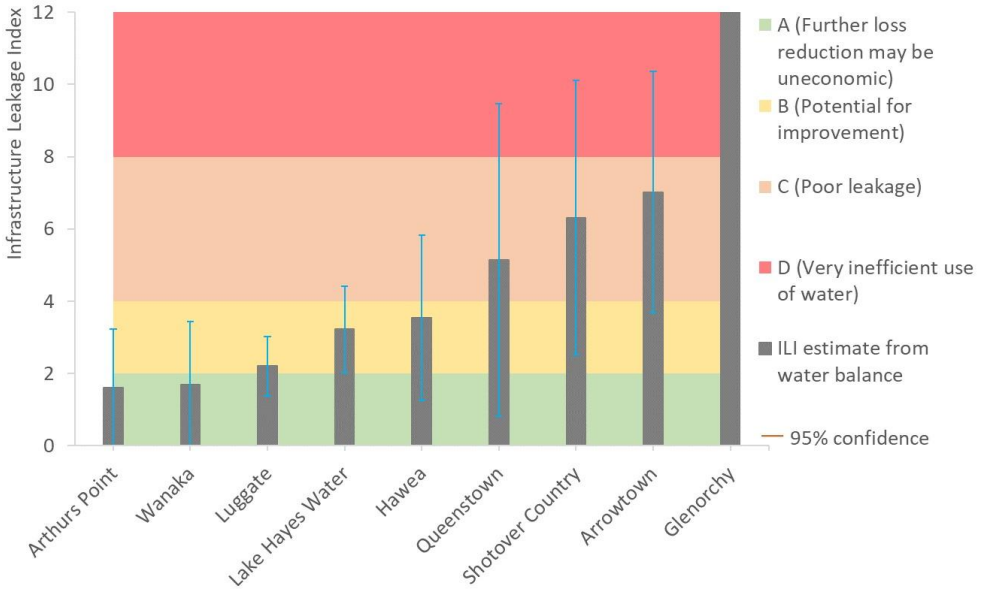


Figure 35: Infrastructure Leakage Index Estimates for 2020/21

ILI range	BAND	General Description of Real Loss Management Performance Categories
Less than 2	A	Further loss reduction may be uneconomic unless there are shortages; careful analysis needed to identify cost-effective improvement
2 to < 4	B	Potential for marked improvements; consider pressure management, better active leakage control practices, and better network maintenance
4 to < 8	C	Poor leakage record; tolerable only if water is plentiful and cheap; even then, analyse level and nature of leakage and intensify leakage reduction efforts
> 8	D	Very inefficient use of resources; leakage reduction programs imperative and high priority

Table 13: World Bank Band Descriptions for the Infrastructure Leakage Index

The 2020/21 water balance leakage estimate for each scheme was benchmarked against South Island district councils using available reported data from the Water New Zealand 2020/21 NPR report. The results are shown in the figure below, along with the % of residential customers that are metered. The median 2020/21 leakage benchmark across all NPR participants was around 230 L/connection/day.

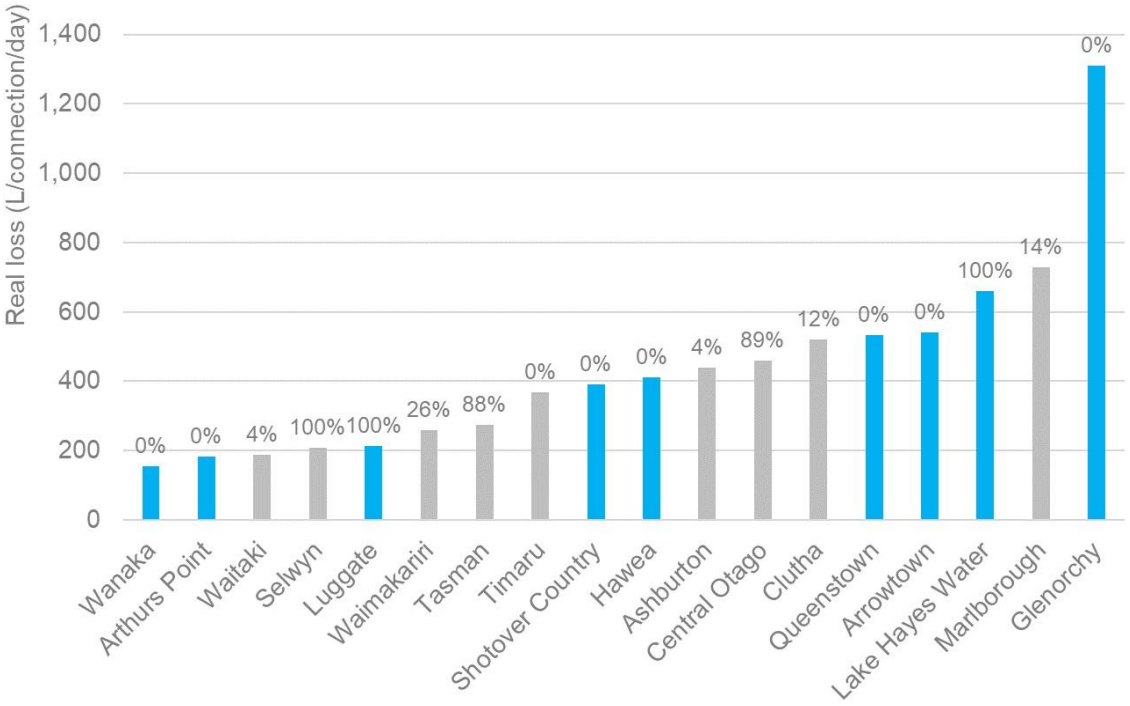


Figure 36: Benchmarking of 2020/21 leakage in litres per connection per day

Council's water supply schemes are shown in blue in the above figure to enable easy recognition. Most of the NPR participants from the South Island have very little customer metering and have leakage estimates with high uncertainty, similar to the QLDC. The councils with universal metering and volumetric pricing are Selwyn, Tasman and Central Otago.

6.3.8. LAKE ALGAE

For a number of years, the Lake Wānaka water supply has been affected by the presence of algae, often known as 'lake snow'. The algae is not harmful from a health perspective, but can affect water filters, irrigation fittings, new appliances, and other equipment.

In mid-2016 we began receiving reports of algae build-ups in a number of water filters around Queenstown that take water from Lake Whakatipu. It has been identified as the same algae that has affected the water system in Wānaka for the past eight years or so.

6.3.9. BACKFLOW PREVENTION

Under the Water Services Act 2021, Council has a duty to protect against the risk of backflow. Council implemented a Backflow Prevention Policy in 2022 with the next review in 2025.

QLDC will utilise this policy in combination with the Integrated 3 Waters Bylaw 2020, the Land

Development and Subdivision Code of Practice, and public education in order to achieve its objectives in regard to backflow prevention.

The key outcomes of this policy are listed below:

- Require that all new connections include appropriate backflow prevention at the point of supply between the customer and the water supplier

- The type of backflow prevention device will be commensurate to the risk to the water supply posed by the customer
    - Domestic/ordinary use connections will require a non-testable dual check device at the point of supply
    - Commercial/extraordinary use customers will likely require a testable backflow prevention device at the point of supply.
- Point of supply or boundary backflow prevention devices will be owned by the property owner, who will then be responsible for their maintenance and replacement as required. This does not include the standard domestic non-testable dual-check value, which is owned by Council.
- Testable backflow prevention devices must be re-tested annually and after any maintenance.
- Existing commercial/extraordinary use connections without adequate backflow prevention will be upgraded at the customer's cost. These will be prioritised according to potential risk.
- Existing domestic/ordinary use connections without backflow prevention will be upgraded when the tobies are replaced.
- Periodic surveying of existing connections will be undertaken to determine any change of use requiring upgrading of backflow prevention.
- Enforcement where necessary will be as set out in the QLDC Integrated 3 Waters Bylaw 2020.

6.4. WASTE WATER ACTIVITIES

QLDC are the primary service operator of wastewater treatment in the District and are responsible for the collection, treatment and disposal of wastewater from our communities throughout the district. This includes everything that gets flushed down the toilet or washed down your kitchen sink or laundry.

We provide a reticulated wastewater service to 21,660 residential properties in the district and approximately 2,893 non-residential properties.

On average of 14,521 m3 is produced in the district daily. it travels through the wastewater network via 516 km of wastewater pipes and requires 74 pump stations to move it to four treatment plants.

Once it makes it to a treatment plant, the wastewater is treated using biological treatment processes to produce treated effluent of a quality that complies with the discharge consent limits as set out by Otago Regional Council.

Project Shotover (Queenstown) and Project Pure (Wānaka) are the largest wastewater treatment facilities in the district, treating the majority of the wastewater produced. Satellite treatment plants exist for the townships of Hawea and Cardrona.

The wastewater programme includes new pumping stations to service growth but also includes plans for expenditure to upgrade our existing facilities. Some of the major projects in this area will work to achieve our strategic goal of centralizing wastewater management where it's beneficial to do so, but the strategy will adapt and move towards distributed assets where needed.

The connection of both Luggate (complete) and Hāwea (planned) to the Project Pure Wastewater Treatment Plant are examples of how we intend to utilise the benefit of an existing high performance treatment plant whilst, at the same time, working to explore the feasibility of those plants that have historically struggled to achieve environmental compliance.

6.4.1. WASTE WATER NETWORK OVERVIEW OF SCHEMES

Treatment Plant	Consent Discharge Limit	Average Annual Wastewater flow 2023	Discharge Consent Number	Consent Expiry	Scheme description
Mt Cardrona WWTP	Shall not exceed 1,844 m3 per day and an average dry weather flow of 603 cubic metres per day	48 m^3/day	2009.348.v3	2045	Mt Cardrona Alpine Resort, Cardrona Village, Mt Cardrona Subdivision
Shotover WWTP	Shall not exceed an annual average of 11,238m3 per day	9 994 m^3/day	RM13.215.01- Discharge to air RM13.215.03- Current discharge to land 2008.238 -future discharge to land	2044 2031 2044	Arrowtown, Lakes Hayes, Lake Hayes Estate, Shotover Country, Quail Rise, Hanley Farm, Kelvin Heights, Frankton, Queenstown, Fernhill, Arthurs Point

Treatment Plant	Consent Discharge Limit	Average Annual Wastewater flow 2023	Discharge Consent Number	Consent Expiry	Scheme description
Wānaka-Project Pure	Shall not exceed 26,400m3 per day	3997 m^3/day	2005.485-Discharge to air 2005.484-Discharge to land	2041	Wānaka, Albert Town, Luggate
Wānaka Airport	Shall not exceed 132m3 per day	-	RM13.073.01-Discharge - To Air RM13.073.02-Discharge - To Land	2043	Irrigation of treated wastewater only
Hāwea WWTP	Shall not exceed 1000m3 per day	962 m^3/day	RM22.178.01-Discharge - To Air RM22.178.02 - Discharge - To Land	2033	Hāwea (excluding Hāwea Flat and the Longview Subdivision)

Table 14: Overview of Schemes

6.4.2. ON-SITE WASTEWATER DISPOSAL

Property owners wanting to build in areas without a council reticulated wastewater network need to consider their options carefully.

In most cases a domestic Onsite Wastewater Disposal system will need to be designed and installed for the property to allow discharge to land. If improperly designed or installed these systems have the potential to contaminate waterways and areas outside the property.

To install an onsite system a QLDC Building Consent will be required. In certain cases a QLDC or Otago Regional Council Resource Consent may also be required.

6.4.3. OVERFLOWS

Wastewater flows easily through the pipes when only human waste and toilet paper is flushed, and when only soapy water is put down the drain. Most wastewater blockages are caused by people flushing things down the toilet or sink that they shouldn't, like fats, oils and wet wipes.

There has been an increase in the number of sewer overflows reaching water in 2022-23. 37% of these overflows reached a watercourse. The main cause of wastewater overflows to water is foreign objects due to increased construction in Queenstown. QLDC has continued and maintained their investment into proactive CCTV inspections from the previous years, resulting in over 34 km worth of sewer pipe being jetted and inspected. The CCTV campaign undoubtedly keeps the amount of overflows at a 'manageable' level, however, we also believe making the general public aware of their individual responsibilities with wastewater would be beneficial as well.

6.4.4. TRADE WASTE DISCHARGE CONSENTS

Trade waste is any liquid or gas waste discharged into the wastewater system from commercial, industrial or educational trade premises. The Integrated Three Waters Bylaw 2020 and Administration Manual came into effect on 1 July 2021. The Bylaw now requires that all businesses that discharge trade waste into the public wastewater network are to hold a current Trade Waste Consent or Approval Notice. Trade waste is not currently as much as a problem compared to other larger centres, as we have do not have a big dairy, oil, gas or meat works, but is an issue that is being monitored and managed.

A Trade Waste Consent is applied for via the QLDC website. Applications are assessed by the QLDC Trade Waste team according to the quality and quantity of the discharge and the potential effect it may have on the environment The three main categories that a trade premise may fall into are permitted, controlled and conditional.

- Permitted trade waste is trade waste from a premise that complies with the requirements of the Bylaw without pre-treatment (e.g. without a grease trap) OR the premise discharges <2000L/day.
- Controlled trade waste is for a premise that requires pre-treatment to meet the requirements in the Bylaw.
- Conditional trade waste is for a premise that discharges >2000L.day or even with pre-treatment, they do not meet the requirements of the Bylaw

6.4.5. INFLOW AND INFILTRATION

Like many places, we sometimes experience wastewater overflows during heavy rain which can result in it entering our waterways. This can have a detrimental effect on ecosystems and isn't very pleasant for anyone. We live in one of the most beautiful corners of the world and our environment is particularly close to our hearts. We're very lucky to be able to enjoy some stunning local lakes and rivers so naturally we want to protect these as much as we can.

Inflow and infiltration (I&I) refers to rainwater and groundwater entering the wastewater system through a variety of defects on public and private property:

- **Inflow** sources allow rainwater to enter the wastewater system directly from the surface through incorrect plumbing, cross connections and damaged or low-lying gully traps or manholes.
- **Infiltration** sources allow groundwater to seep into the wastewater system through cracks or bad joints in wastewater pipes and manholes.

A certain amount of I&I is unavoidable. We plan for it when designing wastewater systems. But too much, especially during severe weather events, can overwhelm the system leading to overflows with associated risks to health and the environment.

The increased frequency of extreme weather events due to the effects of climate change and continued population growth in our district is increasing the risk of overflows. This means we need to start taking wider action and QLDC has prioritised further work on this issue.

We've been working to address I&I for some time. Council has been inspecting its own properties for any issues and fixing them as needed. We're also continuing to carry out an extensive programme of renewals and repairs to the piped network through our Three Waters investment programme.

In partnership with our contractors Veolia, we're now conducting inspections on private properties to identify potential issues. This will give us a fuller picture of the extent of the problem and help us refine our work to reduce it.

These inspections will initially be in Queenstown before we work across the whole district. During our visit we'll explain what we're looking for and discuss any potential issues we find with you.

6.5. STORMWATER ACTIVITIES

6.5.1. STORMWATER NETWORK OVERVIEW

Stormwater infrastructure is important to ensure that contaminants don't get carried into our public waterways. Left unchecked, stormwater could have a negative effect on the environment, and could also lead to flooding and land instability. The stormwater collects and travels through the stormwater system eventually discharging (currently untreated) into the receiving environment (i.e. water or land). QLDC maintain seven public reticulated stormwater systems throughout the district – Queenstown, Wānaka, Arrowtown, Hāwea, Glenorchy, Albert Town and Arthur's Point, made up of 465 km of pipes.

Other small settlements in the district, such as Kingston, Luggate and Makarora, have limited stormwater systems and generally rely on ground soakage and natural watercourses, swales, and gullies for their disposal of stormwater.

Effective stormwater management is important to ensure that contaminant don't get carried into our public waterways. Stormwater infrastructure is important to ensure that contaminants don't get carried into our public waterways. Left unchecked, stormwater could have a negative effect on the environment, and could also lead to flooding and land instability.

Stormwater is rain that runs off surfaces such as rooftops, paved streets, driveways and roads. We maintain seven public reticulated stormwater systems throughout the district – Queenstown, Wānaka, Arrowtown, Hāwea, Glenorchy, Albert Town and Arthur's Point, made up of 368km of pipes. Other small settlements in the district, such as Kingston, Luggate and Makarora, have limited stormwater systems and generally rely on ground soakage and natural watercourses, swales, and gullies for their disposal of stormwater.

6.5.2. FLOOD HAZARD MAPPING

New stormwater flood hazard maps have been developed identifying a potential flood risk for parts of Wānaka. Similar assessments are underway for other urban areas and townships across the district and will be released in 2022 through to 2024 as they are completed.

Flooding is not a new risk in our district, and as a community we have previously experienced flood events. This information doesn't change the level of risk we face, but it does provide us with more detail to help understand, plan for, and manage flood risk.

Maps are available on the QLDC website https://www.qldc.govt.nz/services/water-services/stormwater/stormwater-flood-hazard-maps/

6.5.3. STORMWATER DISCHARGE CONSENT

QLDC currently holds one stormwater discharge consent, for the discharge of stormwater into a regionally significant wetland from a residential wetland. Currently, QLDC namely discharges stormwater as a permitted activity under the ORC Regional Plan for Water. There is an expectation that once ORC's new Land and Water Plan is finalised (refer to section 4), QLDC will be required to consent all QLDC stormwater discharges. This will significantly increase the number of stormwater discharge consents QLDC hold.

Scheme	Consent Number	Consent Expiry	Detail
Shotover Country	RM15.277.01	2050	Pond 1 and Pond 2 discharge to a regionally significant wetland at Shotover Country

Table 15: Stormwater Discharge Consent

7. SCHEME SUMMARIES

QLDC has developed scheme summaries to provide a short fact sheets for each scheme, with a view to developing these further for stormwater systems in the future. The scheme summaries are undergoing a programme of significant updates and the table below shows the progress.

Note: Planned investment is in present day dollars. Not inflated

Complete
Update in progress
Under construction

Wastewater	Water Supply	Stormwater
Cardrona	Cardrona	Queenstown
Shotover Country	Queenstown	Arthur's Point
Wānaka- Project Pure	Wānaka	Wānaka
Arrowtown	Arrowtown	Albert Town
Glenorchy	Wānaka Airport	Lake Hāwea
Lake Hayes	Lake Hayes Water	Arrowtown
Queenstown	Shotover Country & Lake Hayes	Shotover Country
Wānaka	Lake Hāwea	Glenorchy
Lake Hawea	Arthurs Point	Lake Hayes
Arthurs Point	Glenorchy	Luggate
Luggate	Luggate	
	Corbridge	

Table 16: Status of Scheme Summaries

These summaries can be found in the Appendix at the end of the AMP.

7.1. TECHNOLOGY INTIATIVES

Technology will play an increasing role in the management of Three Waters from an operational level through to understanding the increasing demands on our networks and to drive efficiencies and robust decision making.

There are a number of activities underway which will improve QLDC's technological approach.

7.1.1. DATA IMPROVEMENT PROGRAMME

The vision for this project supports QLDC's Strategy by working to capture and manage 3 Waters Asset and Operational Data in a way that is logical, accurate and easy for staff and contractors to access.

With access to accurate and complete data – QLDC can make data driven decisions to more effectively plan, acquire, operate, maintain, replace and dispose of assets over the long term, to meet agreed service standards and the foreseeable future needs of our community in the most cost-effective way.

This is a programme of initiatives to pick up specific improvement activities relating the systems data and processes.

7.1.2. SMART METERS

The 2022 Demand management Plan cites metering and volumetric pricing as an important key part of managing capacity pressures from growth. Although water demand management is not synonymous with smart meters. There is a spectrum of technology, which can unlock additional insights into our water usage.

QLDC have commenced trials of smart water metering in the townships of Luggate and Glenorchy. The smart meters monitor and transmit real-time flow and pressure data in order to improve understanding of our demand. Both customers and Council will be able to access real-time data on water flows to allow better education of water use, and for Council to quickly respond to issues and improve planning. The meters are also able to 'listen' to vibrations typically from leaks in the network. This data, combined with software algorithms allows us to efficiently pin-point water leaks in the system. The benefits sought by the trial are to understand cost-effective means to better manage high water consumption and existing network capacity.

Luggate and Glenorchy demand management project has the smart water meters installed. The previous platform has ended their support in NZ, causing delays in deployment. A new community platform with the water usage per house and educational tips is being searched for to go live at some point this year. Planned install of water meters in Hāwea starting end of March 2024 further to contract signing.

7.1.3. SCADA

QLDC requires a consistent SCADA (Supervisory Control and Data Acquisition) and telemetry solution across all of its three water infrastructure to enable efficient and effective service delivery. With the Lake Hayes scheme being returned from Fulton Hogan following the end of the Design, Build and Operate Contract into the Veolia districtwide maintenance contract, we are at a crossroads with the future direction of our SCADA systems. QLDC are looking to a way forward to enable the Lake Hayes three waters infrastructure to be incorporated into a district-wide SCADA system, whilst achieving a material improvement in QLDC's operational technology.

7.2. IMPROVEMENT ACTIONS –ASSETS AND ACTIVITIES

Improvement Actions – Assets and Activities

General

1. Review update schedule
2. SCADA and Communications Project impacts
3. Add in the Connections to Council Services process and data
4. Vested assets - Insert graph showing historic vested quantities
5. Vested Assets- provide further details on the asset data submission process Data from developers
6. Data improvement programme

Drinking Water Supply

1. Following up the approval /sign off of 2022 Water Demand Management Plan
2. Update Overview of Schemes Table
3. Add commentary on Millbrook - a private scheme that takes the water
4. Finalise Scheme Summaries

Wastewater

1. Update Overview of Schemes Table
2. Finalise Scheme Summaries

Stormwater

1. Monitor ORC new land and Water Plan and impact on Stormwater discharge consents
2. Complete scheme/system summaries

8. DEFINING AND MEASURING LEVELS OF SERVICE

This section outlines key Level of Service drivers, including customer and stakeholder expectations, legislative requirements and Council's strategic priorities. It sets out the proposed levels of service and performance measures and provides information on how Council has been performing in recent years.

There are several ways that QLDC defines and measures our level of service (LOS) within our Three Waters network. From nationally set measures, regional and local frameworks.

The Levels of Service and System Performance Indicators are companion documents.

8.1. INTRODUCTION

QLDC's key outcomes are based on core functions along with the LGA approach: infrastructure; community facilities and services; regulatory services; the environment; the economy; local democracy; and financial support and services.

These outcomes influence QLDC's short-, medium- and long-term priorities, along with the measures set to assess the performance of QLDC towards those outcomes. QLDC issues its Annual Report in October each year; this is where QLDC and the community can monitor progress towards achieving community outcomes.

QLDC has reviewed its current performance measurement framework by referencing a range of measures used across New Zealand so that a more direct comparison of our performance with that of other local authorities can be made. We work with other Otago local authorities to adopt a standard set of performance measures for the region.

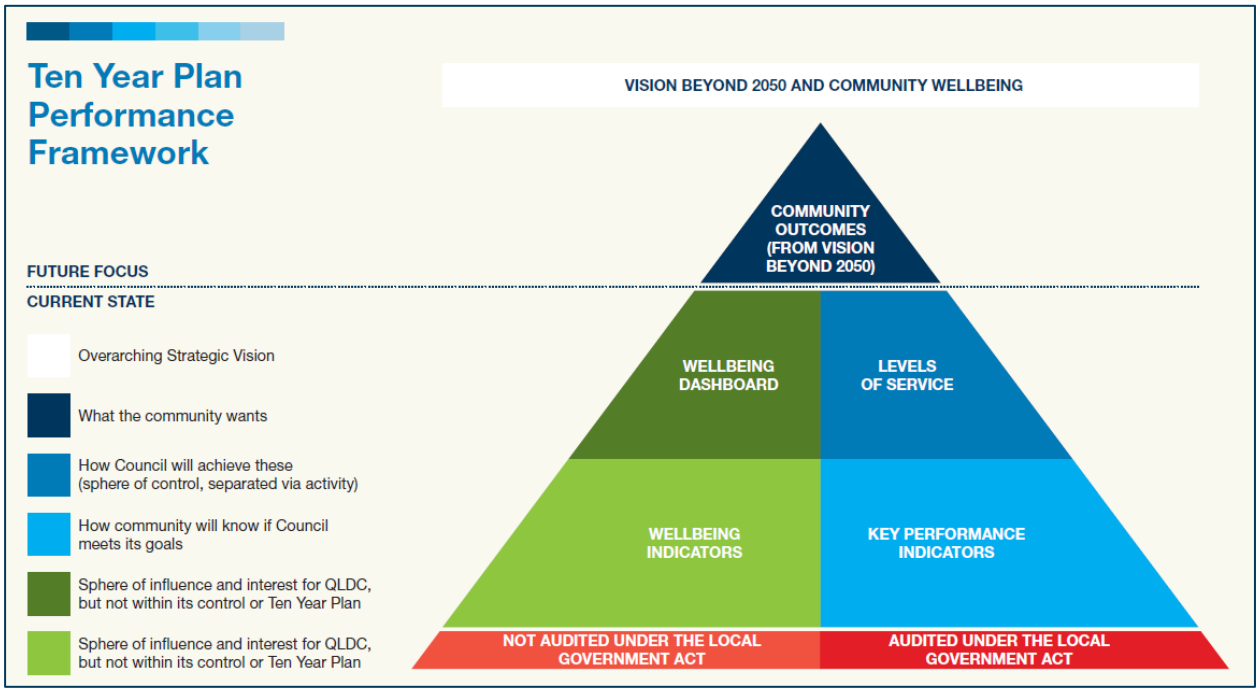


Figure 37: Ten Year Plan Performance Framework

Local authorities are required to incorporate mandatory performance measures developed by the Department of Internal Affairs (DIA) in the development of the 2024–2034 LTP. QLDC have adopted these measures for infrastructure and have been reporting against them in Annual Reports since 2015/16.

Targets for all performance measures will be set for the first three years and are based upon current or 'baseline' performance.

8.2. DEPARTMENT OF INTERNAL AFFAIRS (DIA) MEASURES

In 2010, the Local Government Act 2002 was amended to require the Secretary for Local Government to make rules specifying non-financial performance measures for local authorities to use when reporting to their communities. The aim was to help the public to contribute to discussions on future levels of service for their communities and to participate more easily in their local authority's decision-making processes. The Department of Internal Affairs (DIA) was tasked with developing these measures.

8.2.1. WATER SUPPLY MEASURE

KPIs	Baseline Performance at 30 June 2020	Target Yr 2	Annual Result 2021-2022	Annual Result 2022-2023	Commentary
Average consumption of water per person per day	515 litres on average per person per day	<505L	441L	508L	508 litres of water were consumed on average per person per day for the 2022-2023 financial year. This represents a decline on the past year but continues to show a long-term improvement on historical usage. The result narrowly misses the target set.
Compliance of each municipal water supply with the New Zealand Drinking Water Standards for protecting public health, specifically:					The compliance status of each water supply is summarised below: > Arrowtown - Fully compliant > Arthurs Point - Fully compliant > Glenorchy - Non-compliant for protozoa and insufficient contact time > Queenstown* - Non-compliant for protozoal treatment and contact time > Hāwea - Fully compliant > Lake Hayes - Fully compliant > Luggate - Non-compliant for protozoal treatment and insufficient contact time > Wānaka Airport - Non-compliant for protozoal treatment > Wānaka - Non-compliant for protozoal treatment > Corbridge - Non-compliant for protozoal treatment Changes to the drinking water standards have meant that several plants that were previously able to demonstrate bacterial compliance are now unable to.
Bacteriological compliance	93%	100%	100%	55%	
Protozoal compliance	14%	>50%	11%	40%	
Percentage of water lost from each municipal water reticulation network	33%	<30% overall	25%	32%	Target narrowly missed across the year, but largely consistent with longer term trends.

KPIs	Baseline Performance at 30 June 2020	Target Yr 2	Annual Result 2021-2022	Annual Result 2022-2023	Commentary
Median response time to attend to urgent and non-urgent issues resulting from municipal water reticulation network faults and unplanned interruptions a) between the time of notification and the time when service personnel reach the site	**Urgent** 26 mins	**Urgent** <60 minuntes	**Urgent** 24 minutes	**Urgent** 38 minutes	The median response time to attend a site for urgent issues was 38 minutes for 2022-2023. There were 186 urgent requests raised in the period. This achieved the target set.
	Non-urgent 1,101 mins	**Non-urgent** <1,440 mins (1 day)	**Non-urgent** 994 minutes	**Non-urgent** 975 minutes	The median response time to attend a site for non-urgent issues was 975 minutes for 2022-2023. There were 1,381 non-urgent requests raised in the period. This achieved the target set.
Median response time to attend to urgent and non-urgent issues resulting from municipal water reticulation network faults and unplanned interruptions b) between the time of notification and resolution of the blockage or other fault	**Urgent** 407 mins	**Urgent** < 1,440 mins (1 day)	**Urgent** 210 minutes	**Urgent** 869 minutes	The median response time for resolving urgent issues was 869 minutes for 2022-2023. This achieved the target set.
	Non-urgent 3,185 mins	**Non-urgent** <10,080 mins (7 days)	**Non-urgent** 3,139 minutes	**Non-urgent** 4,428 minutes	The median response time for resolving non-urgent issues was 4,428 minutes for 2022-2023. This is well within the target set.
Number of complaints per 1000 connections to a public water reticulation network about					All categories met the annual target and were mostly consistent with the previous year's results.
The clarity of drinking water	0	<4	1.05	0.48	
The taste of drinking water	0	<4	0.2	0.1	
The odour of drinking water	0.04	<4	0.07	0	
The pressure or flow of drinking water	2.06	<4	3.46	3.56	
The continuity of supply of drinking water	2.22	<4	2.65	2.97	
The way in which a local government organisation responds to issues with a water supply	0	<2	0	0	

Table 17: DIA Measures: Source QLDC Annual Report 22/23

The Secretary for Local Government, Department of Internal Affairs is currently consulting to update the drinking water compliance KPIs to reflect the new drinking water rules. Consultation closes 10 May 2024, therefore due to timing, changes are not reflected in this AMP.

Section	Current wording	Proposed changes
Part 2 – Performance Measures Sub-part 1 - Water supply	**Performance measure 1 (safety of drinking water)** The extent to which the local authority's drinking water supply complies with: (a) part 4 of the drinking-water standards (bacteria compliance criteria), and (b) part 5 of the drinking-water standards (protozoal compliance criteria).	**Performance measure 1 (safety of drinking water)** The extent to which the local authority's drinking water supply complies with Table 1 of the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 (a) Determine and – Escherichia coli (b) Determine and – Total pathogenic

Table 18: DIA –Potential Amendment to Measures

8.2.2. WASTE WATER MEASURES

KPIs	Baseline Performance at 30 June 2020	Target Yr 2	Annual Result 2021-2022	Annual Result 2022-2023	Commentary
Median response time to attend to sewerage overflows resulting from blockages or other faults of a municipal sewerage system a) between the time of notification and the time when service personnel reach the site	17.5 mins	<60 minutes	26 minutes	22.5 minutes	The median response time to attend a site for wastewater overflows was 22.5 minutes for 2022-2023 and achieved the target set.
Median response time to attend to sewerage overflows resulting from blockages or other faults of a municipal sewerage system b) between the time of notification and resolution of the blockage or other fault	121 mins	<240 minutes	113 minutes	196.5 minutes	The median response time to resolve wastewater overflows was 196.5 minutes for 2022-2023 and achieved the target set. There were 64 wastewater overflows recorded.
Annual number of dry weather overflows from a municipal sewerage system per 1000 sewerage connections	1.66	<3	1.72	2.03	There were 2.03 dry weather overflows per 1,000 sewerage connections for the 2022-2023 period. This achieved the target set.
Compliance with resource consents for discharge to air, land, or water from a municipal sewerage system, measured by the number of: a) abatement notices b) infringement notices c) enforcement orders d) successful prosecutions	87%	100%	85%	85%	QLDC broadly complied with resource consents this year. There were no new enforcement actions for wastewater compliance. However, there are two existing abatement notices on two separate wastewater treatment plants in the district. There are currently 13 active discharge consents, and 11 of these were compliant in the reporting period. > Abatement notice EN.RMA.20.0037 for the Hāwea wastewater treatment plant (WWTP). > Abatement notice EN.RMA.21.0025 for the Shotover wastewater treatment plant (WWTP).
Number of complaints per 1000 properties connected to a municipal sewerage system about: reticulation network about					All categories met the annual target.
Odour	0.04	<5	1.34	1.22	
Faults	3.16	<5	3.06	3.22	
Blockages	2.25	<5	1.44	1.4	
The territorial authority's response to issues with its sewerage system.	0	<2	0	0	

Table 19: DIA Measures: Source QLDC Annual Report 22/23

8.2.3. STORMWATER MEASURES

KPIs	Baseline Performance at 30 June 2020	Target Yr 2	Annual Result 2021-2022	Annual Result 2022-2023	Commentary
Number of flooding events that occur in a territorial authority district	0	<7 flooding events	0	1	One flooding event impacting habitable floors recorded during the reporting period.
For each flooding event, the number of habitable floors affected. (Expressed per 1000 properties connected to the territorial authority's stormwater system)	0	< 2 per 1,000 properties	0	0	
Compliance with resource consents for discharge from a municipal stormwater system, measured by the number of: a) abatement notices b) infringement notices c) enforcement orders d) successful prosecutions	100%	100%	100%	100%	QLDC has two active abatement notices associated with stormwater discharges and received two infringement notices in the reporting period. These enforcement orders were associated with unconsented discharges of stormwater from the Northlake/Hikuwai Subdivision and the Alpha Series development. These were offences under the Resource Management Act (RMA), not an enforcement order against a Resource Consent. As such, there were no non-compliant resource consents in the reporting period.
Median response time between the time of notification and the time when service personnel reach the site when habitable floors are affected by flooding resulting from faults in a municipal stormwater system	0 Hours	<3 hours	0	0 hours	QLDC was not contacted to respond to the flooding event noted in the reporting year.
Number of complaints per 1000 properties connected to a municipal sewerage system about faults (including blockages) with a municipal stormwater system	5.13 per 1,000 properties	<5 per 1,000 properties	7.36	9.17	There were 9.17 complaints per 1,000 properties for 2022-2023. This exceeds the target set and represents a deterioration on the performance from the previous year. The contract team is reviewing the preventative maintenance schedule to drive improvements in this area.

Table 20: DIA Measures: Source QLDC Annual Report 22/23

8.3. LEVELS OF SERVICE REVIEW

The levels of service framework for three waters is currently under review. Changes will seek to support more informed and consistent decision-making.. The actual levels of service, in terms of intervention points, are expected to remain mostly unchanged.

Changes are expected to include:

- Simplification and streamlining of content into a concise single document – currently content is split across two documents (Levels of Service and System Performance).
- Enhancement and clarification of principles and measures – emphasising outcomes and rationale to enable good decision-making and practice, rather than specifying technical mechanisms for achieving service outcomes.
- Development and clarification of a framework that better enables QLDC to continually balance service levels with risk and cost.

QLDC have developed a Minimum Service Level methodology that translates the performance indicators as adopted in the LTP to measures that can be assessed utilising network models. Development of a supporting differentiated service level model will provide for a continuum spanning from minimum levels through a range of levels which are increasingly desirable, up to an upper level or maximum level of service. This model will enable QLDC to balance benefit, cost, risk, and affordability when making servicing decisions.

At this point in time the levels of service in the Minimum Service Level Standard document have been developed from a review of other territorial authority's Levels of Service within New Zealand. The resulting level of service has been tested at a high level through the use of the computer models as a part of the water network strategy development. Three Waters hydraulic and hydrological models will continue to be upgraded to provide capability for modelling a range of potential service level options.

The level of service review will continue in parallel with the development of the WSDP and other emerging requirements of Local Water Done Well, alongside ongoing updates to this AMP and the 30IS, to ensure all elements of the system remain aligned and consistent.

8.3.1. WATER SUPPLY FOR ON DEMAND SUPPLIES ONLY (AS DEFINED BY THE QLDC WATER SUPPLY BYLAW)

Council will provide safe and reliable reticulated water, as demonstrated by no drinking water related illnesses, through the provision of the following Levels of Service in climatic condition up to a 50 year drought event.

Corporate Level of Service Statement

The council provides reliable drinking water that is safe to drink as defined by the Drinking-water Standards for New Zealand[2].

Minimum Levels of Service

- Provide a minimum of 25 litres per minute of safe drinking water to the property boundary.
- No breach of resource consent resulting in successful prosecution by the Otago Regional Council.

- Compliance with NZ Drinking Water Standards.
- Ensure safe and sufficient water pressures at the property boundary.
    - A minimum water pressure to each residential property of 200 kPa;
    - A target water pressure range between 200 and 600 kPa where practical given topographic constraints.
    - A maximum limit of 1000 kPa.
- Ensure firefighting supplies at 60% of annual peak demand to Council approved residential, commercial, and industrial on a zone by zone basis:
    - FW2 for residential areas including single family dwellings and multi-unit dwellings but excluding multi-storey (residential or accommodation) apartment blocks.
    - FW3 for commercial and multi-storey (residential or accommodation) apartment blocks.
    - FW4 for industrial areas.
- No interruptions of service due to planned or unplanned maintenance or power outages at water supply pump stations under the following conditions:
    - In a situation of unplanned maintenance on a single pump the remaining pumps are required to be able to supply peak day demand utilising a maximum of 22 hours pump run time per day (92% utilisation) for up to 3 days.
    - Power outages of less than 6 hours on an average day.

Please note:

- *Details of the minimum available firefighting supply to each district plan zone can be found in LOS Methodology Document.*
- *The fire flows for each category will be defined as per SNZ PAS 4509:2008 and are the total minimum provision (sprinkler plus hydrant flow) available at the main at a residual pressure of 100 kPa. Council do not commit to providing pressure suitable to supply sprinkler systems.*
- *Where the required firefighting category for a specific building is in excess of those stated above, the developer will provide an on-site solution to supplement the service provided by council to achieve the required levels of firefighting capacity.*

8.3.2. WATER SUPPLY FOR RESTRICTED SCHEMES, AS DEFINED BY THE QLDC WATER SUPPLY BYLAW

Council will provide safe and reliable reticulated water, as demonstrated by no drinking water related illnesses, through the provision of the following Levels of Service in climatic condition up to a 50 year drought event.

Corporate Level of Service Statement

The Council provides reliable drinking water that is safe to drink as defined by the Drinking-water Standards for New Zealand.

Levels of Service

The LOS for restricted schemes is defined on a scheme by scheme basis. Please refer to each scheme's separate agreement.

8.3.3. WASTEWATER

Corporate Levels of Service Statements

Council will provide safe and reliable reticulated wastewater services demonstrated by no wastewater related illnesses attributed to QLDCs wastewater infrastructure and no breach of resource consent resulting in successful prosecution.

Minimum Levels of Service

- No breach of resource consent resulting in successful prosecution by the Otago Regional Council.
- Wastewater networks are designed to convey a 1 in 5 year storm without surcharging manholes.
- No interruptions of service due to planned unplanned maintenance or power outages at wastewater pump stations under the following conditions:

    - Critical pump stations (criticality greater than 3):
        - at least 4 hours of dry weather flow (DWF) storage AND a minimum of 60% redundancy of duty/assist pump capacity including generator power backup.

      OR

        - 100% pump capacity redundancy (under duty/assist pump failure), duplicate rising mains and full generator power backup.

    - Other pump stations (criticality 3 or less):
        - At least 8 hours of dry weather flow (DWF) storage

      OR

        - A minimum of 60% redundancy of duty/assist pump capacity including generator power backup.
- Safety designed lids will be installed on all manholes that have either a history of surcharging and dislodging the manhole cover or are within the 100 year ARI flood area. This can include either:
    - A stainless steel safety grille capable of carrying a 100 kg point load.

  OR

    - A permanently bolted manhole lid

Please note:

- *Simulated storm to be defined by the Chicago Storm methodology. Data used to define the storm is to be from the latest version of NIWA HIRDS at the time of analysis.*
- *Off-line network storage and pump station storage upstream of the pump station in question is deemed to contribute to the available assessed storage.*
- *Criticality is defined by the QLDC Three Waters Criticality Framework*[3]

8.3.4. STORMWATER

Corporate Levels of Service Statements

Council will provide safe and reliable stormwater drainage services demonstrated by no stormwater related health issues and no flooding of consented building platforms.

[1] Water Supply Bylaw, Queenstown Lakes District Council, 2015
[2] Drinking-water Standards for New Zealand, Ministry of Health, MoH Drinking Water Standards

Minimum Target Levels of Service

- Stormwater networks are designed to convey a 1 in 10 year storm without property flooding or erosion. Safety designed lids will be installed on all manholes that have either a history of surcharging and dislodging the manhole cover or are within the 100 year ARI flood area. This can include either:

    - A stainless steel safety grille capable of carrying a 100 kg point load

  OR

    - A permanently bolted manhole lid

Please note:

- *Simulated to storm will be defined by the Chicago Storm methodology. Data used to define the storm is to be from the latest version of NIWA HIRDS at the time of analysis.*
- *QLDC will not be formalising requirements for stormwater treatment quality until ORC finalise the regional after plan / Plan Change 6A. It is expected that this will be included in the next revision. However, all upgrades until that time will consider water quality treatment to industry best practice to ensure efficient and effective infrastructure.*

8.4. THREE WATERS REPORTING FRAMEWORK

The table below sets out the suite of reporting that is produced and used to support the three waters business processes, to inform the view of hazards, risks and ensure that our activities are safe and complies with legislative requirements to the satisfaction of QLDC's customers.

Report description	Purpose	Compiled by	Frequency	Audience	Water supply	Waste water	Stormwater
Annual Water Safety Plans Performance Reporting	Provide stakeholders with a report on performance against WSP advise on outbreaks, upgrades, significant changes and future pans.	Veolia	Annual – end July (self-imposed)	QLDC ELT QLDC Councillors	X		
Water Safety Plan Review	Requirements under water services act to review and update the 11 plans regularly	Veolia	Annual	Taumata Arowai	X		
Drinking Water Reporting	Regulatory reporting requirements - reported from Infrastructure Data (ID)	QLDC	Daily / Weekly / Monthly / Annual	Taumata Arowai	X		
Department of Internal Affairs reporting	3Waters KPI performance reporting	QLDC	Monthly Quarterly Annual	DIA QLDC Website	X	X	X
Notable Event & Incident Reporting	Ensure key stakeholders are made aware of notable events or	QLDC and Veolia	As required	Taumata Arowai ELT & Councillors	X		

Report description	Purpose	Compiled by	Frequency	Audience	Water supply	Waste water	Stormwater
	incidents. Notifications sent vis Hinekorako						
QLDC Contractor Monthly Reporting	O&M Contractor Performance Reporting	Veolia	Monthly	QLDC O&M & 3W Contract Manager	X	X	X
Customer Satisfaction Reporting	Customer satisfaction survey outcomes		Monthly	QLDC O&M & 3W Contract Manager			
PMO 3W Capex monthly reporting	Delivery status of the 3Waters Cap Ex Portfolio of Work		Monthly	QLDC O&M & 3W Contract Manager QLDC P&I			
Water demand management plan	Some consents require this, but is done district wide.		Every few years				
Leakage management report	Improvement leak management- report on night flow monitoring	O&M Contractor & QLDC	Annual	ORC	X		
Annual reports	Compliance with consent requirements for WWTP and SW Discharge consents		ANNUAL	ORC		X	X

Table 21: Three Waters Reporting Framework

8.4.5. QLDC BENEFITS REALISATION (BENEFITS & MEASURES)

QLDC are developing a Benefits Realisation Framework. QLDC will be selecting some achievable measures to track our performance and how we monitor the benefits of our investment. The QLDC benefits framework will cover both capital and operational areas of investment and will clearly align with QLDC's Strategic Framework and any relevant Long Term Plan measures.

8.4.6. CLIMATE AND BIODIVERSITY PLAN MEASURES

The Climate and Biodiversity Plan measures a number of Three Water related inputs, and these relate to the Plan's 3rd Outcome: *Our built environment is low-emission and resilient.*

This aims to ensure our water resources are resilient and managed responsibly and our infrastructure is resilient to the changing climate.

The Climate and Biodiversity Plan is a companion document.

8.4.7. QLDC CUSTOMERS - LEVELS OF SERVICE

QLDC is becoming a more customer focused organisation, to this end we are striving to understand the requirements of the Community and our stakeholders to provide robust evidence in decision

making. This is achieved through better consultation with the community, and engagement with ratepayers and stakeholders.

8.4.7.1 ENGAGEMENT AND CONSULTATION

QLDC's stakeholders are 'any party having an interest in anything at all that QLDC is or isn't doing relating to the provision and management of an effective and efficient Three Waters network, and the provision of sufficient public Three Waters works for, the Queenstown Lakes District'.

Stakeholder	Philosophy of Engagement
Ministry of Health and Otago Regional Council	QLDC collaborates with both the Ministry of Health and Otago Regional Council to ensure compliance with drinking water standards and resource consents.
Senior Management and Elected Members	Working to ensure QLDC has accurate data for evidence based decision making as well as leading a committed and coordinated effort across all sections of QLDC in terms of AM.
Internal Staff	QLDCs approach is to co-ordinate the education, communication, and awareness of asset management processes in the three waters sector.
Supply Partners and Service Providers	Strong relationships are formed on a shared philosophy of delivering value for money for our customers. Specifically, professional services that are focused on developing investment programmes that increase productivity for our customers. Physical works providers that are delivering fit for purpose service levels and are innovating. Continuing to build awareness & understanding of AM processes across external partners.
Customers	Engage with customers to communicate the cost to deliver services and where they think focus of spending should be and how can achieve required outcomes including a safe, resilient, reliable, and environmentally aesthetic network. Customers include: All residents and visitors, local businesses, ratepayers & residents associations All adjoining property owners
Collaborative Partners	Partnership with delivering services such as neighbouring, regional, & local Councils, emergency (NZ Police/Fire/Ambulance) & civil defence authorities, & DOC. Working with other network providers that utilise three waters for service provision such as electricity, gas, telecommunications, and water.

Table 22: Key Stakeholders

8.4.7.2 COMMUNICATING WITH STAKEHOLDERS

QLDC has adopted a combination of email, social media, radio messaging and websites to inform the public about changing conditions which may disrupt their plans. Disruptions include snow and ice in winter; flooding; burst pipes; contamination warnings; storm damage; road works; crashes and police operations. QLDC has also relaunched its text alert system. Specific channels are:

- QLDC Facebook page (28,513 followers);
- QLDC Twitter feed (3,514 followers);
- Community text alerts (list of 29,000);
- Community Facebook pages, chosen to match the location of the disruption);
- Breakfast radio – The Hits, More FM, Radio Wānaka, Radio Glenorchy;
- QLDC website;
- Crown Range weather station and webcam.

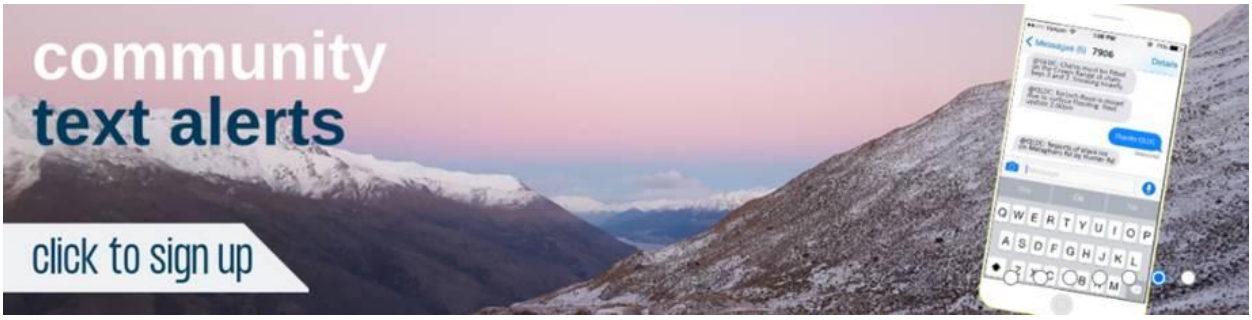


Figure 38: Communicating with Stakeholders

The QLDC website holds up to date and informative information on our Three Waters network – it highlights tips and provides guidance where further information can be sought, examples as per below:

Water Conservation, Tips & Restrictions:
Summer is a thirsty season when it comes to our water network. Maintaining green lawns is harder work in the dry weather, and people seek out water-based fun in the hot sun.

The District is some of the biggest water consumers in the country and it can put our water network under strain. We should always treat water as a precious resource, but over summer it's especially important to consider the ways we use water and so we are encouraging people to become wai wise at home.

In the event we see extended periods of water being taken from the network faster than our reservoirs can replenish, we may need to introduce water restrictions to ensure we can provide sufficient water for public health and fire-fighting requirements.

Why are restrictions needed?
If Queenstown Lakes District residents use water faster than we can make it, the amount of water in the reservoir will decrease.

Every local community will have different trigger points for when water restrictions are needed based on the characteristics of their local supply. In general, if water usage is ramping up then the appropriate alert levels will be imposed and adjusted as needed.

Figure 39: Water Restriction Levels

We continuously monitor water production vs usage reservoir levels across all our water schemes and alert levels will be lifted once usage drops to an acceptable level, normally coinciding with cooler and wetter weather.

Figure 40: Snap Send Solve

Contacting Council

The QLDC website advises a number of ways members of the public can contact council to report leakages, issues with the Three Waters Network etc. From a simple phone call to QLDC to raise a Request For Service (RFS) or lodging it directly via the website through a simple "Fix It" form. QLDC also has the **Snap, Send and Solve** technology application. If you spot non-urgent issue in the community, you can let us know by using the Snap Send Solve app. This app is a simple and free way to send QLDC non-urgent 'Fix It' requests, meaning the next time you spot a pesky pothole on the road outside your house or a fallen tree blocking a trail, snap it then send it and QLDC will solve it.

8.4.7.3 COLLABORATION

QLDC believes that collaboration facilitates an important approach in achieving our desired outcome, this is done by working closely with our partners, stakeholders and wider regional peers.

Closer relationships are being developed between QLDC and its contractors. Regular liaison meetings and early engagement have been fundamental to building our AMP and Maintenance & Renewals Programme

- QLDC is coordinating joint workshops and training for utility operators.
- QLDC are developing relationship with the Office of the Auditor General to improve the 30 Year Strategy.
- Internally within Property and Infrastructure, QLDC are working closer with Transport and Solid Waste, particularly around work programmes, monitoring of reinstatements and undertaking asset criticality/vulnerability assessments.
- Across departments, QLDC are working much closer with our Planning and Development and Strategic Growth teams to address the requirements of the National Policy Statement for Urban Development as well as the spatial plan.
- QLDC are approaching the local supply chain early in the procurement process to find the most appropriate method to get the best value for projects. I.e. packages of works and timings.
- Lifelines – this is a collaboration of infrastructure companies within Otago to make sure people keep moving when there is a significant event. The group covers members from Local Authorities (3 Waters, Roading and Transport), Electricity Companies, and Telecommunications, Emergency Services (St John, Fire, and Police) who meet regulatory. There is also a dedicated Queenstown group - Queenstown Lakes Utilities & Lifelines (QUELL) which includes air and water access.
- QLDC has a strong relationship with the districts business community and is building its relationship with Iwi (Ngai Tahu).
- QLDC have worked with the Civil Defence team to review AF8 preparedness and input this into risk planning.

- QLDC has created a Forward Works Viewer, this allows Council to map the districts projects and in future will combination with Private Development projects. This will provide oversite of what is going on within the district, and have an impact on Utilities, Events etc. A time slider/play button allows for an interactive visual representation.
- Across Council collaboration has focus on reviewing the Land and Subdivision code of practice and this has resulted in tangible improvements to the vesting process.

8.4.7.4 CUSTOMER REQUESTS FOR SERVICE

Customer interaction is key metric on how we are delivering the community outcomes. Interaction with customers is largely recorded through our Customer Management System (TechOne). Request for Service are recorded, actioned, and monitored at a corporate level and a councillor level.

QLDC have worked to integrate the Customer Service System with QLDC's asset management systems, which enables the Three Waters contractors to receive almost immediate notification of requests and to be able to provide response and action back to the customer service team.

The district has seen major changes in the last few years, QLDC are receiving an increasing number of requests from the public

8.5. FUTURE DEMAND FOR OUR ASSETS AND SERVICES

8.5.1. OVERVIEW

Asset demand forecasting provides information around expected changes in demand for assets and services that drive the need for growth-related new works. It is intended to inform asset acquisition planning to meet growing demand as well as disposal planning where there is low or declining demand. It may also drive demand management strategies which are 'non-asset' solutions (do not require a capital asset investment) such as increasing opening hours or promotional activities if the aim is to increase use of under-utilised assets.

Identifying and quantifying the drivers of demand is an important step to forecasting future requirements. A wide range of drivers have been identified through out this document.

The most significant 3 Waters demand drivers in the QLDC are:

- High summer temperatures and low rainfall
- Free draining soils and an expectation that water is available for domestic irrigation.
- Large lifestyle block lot sizes encouraging domestic irrigation use.
- High visitors during summer periods
- High growth in residents and visitors numbers
- Being surrounded by large lakes and rivers creates a perception that water is freely available.

8.5.2. MODELLING STRATEGY

Modelling our Three waters network is playing an increasingly important role in meeting our communities expectations around three waters service delivery.

There has previously been a disparate approach to the modelling, where models have been developed around specific townships using a range of software and approaches. QLDC have now developed model Specification for each network with the objective of getting more consistent outputs.

8.5.2.1 WASTEWATER MODELLING

The Wastewater Network Modelling Specifications' primary objective is to ensure that comprehensive catchment models are built to a consistent standard across the region. This will give confidence in using models for network planning and improving efficiency in both the build and on-going maintenance of models. The other objectives are:

- Enable competitive procurement of model builds.
- Ensure models are of sufficient quality that strategic outputs are transparent and defensible.
- Ensure consistency between models.

The specification will provide guidance on the following:

- Model Extent Definition
- Data Collection and Review
- Data Anomalies
- Model Build
- Model Calibration, Verification and Validation
- System Performance Assessments – current and future.

8.5.2.2 WATER SUPPLY MODELLING

Historically, QLDC has developed models of its water supply networks independently (Queenstown, Wānaka, Lake Hāwea, Lake Hayes, Arrowtown, Arthurs Point and Luggate). These models were created using a range of software and following different standards. QLDC has now developed a Water Supply Modelling Specification to provide a framework for future model development work, ensuring consistent outputs across the region.

The main objectives of water supply network modelling are to:

- Compile network data.
- Assess and improve the understanding of the system through calibration.
- Assess current and future system performance under normal conditions and what-ifscenarios. This includes studies to identify:
    - Areas where Level of Service is not met.
    - Critical fire hydrants for further fire flow testing.
- Identify and optimise network improvements or solutions to performance issues. This includes studies on:
    - Long term upgrades planning.
    - Strategic network planning.
    - Inter township water transfers.
    - Effectiveness of emergency supply.
    - Feasibility of alternative DMA configurations.
    - Optimisation of reservoir replenishment.

But not to:

- Undertake detailed design.
- Determine the flow available at critical hydrants (although the model can provide an estimate,this needs to be confirmed through field test).
- Assess water quality (although the model can provide an estimate of the transit time, this isnot sufficient to determine the chlorine residual at any given point).

8.5.2.3 STORMWATER MODELLING

The Stormwater Flood Modelling Specifications are to be used as a base for all stormwater modelling

associated with the catchment management planning process. such as catchment-wide detailed analysis, planning and design.

The primary objectives of the stormwater catchment modelling are:

- To assess the current performance of the stormwater drainage system in the catchment and identify where levels of service requirements are not, or will not be met
- To develop flood plain and flood sensitive area maps and to identify significant flood hazard areas including properties with habitable floors at risk of flooding.
- To provide a tool that will enable comparative evaluation of initiatives to mitigate flooding
- To provide a guide for the management of stormwater issues in the catchment.
- To provide a basis for determination of actions to meet the QLDC strategic objectives and level of service requirements.
- To provide a basis for determining options to solve flooding issues identified in the catchment, including an assessment of all feasible options and a description of the recommended works required.
- To provide a supporting documentation for the network consent applications.

8.6. IMPROVEMENT ACTIONS – DEFINING AND MEASURING LEVELS OF SERVICE

Improvement Actions – Levels of Service

1. Level of Service Framework finalised and embedded in decision making, subject to WSDP and LWDW developments
2. Population demand process is closely aligned with Strategy & Policy
3. Data input improvements
4. Modelling Specifications signed off and in use.
5. All models in one software solution
6. Provide overview of where we have models, why we have them (or not) and at which level each model is at.
7. Connections report updated in TechOne
8. Bring the Carbon Baseline work into the AMP
9. Benefits Realisation Framework completed
10. Update tables with latest RFS data
11. Update tables with latest Community Engagement figures
12. Update Three Waters Reporting Framework to include the applicable network that the report applies to.
13. Update any DIA changes to KPI's as a result of recent consultation.

9. OUR THREE WATERS PROGRAMME

PROGRAMME BUSINESS CASE

This section provides context for the QLDC Thee Waters Programme; Maintenance, operations and renewals Programme covers how we will Maintain, Operate and Renew our network, the Improvement Programme addresses key gaps in level of service on our network

Section 0 & 0 form the Programme Business Case

9.1. CONTEXT OF 2024-34 PROGRAMME

This investment plan forms part of the 2024-2034 Long Term Plan (LTP24) which sets out QLDC's long-term direction and investment intentions.

The QLDC 2024-34 LTP has been developed to maximise delivery of benefits within a constrained funding environment. The financial impact of the post-COVID-19 environment on our District cannot be underestimated. QLDC LTP is $2.2 billion (Inflated to AP24/25) which will trigger an annual rates increase of around 15% over the next 10 years[6]. This has resulted in a rethink on the priorities within our corporate investment programme. QLDC's LTP process has undergone rigorous review across our organisation and takes into account the needs across all investment portfolios (i.e. transport, three waters, waste management and community services). Given the environmental pressures QLDC's network face, priority has been given to protect our current network investment, so maintenance and renewals local investment has been sustained.

Description	Allocated Budget 2021-31	Proposed Budget 2024-34	$ Change	% Change
3 Waters Operational Expenditure*	193,496,545	225,433,041	31,936,496	17%
3 Waters Capital Expenditure	679,985,874	1,295,416,703	615,430,829	91%
Total	**873,482,419**	**1,520,849,744**	**647,367,325**	**74.11%**

Table 23: Overview of previous LTP & Current 3 Waters Investment Programme Uninflated

** Opex excludes Overhead Allocations & Recoveries and Interest & Depreciation*

9.2. MAINTENANCE OPERATIONS AND RENEWALS

This AMP Programme Business Case provides context for the QLDC Three Waters Programme, indicating how we will maintain, operate and renew our network, as well as our capital Improvement Programme (which addresses some of the key gaps in level of service on our network).

A vital component of any asset management system is ensuring that processes and procedures are in place to maximise the value from the asset throughout its useful life. To this end, QLDC has partnered with its delivery contractors to provide a robust programme of preventative maintenance, coupled with the resource pool and expertise to address reactive works as they arise. Into the future QLDC must continue to mature its asset management by building on available data, processes and technology to achieve a better understanding of the existing asset base, and to enable informed and targeted capital investments. This approach will provide true value to the ratepayers, whilst providing a sound infrastructure platform to support the growing district.

[6] This is subject to change until the LTP is finalised.

QLDC faces a number of challenges associated with the operation and maintenance of its three waters network. The key challenges are below:

- **Aging infrastructure** – as the network ages the frequency of failures will increase, shifting the balance away from planned maintenance, towards reactive action.
- **Limited asset condition data (network risk profile)** – Understanding the condition and nature of the network assets is paramount to enabling sound renewals planning. Without this information, it is difficult to be certain that full value is realised from the assets prior to replacement, and that the assets in service are operating as expected.
- **Private infrastructure within the public network** – A number of legacy privately run water infrastructure schemes remain within the district. The scope and complexity of these private schemes vary from reticulation pipes within a private lane, to pump stations, through to treatment facilities. These present a range of challenges including inconsistent construction standards, poor quality, and insufficient capacity for growth.
- **Noncompliant treatment facilities (potable and wastewater)** – the district's rapid growth has put significant strain on both the water and wastewater treatment facilities. Significant steps have been taken and are planned to bring all treatment plants into compliance within the next 10 years (both drinking water and wastewater).
- **Network resilience** – a lack of redundancy/storage at critical pieces of infrastructure create areas of vulnerability.
- **Rapid development** – creates challenges around quality control through the construction lifecycle.
- **Ambiguity in the level of service we provide** – no published level of service to help guide community expectations.

9.3. MAINTENANCE & OPERATIONS PROGRAMME

The Maintenance Programme aims to support the delivery of services to QLDC customers at the lowest possible whole of life cost. QLDC is building data and systems to better understand the challenges of the district and look to optimise network management and delivery through application of best practice and considering growth predictions in all activities .

The majority of the maintenance programme is delivered under a traditional contract framework, however the intent is to build strong collaborative relationship with suppliers and partners is key to delivering the desired outcomes.

The Three Waters Operations and maintenance Contractor Veolia has adopted a resource profile for the QLDC Operations & Maintenance contract with resources (personnel and plant) based on the contract specification. This provides sufficient resource to:

- Undertake Preventative maintenance tasks on treatment and reticulation assets
- Respond to Requests for Service in accordance with Levels of Service and Contract KPIs
- Provide 24/7 on call coverage to respond to alarms and breakdowns
- Provision of critical and routine spare parts for repairs and maintenance
- Vehicles and plant to cover all of the above

Should the original resource prove to be inadequate or deficient in any area. The contract has numerous mechanisms to identify and resolve potential or actual issues. These include:

- **Early Warnings** - These provide Veolia the opportunity to proactively raise any change in contract risk and seek resolution. These can be prepared and submitted to QLDC for review at any time.

- **Monthly Contract Report and Meeting -** The contract team meet on a monthly basis to discuss and review performance, this includes contract KPIs, drinking water standard compliance and preventative maintenance.
- **Quarterly Core Group Meeting -** The contract leadership team (Core Group) meet on a quarterly basis to review overall contract performance.
- **Annual Target Cost Review -** Finally QLDC and Veolia review the contract scope and specification on an annual basis, any and all contract items can be reviewed and adjusted to ensure sufficient resources are in place at all times.

9.4. STRATEGIC RENEWALS

As infrastructural assets age, we normally see a decline in their performance, sometimes to the point of asset failure. Asset failures can cause service interruptions and may pose a risk to public health and safety. We have developed asset replacement and rehabilitation programmes to monitor the condition and performance of critical assets in order to estimate the end of their useful economic lives. Asset renewal decisions for these assets are based on a risk assessment of the likelihood and consequence of failure, taking into account the asset's age and life expectancy, condition, performance, system resilience and criticality. Renewal of treatment plant assets are undertaken based on the observed performance of the assets in operation and as a result of regular inspections. For local network assets which are currently subject to a 'run-to-failure' philosophy, a probable failure rate is applied based on the diameter, pipe material and expected life. The statistical modelling of local network asset replacements will continue to be refined as further fault analysis and condition assessments are undertaken. Over the time of this plan, we will move towards a proactive rather than reactive approach to renewal of our local network assets, with a proportionate increase in investment in this area to ensure a positive customer experience is maintained. Proactive renewal has significant benefits, by reducing leakage in water pipes and decreasing infiltration into wastewater pipes, preserving water volumes as well as network and treatment capacity for customers.

QLDC renewals is moving to better utilise renewals strategically alongside capital investment to drive better outcomes for our communities. Further work will be done to utilise the IDS Wai Deterioration modelling and develop a robust repeatable way to predict future need for investment.

There is a clear need to review the quantum of renewals being undertaken for each network and to test this against accepted best practice to ensure the long term integrity of the networks are protected.

9.5. DEVELOPMENT OF THREE WATERS MASTERPLANS

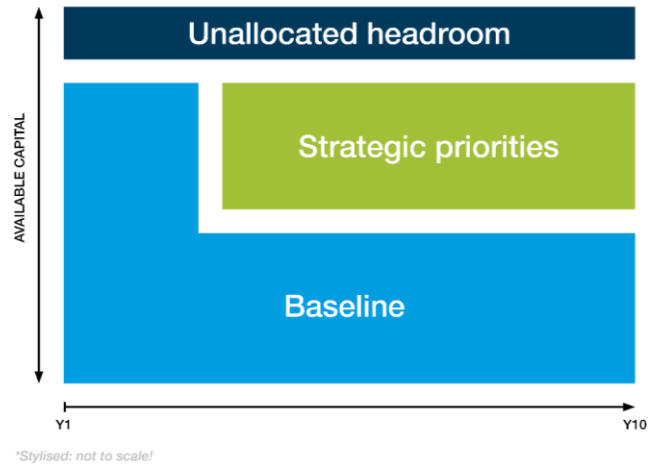
Our existing three water masterplans have been developed by service (i.e. water supply, wastewater, stormwater) and by geographical areas. There is an aspiration to combine masterplans to realise further benefits and synergies These masterplans are being developed with an adaptive view to long term planning horizons that enable an agile approach to scenarios. They will demonstrate how we plan to develop our three water networks to interact with other long-term planning for the district. The masterplans are to be reviewed on a continual basis to ensure that they are relevant.

- **Evidence-based problems:** The quantum of the problem we need to address (e.g. how much projected flow exceeds pipe capacity), and when the problem will trigger a need for investment.

- **Network Strategy:** Ultimate / maximum probable development should be used to understand the long term strategy in terms of capacity, layout and functionality in order to service customers and guide how this infrastructure can be staged.
- **Network opportunities:** How investment will respond to problems and/or could improve operational efficiencies, network resilience, levels of service etc.
- **Strategic dependencies and opportunities:** How planned development of our networks can be aligned to, or is constrained by/dependent on, other long-term planning for the district (including potential plan changes).
- **High-level investment response:** An overview of how we can group and sequence our corresponding investment programmes.
- **Master planning tolerances:** What factors will trigger a review of the masterplan (e.g. changes to regulation or demand projections, programme and project business cases determining the planned way forward isn't feasible).

9.6. TEN YEAR CAPITAL EXPENDITURE

Through LTP24, QLDC is seeking to deliver a balance of outcomes for the community, while remaining within prescribed debt limits and keeping rating increases as low as possible. The resulting approach to prioritisation involved first identifying and allocating funding to 'baseline' activities, followed by the distribution of funding across a range of other strategic priorities for the organisation. A prudent amount of funding unallocated funding headroom was retained to ensure QLDC can be responsive to unexpected expenditure requirements.



1. **Funding was first allocated to baseline expenditure requirements (things we must do). This utilised all available funding for the first two years of LTP24.**
2. **Remaining funding was allocated to initiatives that will deliver on strategic priorities.**
3. **Not all available funding is allocated – retaining some flexibility for unexpected expenditure requirements.**

Figure 41:Approach to building the LTP24 capital expenditure plan

This approach means that, over the next ten years, QLDC plans to invest in all known essential three waters expenditure requirements (i.e. baseline) that ensure:

- Human and environmental health is protected,
- Current levels of service are maintained or do not materially worsen,
- QLDC remains a good steward of existing assets through a supporting and balanced programme of renewals,

- Planning for future investment needs is holistic and robust,
- Regulations, standards, and other compliance based requirements are achieved and maintained, and
- Existing binding commitments are honoured e.g. physical works contracts, development and funding agreements, etc.

In addition to baseline three waters expenditure, a range of other improvement initiatives are planned that will support delivery of QLDC's strategic priorities and support a more sustainable approach to servicing; examples of these strategic initiatives include a major stormwater improvements programme, new schemes for Whakatipu's Te Putahi Eastern Corridor (all three waters) and Te Tapuae Southern Corridor (water supply and wastewater), alternative biosolid disposal arrangements, existing scheme optimisations, and targeted scheme extensions that enable QLDC to provide services to existing areas that currently do not receive service (notably areas of Luggate and Kingston).

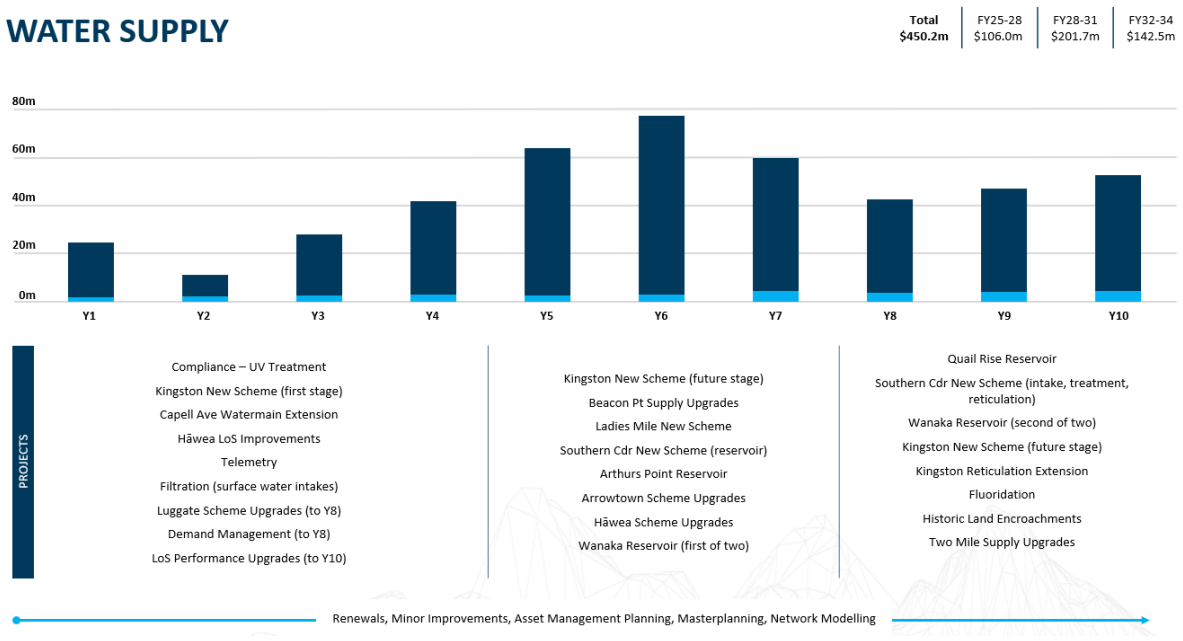
As a result, **QLDC plans to invest $1.295 billion (inflated AP24/25, $1.47 billion inflated) of capital expenditure in three waters assets and services over the next ten years.** This investment is summarised in the sections to follow. The supporting activity-based charts show the distribution of planned three waters capital investment across the LTP24 period, organised by (a) activities QLDC will continue to invest in on an ongoing basis and (b) time-limited initiatives.

QLDC will continue to work with local communities to address their three waters infrastructure needs and the funding and recovery mechanisms required to support significant shifts in historic levels of service, which have been barriers to community uptake in the past. This approach is exemplified by the recent and progressive introduction of new schemes and services across the district to ensure the growing population has access to high-quality three waters infrastructure that protects the natural environment. Notably, Luggate has been connected to Wānaka's wastewater treatment plan, the Cardrona settlement now has reticulated wastewater and water supply schemes, and arrangements are in place to introduce the same in Kingston.

9.6.1. WATER SUPPLY

Investment in water supply over the next ten years will support QLDC to:

- achieve and maintain compliance with Drinking Water Quality Assurance Rules,
- maintain and/or improve service levels within existing schemes in line with projected growth,
- provide enabling infrastructure that unlocks key development areas,
- improve the resilience and reliability of water supply assets and services,
- promote more sustainable usage of raw and treated water,
- look after existing assets, and
- develop comprehensive, integrated, and agile plans for long-term servicing needs.



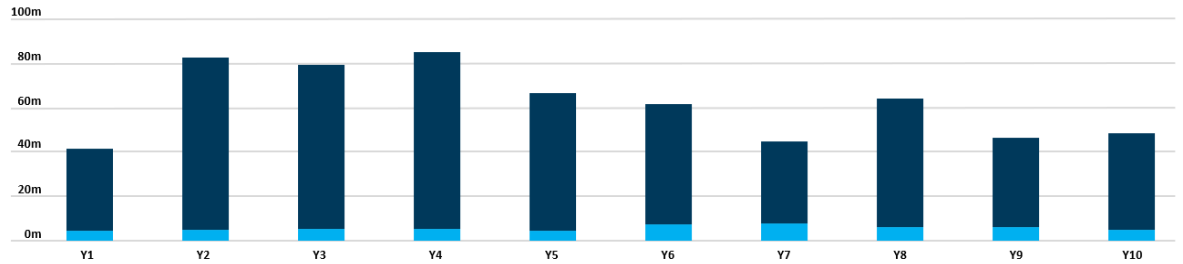
9.6.2. WASTEWATER

Investment in wastewater over the next ten years will support QLDC to:

- maintain and/or improve service levels within existing schemes in line with projected growth (with particular focus on wastewater pump station capacity and storage to manage and reduce the risk of untreated wastewater overflows,
- increase treatment and disposal capacity and performance, including investigation and implementation of an alternative approach to managing biosolids,
- provide enabling infrastructure that unlocks key development areas,
- continue to connect existing settlements to QLDC's reticulated schemes,
- look after existing assets, and
- develop comprehensive, integrated, and agile plans for long-term servicing needs.

WASTEWATER

Total	FY25-28	FY28-31	FY32-34
$620.2m	$288.2m	$172.8m	$159.3m



PROJECTS

CBD to Frankton Conveyance
Robins Road Conveyance
Hanleys Farm Pump Station
Kingston New Scheme (first stage)
Telemetry
Southern Wanaka Conveyance Scheme
North Wanaka Conveyance Stage 2 (pump station)
Septage Disposal
Project Pure Aeration Grid
Upper Clutha Conveyance Scheme (to Y5)
Project Shotover Stage 3
Shotover Disposal Field (to Y6)
LoS Performance Upgrades (to Y10)

FBPS to Shotover Conveyance
Marine Parade Pump Station
Remarkables Park Pump Station
Hawthorne Drive Conveyance
Cardrona Scheme Upgrades (to Y8)
Ladies Mile New Scheme (to Y8)
Project Shotover Future Works (to Y10)

Southern Corridor New Scheme
Arrowtown to Lake Hayes Conveyance
Kingston New Scheme (future stage)
Luggate Reticulation Extension
Kingston Reticulation Extension
Biosolids Disposal

Renewals, Minor Improvements, Asset Management Planning, Masterplanning, Network Modelling

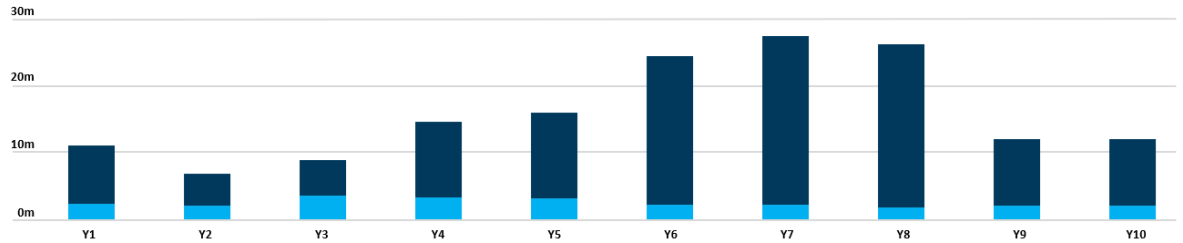
9.6.3. STORMWATER

Investment in stormwater over the next ten years will support QLDC to:

- address known compliance issues,
- provide enabling infrastructure that unlocks key development areas,
- understand the impacts a changing climate will have on stormwater patterns and the associated responses required to protect people and the environment,
- deliver a major stormwater management intervention annually to respond to a historic infrastructure deficit and projected needs, and
- maintain existing assets and improve their resilience.

STORMWATER

Total	FY25-28	FY28-31	FY32-34
$159.3m	$41.3m	$67.8m	$50.2m



PROJECTS

Lakeview Development Servicing (close-out)
Kingston New Scheme (first stage)
Rockabilly Gully Erosion Protection
Remarkables Park Outlet
Stone Street Upgrades

Ladies Mile New Scheme (to Y8)
Major Improvements (to Y10)

Kingston New Scheme (future stage)

Renewals, Minor Improvements, Asset Management Planning, Masterplanning, Modelling, Compliance Plans

9.7. IMPROVEMENT ACTIONS – OUR PROGRAMME

Improvement Actions – Our 3 Waters Programme

1. Review current legislation and regulation
2. Benefits realisation framework
3. Test the IDS Wai Deterioration model to develop robust strategic renewals quantities
4. Continue to improve understanding of asset condition and performance. There is a clear need to explore the quantum of renewals being undertaken to protect the integrity of our assets.

10. MANAGING RISK

This section outlines Council's approach to managing risk, including management of potential significant negative impacts, safety management and Council's risk management approach.

10.1. QLDC RISK MANGEMENT FRAMEWORK

QLDC has reviewed and updated its Corporate Risk Management Framework (RMF) in accordance with ISO 31000. The RMF has been rolled out across QLDC at a corporate level and is in the process of being embedded at an operational level. The RMF provides guidance on the process that QLDC has adopted for the effective identification, analysis, evaluation, and treatment of risk. The RMF also details the responsibilities that are associated with risk management governance, risk ownership and risk treatment. QLDC's Audit and Risk Committee provides governance over the effectiveness of the QLDC's RMF, internal controls, legislative and regulatory compliance, external audits, and financial reporting.

QLDC has developed a risk register containing a set of strategic and operational risks, each of which have been assessed for their likelihood and consequences both before and after the mitigations and controls in place are considered. This list provides guidance to the organisation as to the materiality of key risks and the importance of mitigations and controls.

QLDC is moving to better integrate formal risk assessments into its asset decision making. The result of this integration will be each investment decision being based on a consistent, robust and quantitative assessment of risk.

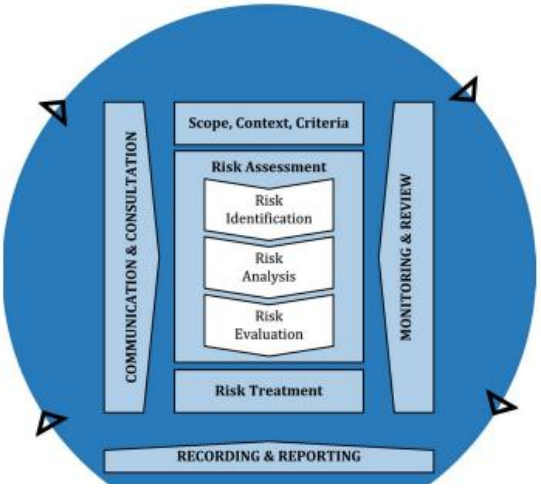


Figure 42: QLDC Risk Management Framework

To mitigate risk, QLDC will:

- Establish and deliver maintenance and renewal service standards that preserve critical assets, mitigate risk and meet the desired service outcomes based on this RMF.
- Not accept the transfer of third-party assets, unless minimum acceptable quality standards are met as set out in the QLDC Land Development and Subdivision Code of Practice.
- Prioritise and proactively inspect and protect its assets and their performance.
- Insure all critical assets for loss, damage and public indemnity.
- In the event that an asset can no longer be maintained in a safe condition, it shall be retired from service and any foreseeable hazards to the community are mitigated.
- Perform hazard loss modelling.

10.2. SIGNIFICANT ASSETS

QLDC Significance and Engagement Policy states that the water supply infrastructure and sewage treatment plants are considered 'Significant Strategic Assets'.

Any decision relating to the sale or transfer or sale of shareholding of any strategic assets is assessed as a matter of high impact and will trigger the Special Consultative Procedure. To clarify:

- Any decision that transfers or changes ownership or control of strategic assets to or from the Council
- The sale or transfer of shareholding of any of the Significant Strategic Assets
- Any long-term lease of strategic assets (other than land)

10.3. CRITICAL ASSETS

Critical assets can be defined as those that "are especially significant to social wellbeing and therefore merit priority attention by utilities in emergency response and recovery" they are also defined as those which have a "high consequence of failure" for example, a water supply main may be critical because it carries the only supply of water to a community.

While there are a variety of frameworks for assessing criticality in different asset classes and industries, it is generally understood that a critical asset is one whose consequences of failure, or interruption of service, is very high. While a focus on assets is important, we also need to consider the events that lead to interruption of service (which may occur across a group of assets). Importantly for QLDC's criticality assessment, the Corporate Risk Management Framework contains guidance on how to assess the consequence of a particular event.

In the Three Waters context, criticality is an important component of a key level of service: resilience. While resilience is the ability of the network to recover following an event, the criticality of the assets in question will drive the level of desired resilience.

QLDC's Criticality Framework (CF) has two stages:

- Stage One is the consideration of different potential failures for each asset category (e.g. water pumps). This stage provides guidance as to which categories of assets, and types of events, are the most critical, which is useful for asset strategy, broad capital allocation and education.
- Stage Two takes the PESTLE scores form Stage One and amends these to suit specific assets (i.e. location, size etc.). The purpose is to specifically prioritises assets for condition monitoring, risk assessments and other aspects of asset management.

This process is intended to be a first generation, inevitably, there will be endless opportunities for future refinements, but our near-term objective is to apply a credible framework and obtain some experience in using it for decision making, rather than perfecting the framework. Next steps include validating the result from the above two stages, communicating, and embedding the data into asset management decisions and investigating GIS analysis.

Our critical facilities and assets are those which cannot be allowed to fail because the consequences of a failure are too high. Criteria to identify which facilities and assets are critical include:

- Health and safety risk

- Number, type, and duration of customers affected
- Environmental consequence of the asset failure
- Regulatory, resource consent and drinking water quality compliance
- Size and location of the asset
- Complexity of repair and outage duration

We have adopted the following approach to the renewal of assets:

- Renewal programmes are developed for critical assets
- Non-critical assets are replaced on failure

10.4. INCIDENT MANAGEMENT

An Incident Management Plan (IMP) is being developed. The purpose is to document the framework, systems, processes, and procedures for managing water, wastewater, and stormwater, and roading operational incidents within the QLDC area.

This IMP links the business-as-usual Three Water and Roading maintenance contract responsibilities, with generally Level 1 and 2 faults and incidents, through the escalation processes to Levels 3, 4 and 5 and the Otago Civil Defence and Emergency Management Group Plan 2018-2028.

The QLDC Risk Management Policy provides the framework guiding the classification of minor Level 1 Faults through to moderate Level 2, major Level 3, and significant Level 4 Incidents, up to extreme Level 5 Incidents including a declared Civil Defence Emergency.

10.5. RESILIENCE

Resilience is a key activity in managing risk on the QLDC Network, more information can be found in the Assets and Activities Section.

10.5.1. EARTHQUAKE ASSESSMENT LOSS

Treasury has indicated that natural hazard loss modelling (risk quantification) for earthquake, flood, volcano, and tsunami will be a requirement going forward for councils exposed to these natural hazards.

QLCDC's first assessment was completed in September 2016, the aim being to provide estimates of damage/loss that might be experienced from a significant natural hazard disaster such as an earthquake to infrastructure (water, wastewater, and storm water reticulation). The total replacement value of QLDCs infrastructure assets assessed were to be $1,488m excluding wastewater and water supply treatment plants.

The Queenstown region is susceptible to a range of possible natural hazards however, the scope of this assessment focuses on earthquakes, with the other possible natural hazards remaining out of scope. When comparing earthquakes to the other types of natural hazards, earthquakes typically have the largest consequence on council assets, hence the focus of this assessment. The other possible hazards such as flooding and volcanic eruption are deemed less likely to cause damage to the same extent in the QLDC region.

Two earthquake-shaking scenarios were assessed for loss estimation. These have a target level of shaking in Queenstown equivalent to 1 in 500 and 1 in 1,000-year average recurrence intervals (ARI). The epicentre used for both scenarios is a rupture on the Moonlight North Fault, located approximately 9 km west of Queenstown and running in a north-south direction.

The assets included in the analysis include both above ground and below ground infrastructure assets in the Three Waters pipe network. The reviewed infrastructure includes assets such as pump stations, reservoirs, and reticulation systems. To make a spatial assessment of loss, the liquefaction vulnerability, earthquake shaking, and asset values were attributed to the asset in the geospatial database. The majority of the assets are typically concentrated in the main urban centres.

Utility	Type of Assets	Value ($m)	% of total asset values
Water Supply	Pipe Infrastructure	199.0	13%
	Pump Stations	69.9	5%
	Reservoirs	30.6	2%
Wastewater	Pipe Infrastructure	533.5	36%
	Pump Stations	177.5	12%
Stormwater	Pipe Infrastructure	477.5	32%
	Pump Stations	NA	NA
TOTAL		1,488	100%

Table 24: Summary of QLDC Infrastructure Assets and Values

Records of historical earthquakes show that Queenstown and Wānaka have been subjected to earthquake shaking up to Modified Mercalli Intensity (MM) MM7 'damaging' since records began circa 1840. Notably, the Wānaka Earthquake of 1943 was centred very close to Wānaka and categorised as MM7 'damaging' in Wānaka. The recent earthquake of May 2015 centred 30 km northeast of Wānaka, generated ground shaking classified as MM4 to MM6 in Wānaka.

Two fault rupture scenarios have been developed to represent target shaking levels of 1 in 500 and 1 in 1,000-year ARI in central Queenstown. Both scenarios are based on a rupture on the Moonlight North fault, which is located approximately 9 km west of Queenstown and runs in a North-South direction. The two scenarios are:

- Scenario One – A magnitude (Mw) 7.1 rupture on the Moonlight North Fault targeting a shaking intensity with a 1 in 500-year ARI in central Queenstown.
- Scenario Two – A Mw 7.6 rupture on the Moonlight North Fault targeting a shaking intensity with a 1 in 1,000-year ARI in central Queenstown.

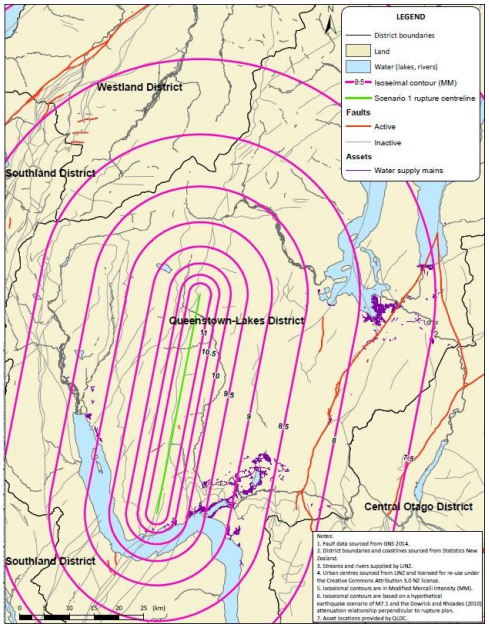


Figure 43: Earthquake Scenario 1

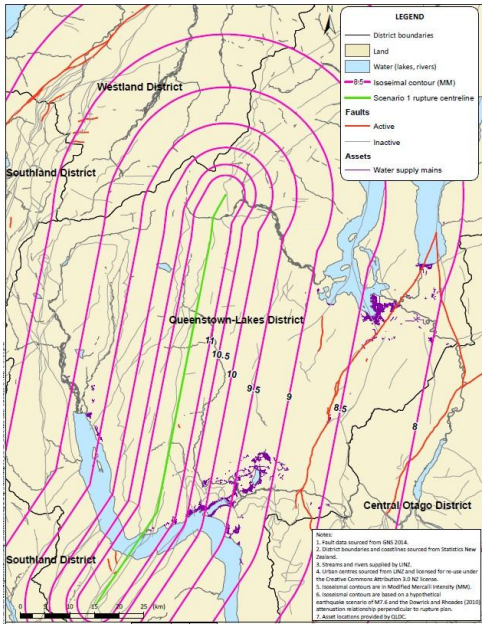


Figure 44: Earthquake Scenario 2

The following table provides a summary of aggregated damage levels ($) for each asset type for the scenarios modelled. Damage from an earthquake will be caused by a number of different factors. The majority of damage is expected to be caused by the effects of shaking (cracking/deformation) and liquefaction (especially lateral spread and differential settlement).

The earthquake loss scenarios considered are severe events, but more extreme events can always occur. Considering this the two scenarios modelled have a target ARI of 1 in 500 years and 1 in 1,000 years.

Scenario	Utility	Asset Type	Damage Estimate ($m)		
			10th Percentile	Mean	90th Percentile
Scenario 1	Water Supply	Pipe Infrastructure	$15.4	$21.8	$28.8
		Pump Stations	$27.3	$34.0	$40.9
		Reservoirs	$11.6	$15.1	$18.1
	Wastewater	Pipe Infrastructure	$33.6	$51.3	$70.6
		Pump Stations	$59.6	$73.0	$86.1
	Stormwater	Pipe Infrastructure	$15.1	$23.2	$32.2
		Pump Stations	NA	NA	NA
	TOTAL		$182.4	$218.4	$256.5
Scenario 2	Water Supply	Pipe Infrastructure	$18.5	$25.9	$34.0
		Pump Stations	$36.8	$43.6	$50.2
		Reservoirs	$17.0	$19.6	$22.1
	Wastewater	Pipe Infrastructure	$43.4	$63.7	$85.3
		Pump Stations	$81.6	$95.0	$107.9
	Stormwater	Pipe Infrastructure	$20.1	$30.2	$41.5
		Pump Stations	NA	NA	NA
	TOTAL		$237.0	$278.1	$321.8

Table 25: QLDC Probable Maximum Loss and Foreseeable Maximum Loss

10.6. HERITAGE ASSETS AND PROTECTED FEATURES

QLDC have a number of heritage assets in our district, and these are referenced in the District Plan. QLDC are developing a new Arts, Culture and Heritage (ACH) Strategy. It is proposed to create a 'Heritage Operational Framework' within Council to connect touchpoints across departments.

Heritage Asset	Stormwater heritage reference 5224
Description	Stone-lined Channel 26 Hallenstein Street, Queenstown Private/No Public Access 
	This stone-lined channel on a section of land declared part of a water reserve in the 1870s was probably built in the late 1870s or early 1880s to help control water flow from springs and streams on this sloping land on Hallenstein Street, Queenstown. It has historical and archaeological significance. In November 1873, the sections associated with the channel were included as part of a 'water reserve.' On an 1871 survey plan these sections show a stream bed marked as a water reserve traversing these land parcels. These water ways appear to travel down the slope, rather than traverse it as would be typical of a water race, so it looks like the structure is associated with managing the flow of the water, rather than carrying water as a race would do.' The Templetons preserved their 50-metre section and had a plaque installed commemorating its importance. Much of the channel has been buried or destroyed, but this remaining section illustrates the stone-lined construction of the original channel. In 2016, the Stone-lined Channel remains, as does the plaque commemorating its existence.

Table 26: QLDC Heritage Assets (Source: Heritage New Zealand)

The following heritage assets are identified in the District Plan. Details of Three Waters Services affected are below:

Asset	Three Waters Service
Edith Cavell Bridge	• Has both a water and wastewater gravity pipe crossing this bridge
Kawarau Falls Bridge	• There is an active water main and inactive wastewater pumping main on this bridge

Table 27: District Plan Heritage Assets

10.7. CONSENTS

Further to the legislation discussed in in the Strategic Direction Section, the primary driver of Three Waters statutory requirements is driven by compliance with the Resource Management Act 1991 (RMA), which requires:

- Resource consents for **water supplies** are required for the abstraction of natural water that is used for public supplies. These stipulate the volume of the water that can be taken on a daily or weekly basis and a maximum rate of extraction (litres per second).
- Resource consents for **wastewater** are required for the discharge of treated wastewater, into or onto land, into the air or into water.
- Resource consents for **stormwater** relate to discharge structures and river/stream diversions as a means to mitigate flooding risks. QLDC is not currently required to have resource consents for most discharges of stormwater to the environment as these discharges are considered to be permitted by the Regional Plan: Water for Otago. Impending updates to the Otago Regional Council Water Quality Strategy are likely to result in changes to the Regional Plan, potentially requiring QLDC stormwater discharges to be consented.

Under the Three Waters Contract consent compliance is maintained as follows:

- The Council shall fully comply with the RMA and the conditions of resource consents that apply to each scheme.
- The Council is responsible for applying for new resource consents that are due to expire. In some instances, a new resource consent may be applied for well in advance of the expiry date where current and projected demands require an increase in the rate of abstraction and/or an alteration to an existing designation.
- The Council shall gather and collect data required by the resource consent conditions and complete reports as required.
- The Council shall report the monitoring results to Otago Regional Council to demonstrate compliance with resource consent conditions.

As mentioned earlier, the Department of Internal Affairs has introduced mandatory non-financial performance measures. These measures are reported in QLDCs Annual Report, the latest beginning in 2022/23. Two of these measures are in direct correlation to resource consents:

10.7.1. WASTEWATER PERFORMANCE MEASURE 2

Compliance with the territorial authority's resource consents for discharge from its sewerage system measured by the number of:

- Abatement notices;
- Infringement notices;
- Enforcement orders; and
- Convictions, received by the territorial authority in relation those resource consents.

This performance measure indicates how well Council is managing the environmental impacts of its sewerage system. Non-compliance may indicate that it is not managing its processes adequately or that the infrastructure is inadequate. Council has to report on only formal actions taken against them

as these represent activities that may have the greatest adverse impact on the environment. Minor breaches or technical non-compliances would not be reported against this measure.

10.7.2. STORMWATER PERFORMANCE MEASURE 2

Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of:

- Abatement notices; and
- Infringement notices; and
- Enforcement orders; and
- Successful prosecutions, received by the territorial authority in relation those resource consents.

The performance measure indicates the extent to which Council is meeting resource consent requirements to prevent harm to the environment. This means how well Council is managing the environmental impacts of its stormwater system. Non-compliance with consent conditions may indicate that Council is not managing its processes adequately or that the infrastructure is no longer adequate. Council would have to report on only formal actions taken against them as these represent actions that may have the greatest adverse impacts on the environment.

Consents Register is a companion document.

10.8. IMPROVEMENT ACTIONS – MANAGING RISK

Improvement Actions – Managing Risk

1. Develop the QLDC Corporate Risk Framework Tier 2 Risks
2. Update the Network Risk Plan with the Operations team and Contractor.
3. Incident Management Plan (IMP) to being finalised.
4. Update the Earthquake Loss information and context to the Insurance approach

11. EFFICIENTLY AND EFFECTIVELY PROCURE & MANAGE

Delivering our intended outcomes to our community is essential; effective service delivery through procurement and management of our contracts enables us to deliver our programme.

11.1. PROCUREMENT

11.1.1. QLDC (PROPERTY & INFRASTRUCTURE) PROCUREMENT

QLDC has had an increasing focus on procurement capability, capacity, and consistency, QLDC has:

- Introduced a new Procurement Policy (2021) and new Procurement Guide (2022) and continue to build procurement capability, capacity, and consistency
- Adopted a QLDC-wide Procurement Strategy (2023) setting up a centre-led procurement function with the creation of new roles for a Procurement Manager and Procurement Excellence Advisor

Optimise public value	Get the best possible result over the whole-of-life of the goods, services or works by maximizing the benefits and outcomes generated by QLDC's procurement activities.
Supporting the delivery of QLDC objectives through efficient and effective procurement	Make conscious decisions to use procurement to assist the delivery of QLDC objectives. Ensure procurement activity has consideration for QLDC's Procurement Principles and Procurement Charter, including planning for broader outcomes.
Build procurement capability and capacity	Develop QLDC's procurement, knowledge, systems, processes, and resources to support efficient and effective procurement that aligns with industry best practice.

Table 28: Key Goals of Procurement

All procurement is supported by a Procurement Plan that addresses the entire project or service. It is intended that a short-form procurement plan be developed for simple procurements (low cost/low value) and a more detailed plan for complex procurements with higher costs, risk and/or high customer or community profile.

QLDC intends to utilise a variety of supplier selection methods as defined in each specific procurement plan. These may include direct appointment, lowest price conforming, price quality and quality based. QLDC has identified the use of advanced components being contemplated in multiple scenarios, including Supplier Panel – Engineering and Specialist Support Services Panel, Supplier Panel – Minor Works, and Way to Go – Quality Based and Shared Risk.

Contractors are QLDC workers too - to fulfil our duties under the Health and Safety at Work Act when engaging contractors WorkSafe expects that at minimum, we will:

- Be a health and safety leader.

- Set clear health and safety expectations and incorporate these into contracts with contractors.
- Work with designers to eliminate risks so far as is reasonably practicable or minimise risks if they cannot be eliminated.
- Choose the best contractors for the job using pre-qualification, not simply choosing them based on cost.
- Check health and safety records of potential contractors.
- Put clear and effective reporting procedures in place so they can be confident all duties are being met.
- Set up a clear framework for information sharing for the duration of the project.

Contractors are classified based on the frequency of engagement and the risk profile of the work ahead. They are either Low, Medium or High-risk contractors and each requires a different level of tender assessment, induction, monitoring and post contract evaluation.

To help in engaging contractors for or on behalf of QLDC and to ensure that the contractor has suitable safety systems and appropriate training in place QLDC requires contractors to undergo pre-qualification before being engaged to perform work. At QLDC our recommended supplier to do this is SiteWise.SiteWise. Contractors must attain SiteWise Green Status. SiteWise is a pre-qualification system that grades a contractor's health and safety capability and publishes that grade in a database that can be viewed by main contractors and principal organisations. We can also accept other pre-qualification systems that are of an equivalent or higher standard, but you must involve the HS Manager in this process to ensure that the system meets QLDC requirements.

QLDC's Procurement Policy sets out how goods and services should be purchased. It is based on two complementary principles – value for money, and open and effective competition. It is applied to all purchases made by the QLDC including all goods, services, plant and equipment, civil construction, and real property.

QLDC will undertake regular reviews of the quality and quantity of information to enable it to monitor progress against its own procurement goals. The performance of QLDC's maintenance contracts is tracked through monthly and quarterly KPI reporting, and the application of this strategy will be monitored annually by reviewing the past year's procurement processes.

11.1.2. SECONDARY PROCUREMENT

Secondary procurement is used by the Three Waters Programme as well as in other tender processes. Below is a description of secondary procurement of Three Waters tenders only:

QLDC has determined that the most appropriate mechanism to deliver the Three Waters Programme is to establish supplier panels: Design Services and Capital Works Delivery panels.

Once the Panel members have been selected and the Panel established, through an RFP process, up to three (more or less if this will be best for the project) Panel members will be asked to provide a quotation for delivering that Services Bundle under a secondary procurement process.

This secondary procurement process is intended to save significant time and cost in the sourcing process for both QLDC and the Panel members.

The benefits to both parties of using a panel arrangement are summarised below:

Advantages to QLDC of the panel process:

- Programme and delivery advantage - Significantly reduced time to market –the process will optimise timeframes to deliver the programme within the required three-year period.
- Significantly reduced volume of internal transactional documents to process.

Advantages to Consultants of the panel process:

- Significantly reduced transactional tendering costs and time investment in bidding.
- Increased probability of success due to optimised number of Panel members bidding for each Consultancy Services Bundle.

The combination of the above factors will provide procurement efficiency to the market and is intended to help maintain interest and value for money tendering throughout the 3W Programme.

11.2. SERVICE DELIVERY

11.2.1. CONTRACTING ARRANGEMENTS

Contract management is a key area where QLDC has focused on improving over the last six years. With a team dedicated to managing operational and maintenance contracts across all disciplines (Transport, Three Waters, Solid Waste), contract and knowledge and skills have increased. Contract form is now standardised (NZS390/7) across all contracts, which assists better contract management as staff can build better understanding of the contract form.

The majority of the maintenance and operations programme is delivered under a traditional contract framework, however there is a collaborative intent and relationship with suppliers and partners which is key to delivering the desired outcomes.

The majority of QLDC capital projects are delivered through the Property and Infrastructure, Project Management Office.

11.2.2. CONTRACT RENEWALS

QLDC is reaching the end of its long-term operational maintenance contract. Procurement planning is commencing to test current contract form and to explore other opportunities. The intent will be to engage with the market

11.3. IMPROVEMENT ACTIONS – EFFICIENTLY AND EFFECTIVELY PROCURE AND MANAGE

Improvement Actions – Efficiently and Effectively Procure and Manage

1. Continue to embed QLDC Procurement strategy and policy into BAU and upskill P&I staff
2. Explore opportunities for contract models
3. Procurement planning for contract renewals

12. FINANCIAL MANAGEMENT

This section highlights budget allocations, expenditure projections, funding sources and financial strategies related to the management & maintenance of the Three Water assets.

12.1. INTRODUCTION

Following the Government repeal of Three Waters legislation in February 2024, QLDC was directed to incorporate ten years of planned three waters expenditure into LTP24. QLDC agreed to utilise the three-month extension for LTP development provided for by the Government, and now expects to adopt LTP24 in September 2024. An update to this section of the AMP will occur thereafter.

12.2. FINANCIAL IMPACT LARGE DEFECTIVE BUILDING CLAIMS

The settlement of large defective building claims – this has led to higher borrowing and interest costs. The annual cost of the borrowing required to fund the settlements made in the past two years is $5.3M and the increase in interest costs for 2023-24 is $4.4M which has a rates effect of 4.03% for the year.

12.3. REVENUE AND FINANCING POLICY

Section 102(4) (a) of the Local Government Act 2002 requires each council to adopt a Revenue and Financing Policy. This is held within the LTP document. This Policy states QLDC's policies in respect of the funding of both capital and operational expenditure. Further information can be found in QLDC's Revenue and Financing Policy.

Funding for new assets will come from a mix of borrowing, development or financial contributions, grants, subsidies, capital revenue, reserves and asset sales. Generally, the costs of new assets will not be met from rates; however a portion of the costs of servicing loans will be met from rates.

Funding for new capital works will depend on the nature of the work in particular the reasons (cost drivers) which have made the work necessary.

There are three main cost drivers recognised by QLDC:

1. **Growth** QLDC intends to entirely fund the portion of capital expenditure (capex) that is attributable to growth by either Financial or Development Contributions wherever it is legally, fairly, reasonably and practically possible to do so. QLDC considers that Development and Financial Contributions are; the best mechanism available to ensure the cost of growth sits with those who have created the need for that cost. QLDC considers it inappropriate to burden the community as a whole, by way of rating or other payment means, to meet the cost of existing growth. Historically, QLDC has sought a contribution towards the expansion of the District's reserves, community facilities and infrastructure from those developments, which place additional demands on these services. In order to levy these contributions QLDC has used:

    - Financial Contributions imposed as a condition of a resource consent (Resource Management Act 1991) - applies to consents received prior to 8 May 2004.
    - Development Contributions as defined by the provisions of the Local Government Act 2002 (LGA 2002) - applies to consents received after to 8 May 2004.

2. **Level of Service:** The cost driver for a significant portion of capital works relates to increasing of levels of service for the community for example, due to changes to **legislation** or resource consent conditions, which means that there is often little discretion with regard to the decision. An example of this is the requirement to provide additional water treatment facilities as a result of the introduction of new Water Treatment Standards. Funding sources in order of priority (1) Capital Grants and subsidies, (2) Capital Revenues and Asset Sale Proceeds, (3) Capital Reserves, (4) Borrowing, (5) Rates.
3. **Renewal**: Renewal capital works are those capex costs that are incurred in restoring an asset to previous service levels, usually reflected in the amount that an asset has depreciated. Therefore, by using those depreciation funds QLDC is attempting to maintain infrastructural networks to at least their existing service level. Funding sources in order of priority: (1) Depreciation Reserves (2) Borrowing and (3) Rates. Note that depreciation is not funded where a community has funded a water or sewerage scheme via lump sum contribution or loan charges.

12.3.1. OTHER FUNDING SOURCES

More investment in three waters infrastructure over the next ten years is inevitable. Built solutions alone will not respond to the challenges outlined in this Asset Management Plan, and it is no longer feasible to rely on traditional funding mechanisms to meet the district's three waters (and wider infrastructural) investment needs. Securing alternative funding sources, including generating new revenue streams, will be an important component of meeting QLDC's three waters investment needs.

Established alternative funding sources in place to support three waters investment include:

- **Infrastructure Acceleration Fund:** grant funding towards the Upper Clutha Wastewater Conveyance Scheme and Hawea Water Demand Management projects.
- **Housing Infrastructure Fund:** ten year interest free lending towards investment in three waters (and other) infrastructure for Kingston and Ladies Mile.
- **Shovel-Ready stimulus funding:** grant funding towards formation of Stage 1 of the Queenstown Arterial bypass route, which includes major three waters asset upgrades.
- **Developer Agreements:** a wide range of agreements with development parties that provide for the funding and/or delivery of three waters assets that leverage development activity.

In addition to the above, QLDC will proactively explore other available (existing or yet to be introduced) funding mechanisms to support sustainable investment in three waters. Examples may include, but are not limited to, utilisation of the Infrastructure Funding and Financing Act, point of use charges, commercial and procurement arrangements such as Build Own Operate Transfer and other similar mechanisms, different service provision models, and arising/targeted competitive funds.

12.4. FUNDING RISKS

QLDC has identified several financial challenges that are explained in and managed in its Risk Register. The significant risks are:

- Changing central government priorities.
- Availability of revenue (rates due to events such as COVID-19.
- Insufficient QLDC funding to meet levels of service.
- Funding sources for the repair of damage caused to Three Waters by natural hazard events (including climate change).

Other financial risks that QLDC is managing (or may potentially need to manage in future) are:

- Fraud and corruption.
- Inadequate management of contract retentions and of potential claims for cost escalation or other contract variations.
- Excessive tender prices (or no tenders submitted).
- Contractor non-performance (or company failure).
- A 'sensitive expenditure' issue occurs.
- Poor project cost estimation.
- Poor forward financial forecasting/budget formulation.
- Poor general financial management.

12.5. KEY ASSUMPTIONS, CONFIDENCE AND RELIABILITY

The following general assumptions have been made in preparing the AMP forecast:

- Subdividers and developers will contribute towards QLDC's costs by paying development contributions at the levels and times forecasted.
- The depreciation provision will be as forecasted.
- An extraordinary major event such as a natural hazard will not occur.
- Government legislative, regulatory, or policy changes will not cause higher QLDC costs.
- Actual project costs will be as forecasted on a cumulative basis.
- Minimal costs will be carried forward from year to year – all projects will be paid for in the year in which they are programmed.
- No unforeseen significant asset failures will occur (or other unexpected costs be incurred);
- The extent to which new Three Waters assets will be vested in QLDC will be as forecasted.
- Low maintenance and construction cost escalation.
- Increasing inflation rates and its effect on construction costs, sourcing materials, labour costs etc.
- QLDC will need to increase its monitoring of the natural environment. The ability to predict and respond as to when a water treatment solution is no longer appropriate and public health maybe compromised is imperative.
- QLDC will continue to work with Central Government and Otago Regional Council to address the issues around Climate Change and will commit to implementing Water

Standards, lifting the quality of freshwater resources, and improving our drinking, waste and stormwater.

12.6. ASSET VALUATION

QLDC's valuation of water, wastewater and stormwater infrastructure assets was based on depreciated replacement cost in accordance with Accounting Standards for Public Sector Public Benefit Entities (PBE IPSAS17) and in accordance with the New Zealand Infrastructure Asset Valuation and Depreciation Guidelines Manual Edition 1.0, 2006 (NZIAV). Straight-line depreciation has been applied in all instances except in the case where assets are non-depreciable. Each asset is depreciated over its total useful life.

Changes to the valuation results from 2022 to 2023are summarised below.

Asset Group	Change In Value ($)			Change In Value (%)		
	ORC	ODRC	AD	ORC	ODRC	AD
Wastewater	$54,824,918	$36,113,651	$726,490	10.4%	9.5%	10.3%
Water Supply	$37,284,772	$23,685,294	$499,337	9.9%	8.5%	9.7%
Stormwater	$59,120,003	$40,068,006	$554,925	12.7%	12.1%	7.2%
Facilities	$53,707,270	$40,977,250	$1,270,467	24.9%	36.3%	21.1%
Total	$204,936,964	$140,844,201	$3,051,219	12.9%	12.8%	11.8%

Table 29: Total Change in Valuation Assets (2022-2023)

The general components of change are:

- General depreciation of one year.
- General increase in construction cost between 2022 and 2023 for reticulation (7.74%) and facilities (5.68%) assets.
- Data improvements as a result to the inclusion-exclusion methodology
- The addition of Cardrona WWTP. This was a developer vested project which when combined with the QLDC capital project to build the Cardrona conveyance network (pipe and pumpstation) has resulted in a complete Wastewater network for the Cardrona community.

		QLDC 3Waters Asset Valuation 30 June 2022			QLDC 3Waters Asset Valuation 30 June 2023		
Activity	**Scheme**	**ORC**	**ODRC**	**AD**	**ORC**	**ODRC**	**AD**
STORMWATER	GLENORCHY	100	100	0	$1,596,568	$1,264,439	$20,300
	ARROWTOWN	14,800	9,800	200	$19,113,946	$13,124,465	$234,812
	ARTHURS PT	4,600	3,700	100	$7,046,347	$5,589,784	$90,926
	CARDRONA	0	0	0	$2,935,780	$2,535,366	$34,963
	FRKTN FLATS				$16,201,155	$14,842,141	$211,119
	LAKE HāWEA	17,500	14,600	200	$7,940,602	$5,310,164	$94,588
	LAKE HAYES	1,600	1,200	0	$34,107,201	$25,187,308	$837,341
	LUGGATE	0	0	0	$3,659,815	$2,317,503	$49,522
	SHOTVER				$24,410,685	$21,843,962	$331,343
	QUEENSTOWN	84,900	53,400	1,400	$144,226,115	$98,735,752	$2,682,113
	WĀNAKA	83,900	64,700	1,400	$169,601,371	$122,345,160	$2,514,662
					$430,839,585	**$313,096,045**	**$7,101,688**
WASTEWATER	CADRONA	100	100	0	$0	$0	$0
	ALBERTWTN	7,200	6,300	100	$1,642,242	$1,197,537	$26,782
	ARROWTOWN	9,200	7,500	100	$23,488,146	$12,421,267	$311,066
	ARTHURS PT	3,200	2,800	0	$8,578,942	$6,401,052	$104,944
	NOSCHEME	700	600	0	$4,142,232	$3,404,468	$51,414
	LAKE HāWEA	2,500	2,100	0	$2,303,046	$2,159,003	$29,838
	LAKE HAYES	10,300	8,800	100	$18,410,530	$14,019,240	$227,260
	LUGGATE	1,700	1,500	0	$33,130,326	$25,538,929	$398,595
	QUEENSTOWN	53,400	40,100	700	$0	$0	$0
	SHOTVR CTY	8,200	8,000	100	$433,631	$314,607	$5,244
	WĀNAKA	53,500	42,100	700	$157,096,732	$103,440,549	$2,054,859
		186,200	139,000	3,000	**$493,819,899**	**$352,879,427**	**$6,552,376**
	NOSCHEME	500	400	0	$157,039	$120,962	$2,122
	ARROWTOWN	11,900	8,000	200	$19,652,494	$11,391,744	$266,491
	ARTHURS PT	4,700	3,800	100	$7,521,137	$5,767,642	$95,453
	CARDRONA				$57,688	$53,361	$721
	GLENORCHY	3,100	2,300	100	$5,157,028	$3,816,952	$65,669
WATERSUPPLY	LAKE HāWEA	8,200	6,500	100	$16,877,088	$11,698,108	$198,710
	LAKE HAYES	14,700	12,100	300	$35,595,422	$28,476,825	$451,490
	LUGGATE	2,300	1,800	0	$4,117,846	$2,791,294	$48,577
	QUEENSTOWN	72,900	50,100	1,200	$133,307,462	$93,282,784	$1,730,326
	SHOTVR CTY	5,000	4,900	100	$11,814,922	$10,685,098	$147,700
	WĀNAKA	63,900	49,100	900	$138,569,615	$106,778,713	$1,768,960
		556,400	**416,700**	**8,400**	**$372,827,740**	**$274,863,483**	**$4,776,219**
Grand Total					**$1,297,487,224**	**$940,838,955**	**$18,430,283**

Table 30: Asset Values ($000s) by Scheme

12.6.2. EXCLUSIONS

The following asset groups have been excluded from the valuation:

- The effect of the relevant provisions of the RMA or other legislation on any asset replacement.
- Land value i.e. under pipes, and pond.
- Natural features such as streams, rivers, and overland flow paths
- Intellectual property related to the Three Waters Infrastructure activity.
- Work in Progress as of 30 June 2023
- Costs associated with resource consents (applications and renewals)

12.6.3. DEPRECIATION (LOSS OF SERVICE POTENTIAL)

Depreciation is the extent to which QLDC's assets decrease in value each year - due to their use, age, obsolescence through technological and market changes, change in use, or neglect.

12.6.4. DEPRECIATION PROVISION

Operational assets with the exception of land, are depreciated on a straight-line basis to write off the asset to its estimated residual value over its estimated useful life.

Infrastructure assets, with the exception of land under roads, are depreciated on a straight-line basis to write off the fair value of the asset to its estimated residual values over its estimated useful life.

The estimated useful lives used in the calculation of depreciation is in the range of 1.68% - 10%.

On Revaluation Infrastructural assets, other than land under roads, are stated at fair value less accumulated depreciation and any impairment losses recognised after the date of revaluation.

The useful lives and associated depreciation rates of the various classes of assets have been estimated generally based upon the New Zealand Infrastructure Asset Valuation & Depreciation Guidelines – Version 2. In specific cases these have been modified for reasons explained in the valuation report.

The depreciation rates are applied at the component level and the depreciation sum is calculated on the remaining useful life of each component. Where the age or condition is unknown it is assumed the asset is half way through its useful life. The residual value and useful life of an asset is reviewed, and adjusted if applicable, each financial year end.

12.6.5. CONFIDENCE

The depreciation confidence is as recorded for the revaluation. QLDC uses the International Infrastructure Management Manual (IIMM) rating system for data integrity and confidence.

The confidence ratings for the 2023 valuation is:

Asset Group	Asset	Quantity	Unit Cost	Life Expectancy	ODRC
Water Supply	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Wastewater	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Stormwater	Pipe Reticulation assets	B	B-C	B	B-C
	Non-Pipe assets	B	B-C	B	B-C
Facilities	WS and WW Facilities	B	C	B-C	B-C

Table 31: Assessment of Confidence Levels (Valuation report 2023)

A	Highly Reliable Data based on sound records, procedures, investigations and analysis, which is documented properly and recognised as the best method of assessment.
B	Reliable Data based on sound records, procedures, investigations and analysis, which is documented properly but has minor shortcomings, for example the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation.
C	Uncertain Data based on sound records, procedures, investigations and analysis, which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available
D	Very Uncertain Data based on unconfirmed verbal reports and/or cursory inspection and analysis. Dataset may not be fully complete and most data is estimated or extrapolated.
N/	Data does not exist or is not relevant

12.6.5.1 WATER SUPPLY & WASTEWATER

With the exception of asset data for service connections, data completeness is generally highly reliable. An ongoing data improvement process will continue to make improvements over time, with a current focus on service connections. Asset performance has been improved significantly in recent years by a programme of hydraulic modelling as well as desktop analysis. Recent improvements and integrations in QLDC's asset management system allows for more advanced analytics and confidence related to asset condition, however, more condition assessments are required for water supply assets.

12.6.5.2 STORMWATER

The distributed nature of stormwater infrastructure has resulted in some uncertainty in the data completeness and an ongoing data improvement process will continue to make improvements over time, with a current focus on stormwater mud-tanks and associated assets. Work has been undertaken to build closer linkages with the roading drainage data. Asset performance is developing with a strong focus on the programme of hydraulic modelling underway. Improvements and integrations in QLDC's asset management system has been stalled with the uncertainty around reform and resource constraints within QLDC allows for more advanced analytics and confidence related to asset condition.

12.6.6. BACKLOG (DEFERRED MAINTENANCE AND DEFERRED RENEWALS)

Backlog is the value of maintenance and renewal work that has not been done when it should have been – in order to meet the prescribed levels of service.

If maintenance and renewal work is not carried out at the optimum time in the asset lifecycle:

- The assets will deteriorate further.
- The repair, renewal or replacement work that will have to be done later may be more extensive than it would have been if it had been carried out at the optimum time.
- The cost of doing the work later may be more expensive (in real terms) than it would have been if the work had been carried out at the optimum time. A delay in road maintenance of 3 to 5 years can increase the required repair costs by more than six times.
- (Until it is done) the annual cost of maintaining the asset may be more expensive than it would have been if the work had been done at the optimum time (e.g. the higher cost of repairing the road as more and more potholes appear as the road further deteriorates).
- The asset may not be able to continue to perform to its original design capacity or performance standard, or to deliver the specified levels of service, and, if the work continues to be delayed, may ultimately be unable to provide the required service altogether (e.g. the necessity to close a bridge because the lack of maintenance resulted in it now being structurally unsafe).

12.6.7. MONITORING THE BACKLOG TRENDS

Data is critical to determining if maintenance and renewal effort is being deployed efficiently. QLDC gauge the residual life of its buried assets through a number of different approaches, depending on the nature of the asset. For gravity sewers a programme of closed-circuit television (CCTV) inspections allows the internal condition of the pipe to be assessed. For pressurized pipes the remaining useful life of the asset is determined from the pipe material and age. This information is then considered in conjunction with other problem indicators such as the number of reported breakages.

Due to the aging nature of the water infrastructure in the district, and the quantum of non-ideal materials used historically, QLDC is faced with a relatively significant backlog of deferred renewals to address in order to achieve the desired level of service and reliability universally.

12.7. TOTAL EXPENDITURE

All expenditure to be updated following the approval of the LTP 2024.

The graphs below provide a *high-level overview of the QLDC Capital Investment Programme, all financials have been drawn from Technology One, QLDC's Enterprise Financial system.*

At $2.2BN (Inflated AP24/25) The QLDC TYP24-34 is significant, as it represents the most capital expenditure we have planned for a ten-year period.

The figure below represents our Three Waters Capital Expenditure inflated to funding year 24/25 for both capital and operational expenditure.

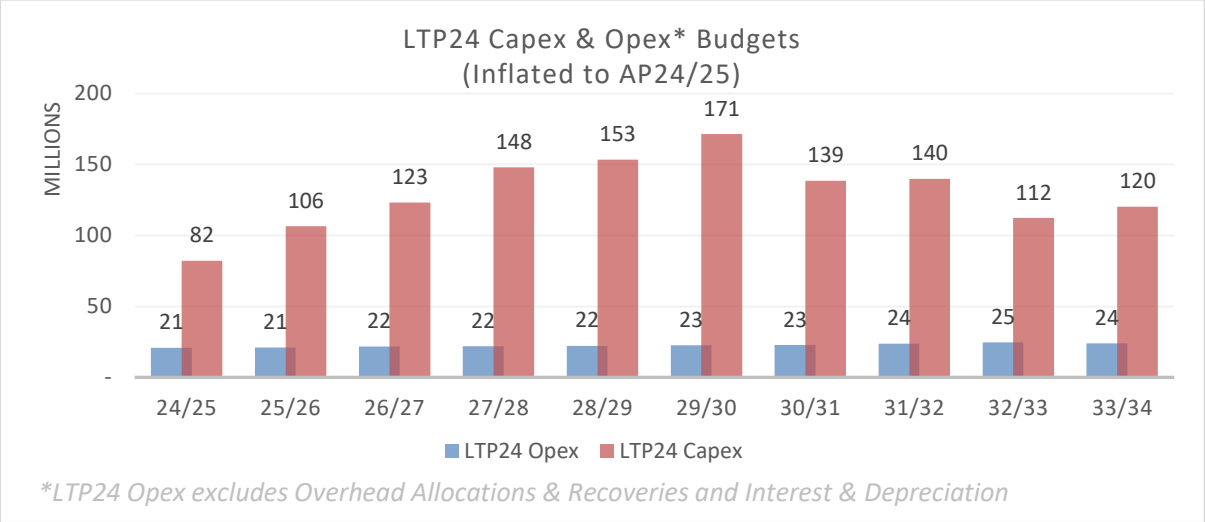


Figure 45: Total Three Waters Expenditure

12.7.1. CAPITAL EXPENDITURE

The figure below shows the total expected expenditure inflated AP24/25.

Wastewater is big spend short term with key drivers being the Project Shotover Stage 3 upgrade, Upper Clutha Wastewater Conveyance Scheme, Southern Wanaka Wastewater Conveyance Scheme, Kingston New Scheme, North Wanaka Stage 2, Robins Rd Conveyance, and others

QLDC's planned water treatment expenditure has been significantly reduced through the rapid UV deployment project underway, followed by dedicated filtration funding for surface water intakes in the early years of LTP24. Major water spend through middle years delivers LoS and resilience benefits primarily through major intake, storage, and retic upgrades across established schemes.

Expenditure is the mid-late year spend is also driven by the introduction of new schemes for Ladies Mile, followed quickly by the southern corridor. This contributes to the stormwater increase through years Y7/8.

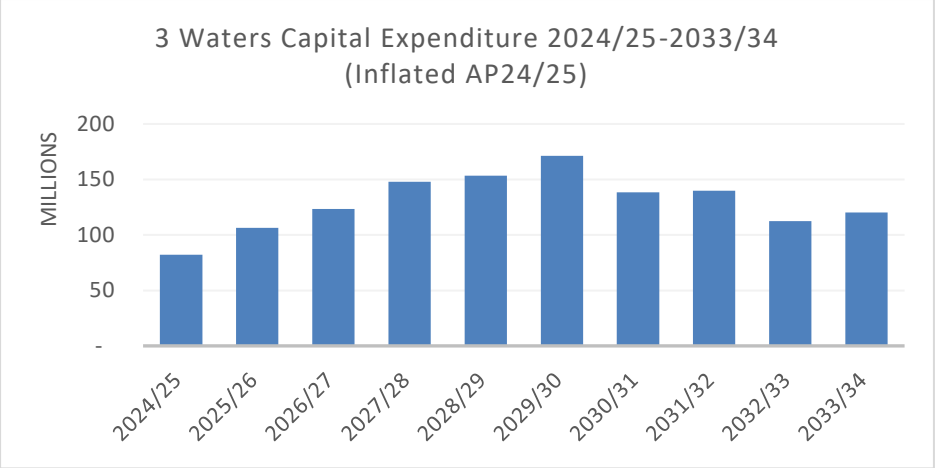


Figure 46: Three Waters Capital Expenditure Projections

The figure below shows the total capital expenditure projections for 3 Waters by activity: water supply, storm water and wastewater. Years 1 to 3 show our capital spend is mainly focused on water supply followed closely by wastewater this is due to projects such as Wānaka Water Treatment (WS), Southern Conveyance Network (WW) and Project Shotover Upgrade (WW).

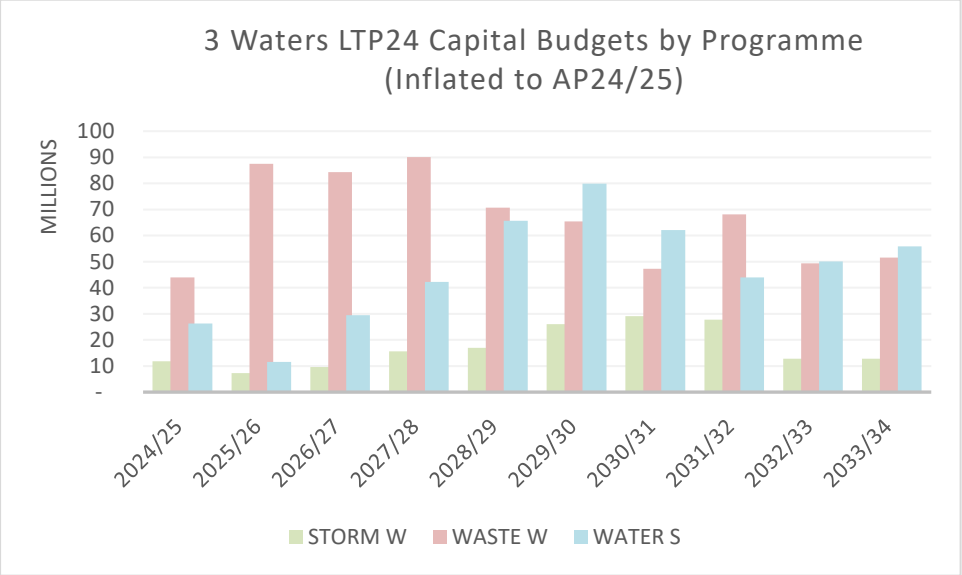


Figure 47: Infrastructure Capital Expenditure Projections by programme

The figure below shows the expected expenditure year-on-year up to 2033/34, by driver (growth, asset renewal or level of service). Spend in the first ten years is primarily driven by growth and delivering levels of service to the district, as highlighted below:

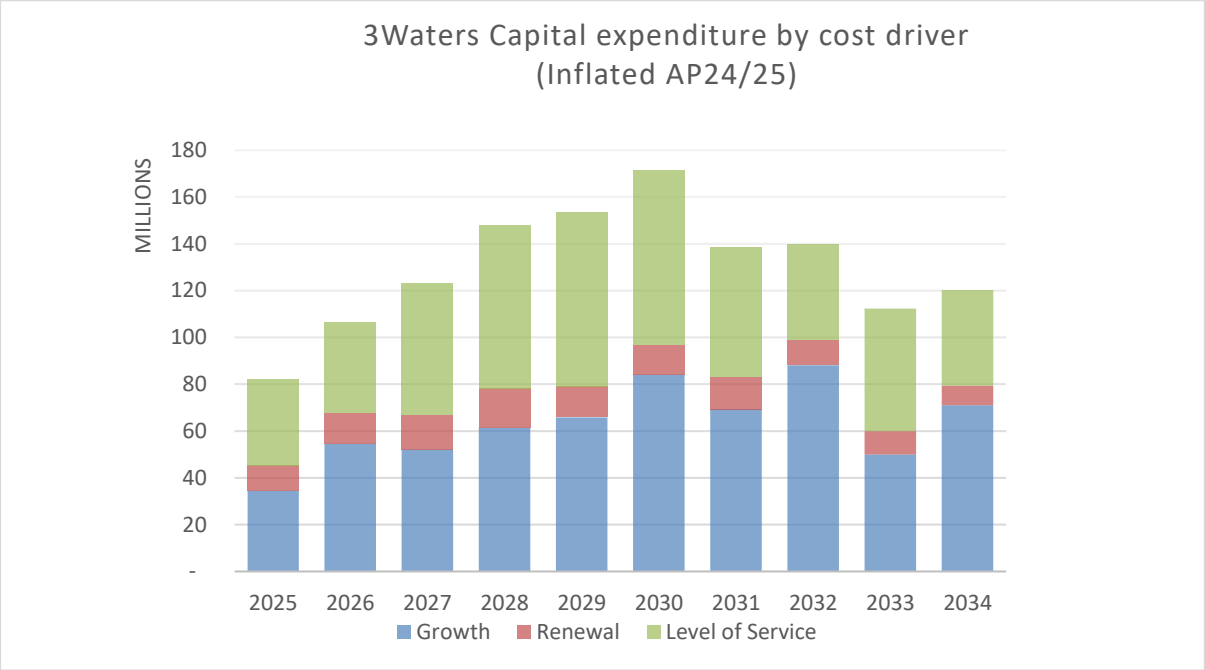


Figure 48: Infrastructure Capital Expenditure Drivers

12.7.2. OPERATIONAL EXPENDITURE

Operational expenditure for the 10-year period is shown in below. Wastewater and water supply operational costs continue to increase over the ten year period with a growing number of schemes and infrastructure such as Cardrona and Kingston as QLDC continues to work with local communities to address their infrastructure needs.

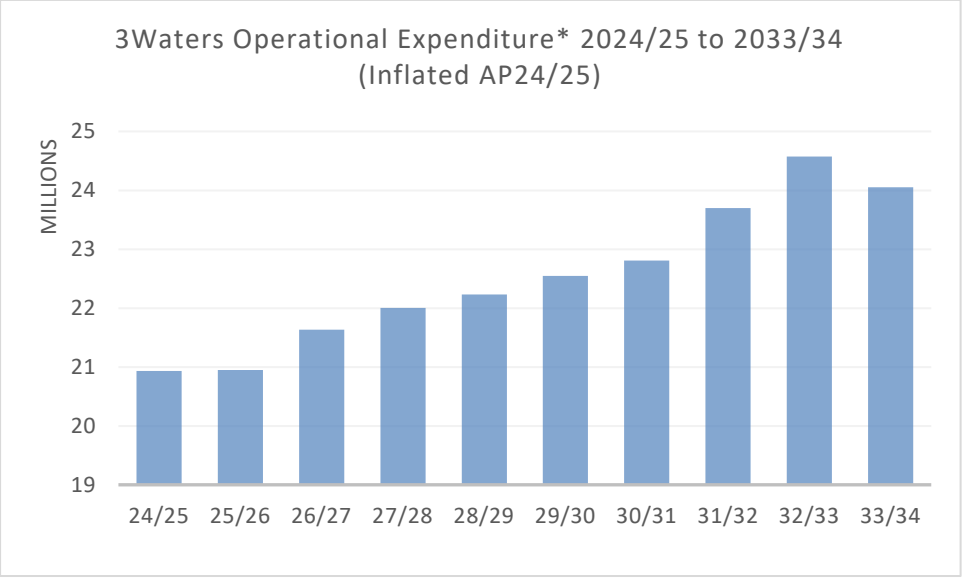


Figure 49: Three Waters Operational Expenditure

**LTP24 Opex excludes Overhead Allocations & Recoveries and Interest & Depreciation*

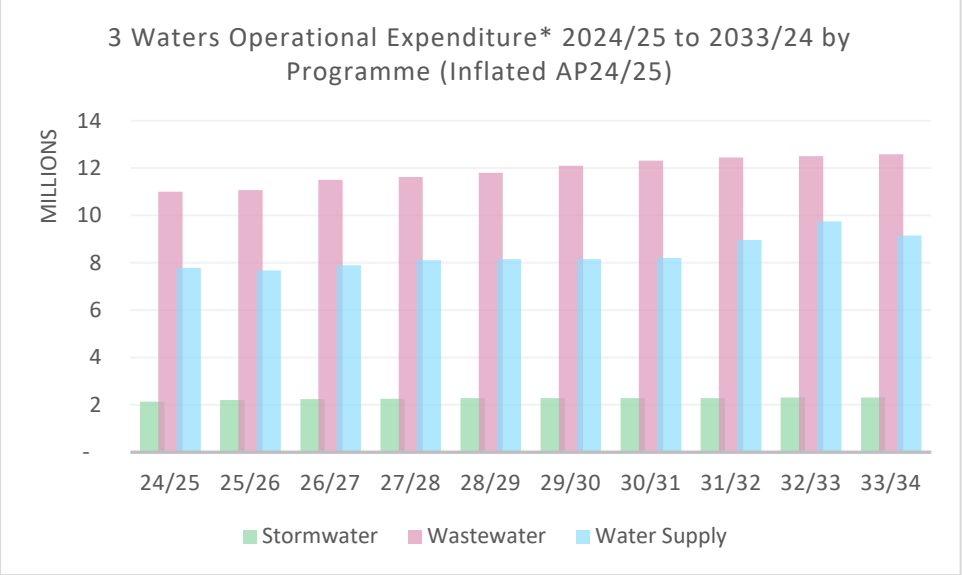


Figure 50: Three Waters Operational Expenditure By Programme

**LTP24 Opex excludes Overhead Allocations & Recoveries and Interest & Depreciation*

12.8. IMPROVEMENT ACTIONS – FINANCIAL MANAGEMENT

Improvement Actions – Financial Management

1. Ensure the AMP is updated with the 2024 LTP approved by Council in September
2. All numbers and charts to be updated once QLDC LTP Finalised
3. Review clear alignment with updated LTP assumptions and risks
4. Consider the use of uninflated and inflated (annual plan and funding year) scenarios in the budget communication, how can this be improved.

13. CONTINOUS AMP IMPROVEMENT

This Section outlines the current maturity of Council's Three Water asset management practices and areas where it intends to improve processes, data, information systems and people capability and capacity.

13.1. CONTINOUS IMPROVEMENT

Continuous improvement refers to an ongoing process of enhancing efficiency, effectiveness and performance throughout the asset lifecycle. It involves regularly assessing and refining strategies, processes and systems to optimise the management operation and maintenance of assets. This iterative approach aims to adapt to changing conditions, incorporate lessons learned and ensure the asset management practices align with evolving goals, standards and best practice.

The last 10 years has seen positive rewards in QLDC's approach to continuous improvement in three waters asset management as described in the asset maturity assessment below.

13.1.1. RECOMMENDATIONS FOR THREE WATERS

The water activity has a well-established improvement plan however there has been a reduction in scores in some key areas (due to staff turnover, reforms, and government funding injections).

The current focus for 2023/24 has been developing a more robust 30 Year Infrastructure Strategy, development of this AMP and the inaugural Strategic Asset Management Plan (all of which are underway) which will all help in preparation for the LTP and changes to Three Waters Reform.

Other key priorities are to re-establish processes for maintaining and analysing the asset register and accessing contractor operational / performance data. Staff shortages have impacted the ability to maintain Master Plans, which are still too reactive for developers. The Property & Infrastructure Organisation Review will need to confirm and document respective roles, tools, and processes for developing and managing investment programmes (strategy-AM-delivery-investment –finance teams etc).

13.2. ASSET MANAGEMENT MATURITY

As referenced in the SAMP, QLDC have an independent audit of Asset Management Maturity undertaken every two years. This covers the wider organisation than just Three Waters and drives organisational asset management improvement as well as activity-based improvements.

This audit is based on NAMS IIMM guidelines and forms part of the continuous improvements in AM practices. The review has previously focused on the activities of Transport, Three Waters, and Waste Management, but the 2022 review included the activities of Property and Parks.

The review highlights and recognises some Council wide issues:

- Strategic development is outpacing the ability to implement strategies
- The industry wide issue of staff changes and absences has been disruptive to the AM functions with limited capability to backfill positions
- There are no agreed tools for developing, prioritising, and managing investment programmes, which lead to role clarity and inefficiencies

- Unexpected Government funding packages, Three Waters Reform, changes in Council priorities result in knee jerk reactions with planned programmes suffering
- There is a lack of systems approach to the planning cycle when strategies aren't updated timely to inform AMP's and LTP, with multiple plans and strategies happening in parallel
- Benefits monitoring remains an area of weakness

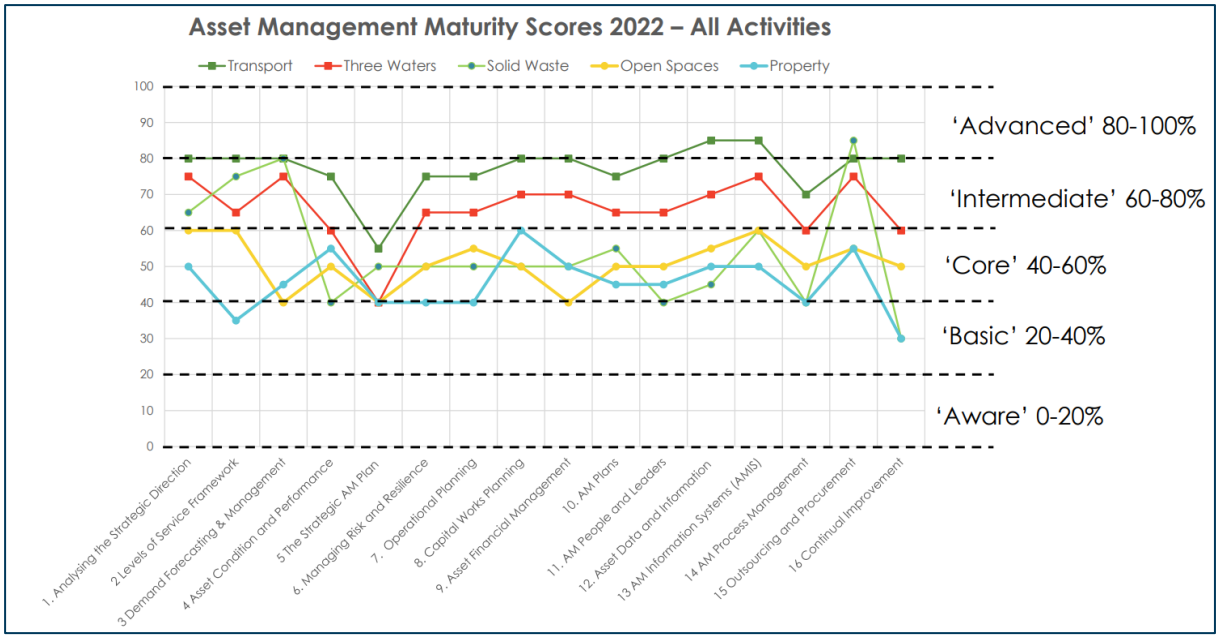


Figure 51: Comparison of asset management maturity (AMMA Review 2022)

The 2022 review included achievements and key areas of strength and opportunities for improvement for each activity. The figure below illustrates the historical trends since 2012 to date for each AM function in Three Waters:

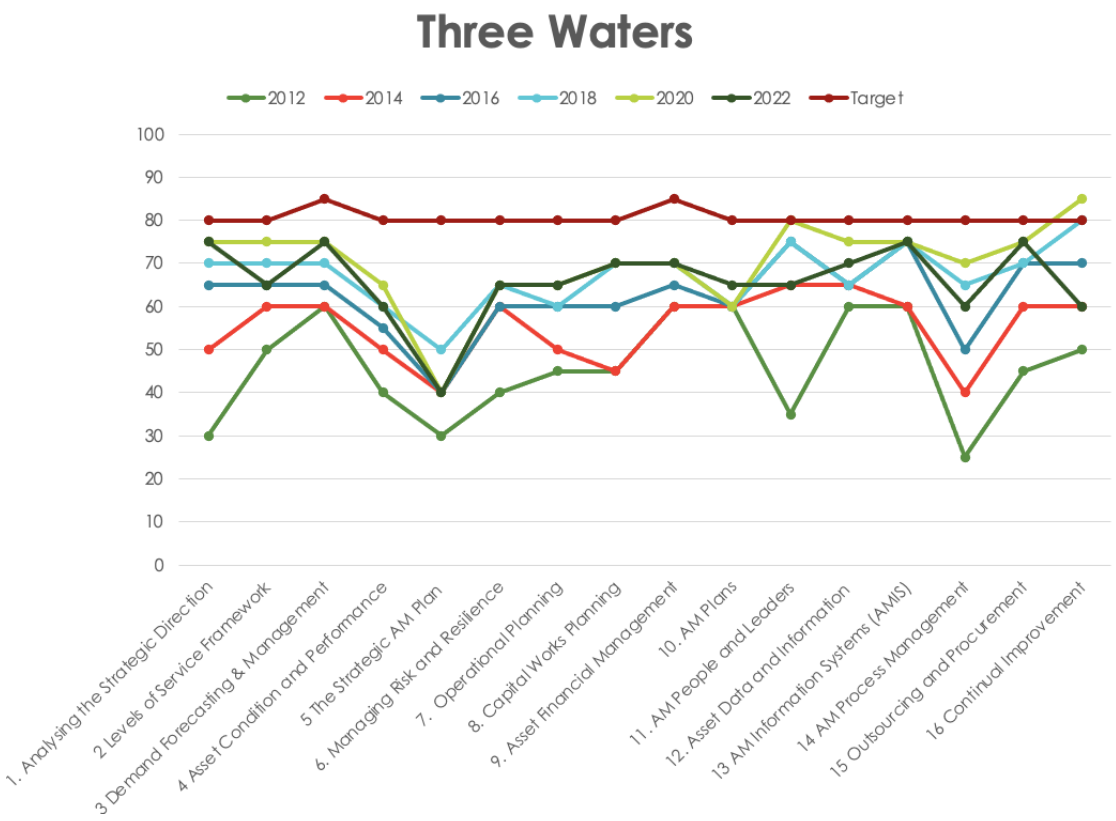


Figure 52: 2012 to 2022 Three Waters Asset Management Assessment Average Scores

13.3. PROGRESS AGAINST PREVIOUS AMP

QLDC are continuously maturing, and below highlights some of the biggest improvements since the 2021 AMP.

- Three Waters Asset Management has not had a big focus since 2018, this is due to key staff leaving the organisation and changing roles, the AMMA reporting reflected tis, with a drop in maturity.
- Since the 2023 general election when the government cancelled the Three Waters reform, QLDC are re-starting to focus on rebuilding the staff capacity and capability.

The main achievements since the 2021 AMP are:

- Introduction of a Strategic Asset Management Plan (SAMP), and an AM Policy update to support a more organisationally structured approach to asset management
- QLDC have a new organisational 'Strategy and Policy' Directorate with the remit to deliver better strategic clarity across the organisation
- Updates completed to the Corporate Risk Management Framework
- Data improvements (via the Data Improvement Programme) which aims to build a prioritised view of system and business changes that are required to logically deliver the agreed changes
- Continued work on the Level of Service Framework - still needs sign off
- Water Demand Management Plan in 2022 developed and updated. Register of reports and strategies in place
- Improved future demand oversight and focus on improved modelling specification

- Adopted a QLDC-wide Procurement Strategy (2023) setting up a centre-led procurement function with the creation of new roles for a Procurement Manager and Procurement Excellence Advisor
- Revamped the Assets and Activities section to include better overview of all activities associated with each network
- QLDC have prepared Water Safety Plans (WSP) for all QLDC's drinking water supply schemes to comply with the requirements of the Water Services Act 2021 (WSA 2021)
- Council produce a Leakage Management Report annually
- Scheme summaries have been revamped, still work to do, but this is programmed for completion 2024. Alignment between the Water Safety Plans and the Water schemes pans is recognised and will be developed
- The Property & Infrastructure department are currently reviewing its operating model, any changes will need confirmation and documentation of respective roles, tools, and processes for developing and managing investment programmes (strategy-AM-delivery-investment – finance teams etc)

13.4. IMPROVEMENT PLAN

13.4.1. ASSET MANAGEMENT IMPROVEMENT PLAN

QLDC's Asset Management Improvement Plan is a detailed plan of the improvement actions identified to enhance the asset management planning process within QLDC. Implementing this Improvement Plan will align QLDC's Three Waters AM practices to the higher end of the "Intermediate" level as represented in the IIMM 2015 guidelines.

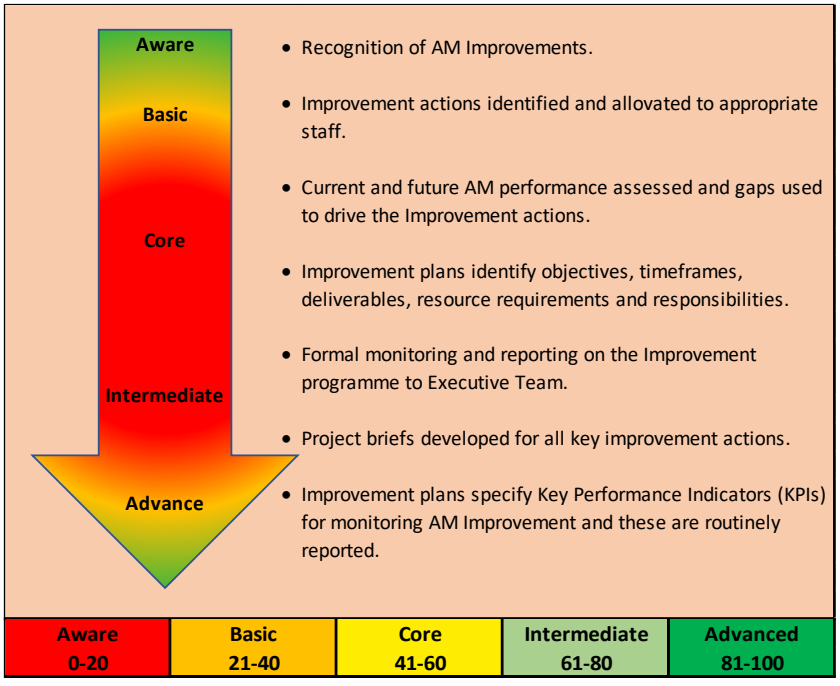


Figure 53: International Infrastructure Management Manual (IIMM) AM Maturity Index (2015)

Actions are identified following external reviews, LTP Audits, maturity assessments and internal processes. Timelines for completion are assigned to the actions based on priority. The key focus is on process and data integrity; ensuring that the process to deliver the AMP programme is defined, understood, implemented and resourced to deliver with the appropriate capability and asset information is robust, repeatable and reliable.

13.5.1. LONG TERM PLAN AND ANNUAL REPORT

QLDC uses external auditors (on behalf of the Office of the Auditor General) to evaluate the quality and reliability of financial information reported in the Long Term Plan and Annual Reports. The next audit for the draft LTP is scheduled for mid 2024.

13.5.2. METADATA STANDARDS

It was the intention to model QLDC's data structure according to volume 1 of the New Zealand Metadata Standards for Three Waters with the upgrade to using Technology One (T1) Enterprise Asset Management module in 2018/19. However, the decision was made, to use the existing structure within the T1 module for improved technical support and service by T1. Since this implementation, an effort by the Canterbury Quake Centre to develop a standard Code of Practice for local authorities based on the NZMS for as-built submissions is driving further interest in adopting a national standard for Three Waters data.

As part of the three waters proposed reform, a data standard was developed, and QLDC are working towards understanding how this could be adopted.

13.6. IMPROVEMENT ACTIONS –AMP IMPROVEMENTS

Improvement Actions – Continuous AMP Improvements

1. Align with update to the new SAMP

Follow up actions from the AAMA and embed in the SAMP improvement plan:

1. Demonstrate alignment of AM objectives with Council objectives/outcomes in AM Policy.
2. Complete analysis of key LoS options to inform next AMP.
3. Review demand forecasts / Master Plans to align with Spatial Plan and Future Development Strategy.
4. As above, plus develop/document condition and performance assessment strategy and programme across all assets.
5. Establish / implement a programme for ongoing updating of hydraulic / catchment models.
6. Development of a network resilience strategy (or inclusion in Inf Strategy / AMP).
7. Review / update 3Waters risk register.
8. Criticality ratings applied to all assets, with strategy documented for applying these in OPEX/CAPEX planning.
9. Ongoing development and upgrade of Master Plans, project scoping / business cases.
10. Renewal forecasts based on condition / performance information.
11. Develop / implement benefits monitoring framework.
12. Formalised methodology for cost estimation CAPEX projects.
13. Review asset lives and costs with analysis of work history / condition data for next revaluation.
14. Ongoing improvements to financial reporting processes.
15. Review timing of AMP to support LTP / Inf Strategy process. Review/update AMP to better provide a linking document between Strategic Direction (Inf Strategy) planning processes (eg: Master Plans, water demand management plan, levels of service document) and projects/ operational plans.
16. Council-wide awareness raising of AM planning process and interactions with corporate programmes.
17. Transfer all data into Tech1 (including criticality, condition, performance, work history) with process for ongoing updating.
18. TechOne implementation plan.
19. Review completeness of mapping of all major AM workflow processes (including condition assessments) and include missing processes in improvement plan.
20. Data quality management processes reviewed, including clarification of ownership and responsibilities.

21. Implement continuous improvement module in Promapp.
22. Implement recommendations from external contract review.
23. Secure additional resource for contract auditing.
24. Monitor water sector reforms.
25. Development of renewal construction panel to streamline procurement process and improve ability to deliver minor CAPEX programme.
26. Review and update the AM Improvement Plans with consideration of these review findings, and with a reduced number of tasks. Focus on good project management and delivery of these tasks.
27. Establish KPIs to monitor AM improvement - e.g. data quality / completeness, % AM processes documented. planned/unplanned maintenance ratios (if appropriate).

APPENDIX

QLDC POLICIES, STRATEGIES AND SUPPORT ELEMENTS		
1	Asset Management Policy 2016 (under review)	https://www.qldc.govt.nz/your-council/council-documents/policies/
2	QLDC Lakes Spatial Plan	https://www.qldc.govt.nz/your-council/council-documents/queenstown-lakes-spatial-plan/
3	QLDC Land Development and Subdivision Code of Practice	https://www.qldc.govt.nz/services/resource-consents/land-developments-and-subdivisions
4	QLDC Revenue and Financing Policy	https://www.qldc.govt.nz/your-council/council-documents/policies/
PROCUREMENT		
5	Procurement Policy & Procurement Guidelines	https://www.qldc.govt.nz/media/cgok5mj2/procurement-policy-approved-2-6-2022.pdf & https://www.qldc.govt.nz/media/4ycpi2vu/procurement-guidelines-2016-rev-2021.pdf
AUDITS		
6	Asset Management Maturity Report 2022	APPENDIX A
COMPANION DOCUMENTS		
7	Strategic Asset Management Plan 2023	To be updated on completion
8	Demand Projections 2022	https://www.qldc.govt.nz/community/population-and-demand/
8	Demand Projections 2024	https://www.qldc.govt.nz/community/population-and-demand/
9	30 Infrastructure Strategy 2024	To be provided on completion
10	Climate And Biodiversity Plan	https://www.qldc.govt.nz/your-council/climate-change-and-biodiversity/
11	Modelling Specifications	To be provided on completion
12	Acquisition and Vesting of Private 3 Waters Scheme Policy and Steps Summary 2021	Https://www.qldc.govt.nz/media/bt4nqkvl/7a-acquisition-and-vesting-of-private-3-waters-scheme-policy.pdf
13	Active 3Waters Consents	APPENDIX B
14	Scheme summaries.	APPENDIX C

	Water Supply Wastewater Stormwater	

APPENDIX A: ASSET MANAGEMENT MATURITY REPORT 2022

ASSET MANAGEMENT MATURITY ASSESSMENT, 2022

For: Queenstown Lakes District Council
Undertaken by: Lisa Roberts, Infrastructure Decisions Limited

QUEENSTOWN LAKES DISTRICT COUNCIL

INFRASTRUCTURE DECISIONS LIMITED

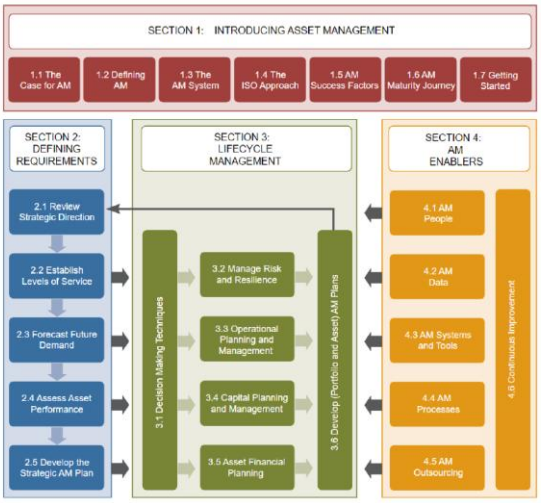
The Goal: Continual Improvement of QLDC Asset Management Practices.

A mature asset management organisation:

- takes a long-term, optimised approach to asset lifecycle management
- has well-aligned corporate, asset management and operational objectives
- has fit-for-purpose information systems and data
- takes an evidence (data) -based approach to capital and operational decisions, and
- is sufficiently resourced and competent with strong AM leadership and coordination

Asset Management Maturity Assessment (AMMA) Framework:

- External QLDC AM Maturity Assessment undertaken every two years.
- Objectives of the AMMA are to:
  - Provide an independent view of AM Improvement progress.
  - Review AM 'Appropriate Practice' targets.
  - Review the AM improvement programmes.
  - Make recommendations to support delivery of AM improvements.
- The AMMA framework used is from the 'IIMM' (shown right) – each blue/green/orange box represents an AM function that is assessed.



Assessment Methodology

1. The assessment of 'current' scores was based on:

- Interviews with staff across the Council with a role in asset management.
- High level reviews of key supporting evidence including the draft Asset Management Plans, Infrastructure Strategy and other documents.
- *Noting the assessment did not include detailed audits of any of these specific documents, processes, data, information systems or financial information.*

2. The assessment of 'appropriate' practice is set collaboratively with QLDC staff andconsiders factors such as the:

- Risk and complexity of assets and activities.
- Costs and effort required to progress and benefits that would be achieved.
- Expectations from key internal stakeholders.
- Industry good practice.
- Reasonableness and practicality of achieving that level of maturity.

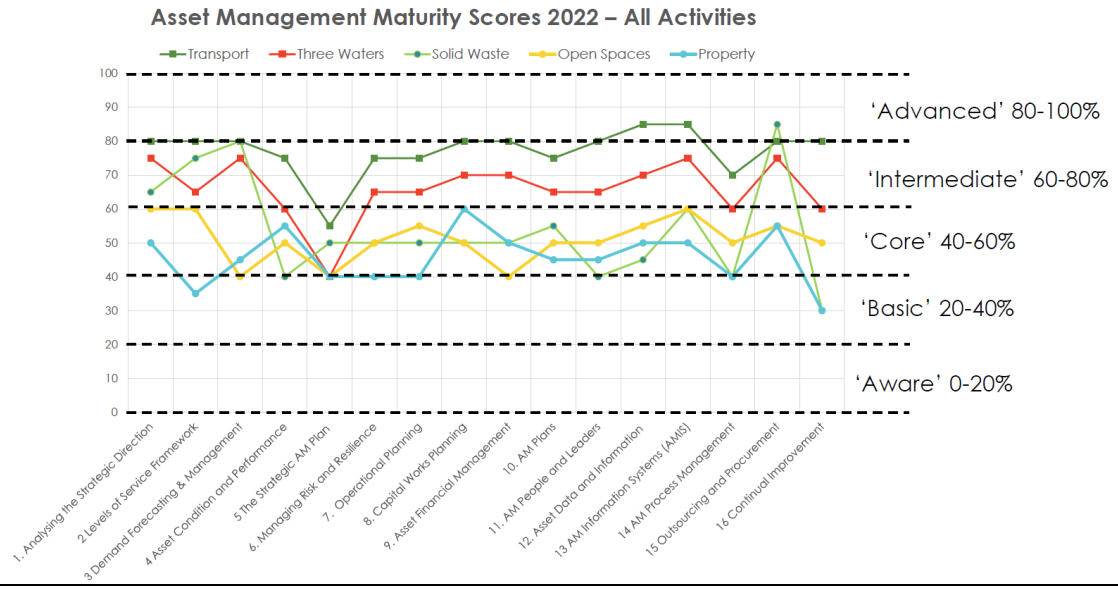
Project Deliverables

1. This report (Powerpoint Presentation):

- summarises the AMMA results, highlights key issues and makes recommendations to improve delivery of AM improvements.

2. AMMA spreadsheets contain, for each separate activity:

- 'Current' scores for each AM function, for each year that the AMMA has been carried out.
- 'Target' scores for each AM function.
- Evidence used as the basis for the scores.
- Improvement tasks to close the gap between 'current' and 'target' maturity.



Summary of Council-wide Issues

- **Impacts of staff churn** – An industry-wide issue; staff changes and absences have been very disruptive to QLDC's AM improvement programme. This is exacerbated because AM staff are spread thinly in most areas, and there is limited ability to backfill positions.
- **Strategy development is outpacing ability to implement Strategies –** This work is important but needs to recognise the resources this takes away from other AM planning. Significant increased resourcing is being put into strategy development but without sufficient additional resources at the delivery end.
- **Council Investment Portfolio Management –** There are no agreed Council tools for developing, prioritising managing investment programmes – different approaches are used and tools (e.g. spreadsheets) change each LTP or more often. There are role clarity issues and inefficiencies arising from all the above.
- **Reactive to Distractions –** Unexpected Government funding packages, 3Waters Reforms initiatives, changes in Council priorities, community/political requests etc, often get a 'kneejerk' reaction and planned programmes suffer. The Programme Governance Board will provide stronger oversight of this.
- **Lack of a 'systems' approach to Council planning cycle -** Strategies aren't updated in time to inform AMPs and LTP and multiple plans and strategies end up happening in parallel and inefficiently.
- **Benefits monitoring** – this remains an area of weakness. When projects are completed, did the community get the outcomes expected from the business case? If not, what can be learnt?
- **Not finishing things** – New and improved processes often don't get bedded down with good documentation, training, etc. Partly caused by trying to progress on too many fronts, staff move to the new thing before the old one is properly established.

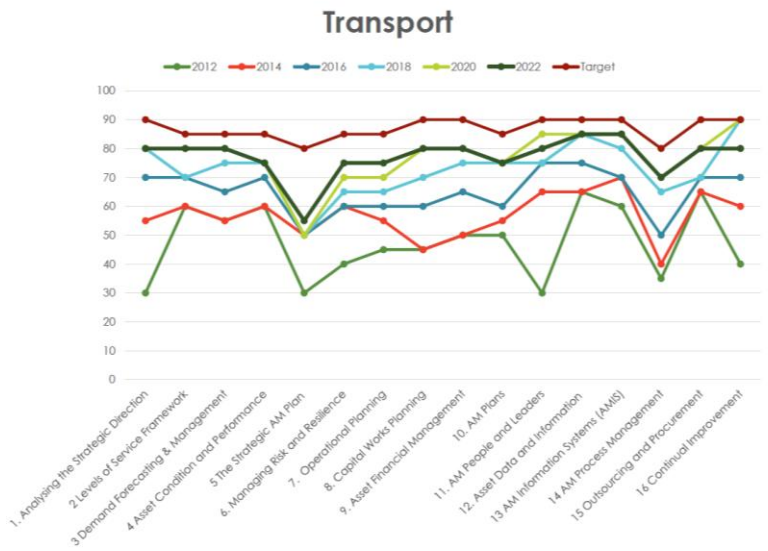
Recommendations

- **Prioritise AM Improvement efforts:**
  - Review the AM Improvement Plans with consideration of these review findings, and with a reduced number of tasks. Focus on good project management and delivery of these tasks.
  - Establish AM Improvement Plan progress reporting to responsible Director, so that programme slippages are transparently managed.
  - Consider priorities for 3Waters wrt Reforms – strong CAPEX programme linked to supporting evidence, reliable asset data/valuation, critical process review (see next).
- **Strengthen critical AM processes to ensure continuity through staff changes and reforms**: Identify critical AM processes and complete process documentation and backups for key roles. *(e.g. maintaining the asset register, undertaking asset assessments, renewal forecasting, managing investment programmes)*.
- **Develop a Council-wide portfolio management process.** Including process mapping, role definition across teams, use of common software (or Excel templates).
- **Establish Change Management Processes:**
  - Major change management – process for reviewing existing programmes when new funding or direction is given from Council, govt, or other shocks and disruptors.
  - AM Project change management – process for completion of AM (or any type of) Improvement project, sign off required for documentation, training.

Recommendations

- **Strengthen connections from Strategy Development to Delivery:**
  - Work with Strategy to identify time inputs required from I&P staff and ability to support Strategy work.
  - Incorporate actions from Strategies into AM Improvement Plans (process improvements) or CAPEX programmes (asset improvements). *Ongoing process as Strategies are developed and updated.*
- **Review Council Planning cycle**: work with Strategy team to map out the interactions between AMPs and other key documents and processes, appropriate timings, Council engagement with AMPs.
- This should include consideration of when and how the Council and community are engaged in debating level of service / cost options and selecting preferred approach. (Waters are currently developing a levels of service document for this purpose).

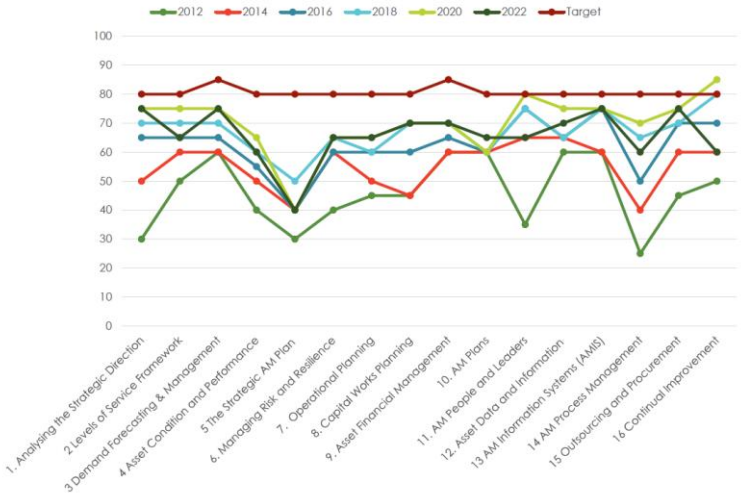
RESULTS BY ACTIVITY



"Steady as she goes"

- High performer relative to other QLDC activities and other NZ road authorities.
- Big focus on delivery of strategic transport programmes.
- Need to continue to build toolkit and evidence base – enhanced multi-modal traffic modelling, Network Operating Plan, Benefits Monitoring.
- Completion of Maintenance Management Plan is a long-awaited achievement.
- Value mapping of key asset management processes proving effective and a good model for other activities.

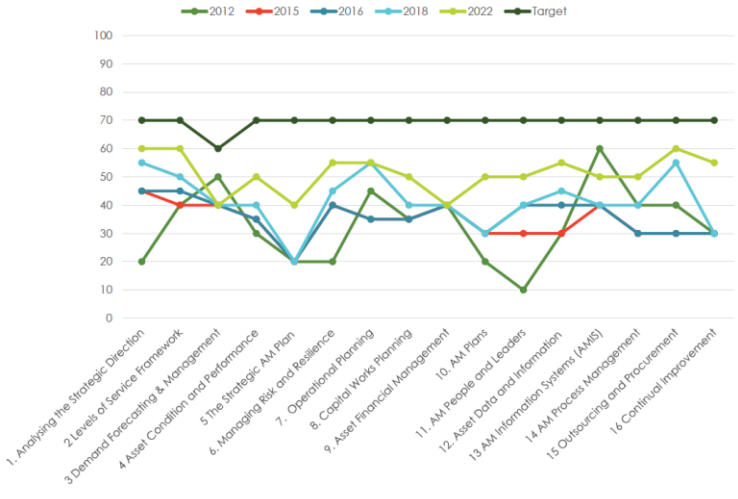
Three Waters



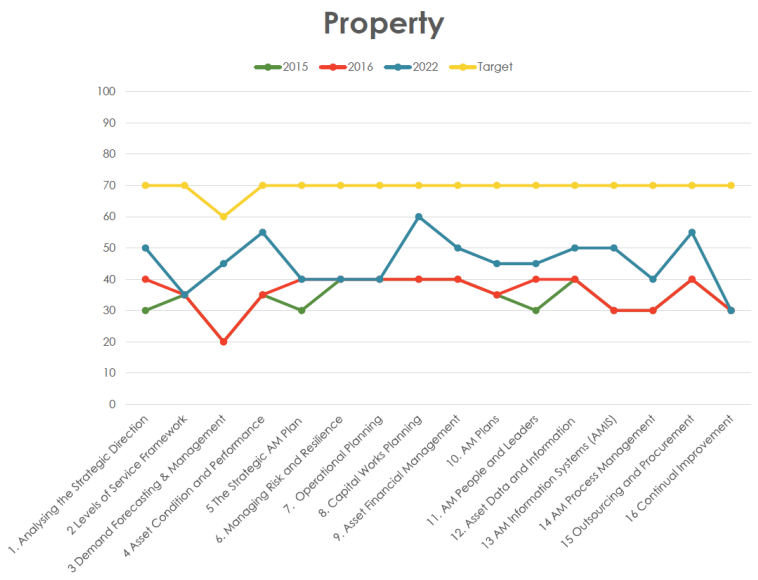
"Needs Attention"

- Reduction in scores in some key areas (due to staff turnover, reforms, govt fund injections).
- Re-establishing processes for maintaining asset register, and accessing contractor operational / performance data.
- Current focus should be developing a more robust Infrastructure Strategy, AMP and SAMP and preparing for Reforms.
- Staff shortages have impacted ability to maintain Master Plans, still being too reactive to developers.
- Need to confirm and document respective roles, tools and processes for developing and managing investment programmes (strategy-AM-delivery-investment –finance teams etc).

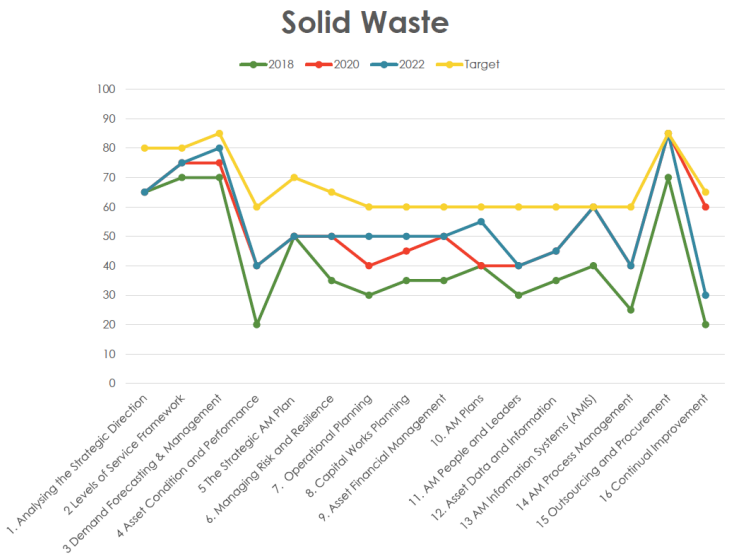
Parks and Open Spaces



- **"Star performer".**
- Improvements across most AM functions.
- Significant improvements made to asset data, asbuilt data provision and asset condition assessment programmes.
- Draft AMP developed (though not completed).
- Reliance on individuals is a key risk.
- Probably running on too many fronts, need to focus on work to support robust AMP forecasts / LTP 2024.
- Separate parks workshop run to confirm improvement priorities and scope the *Parks AM Planning System* – refer slides at end of report.

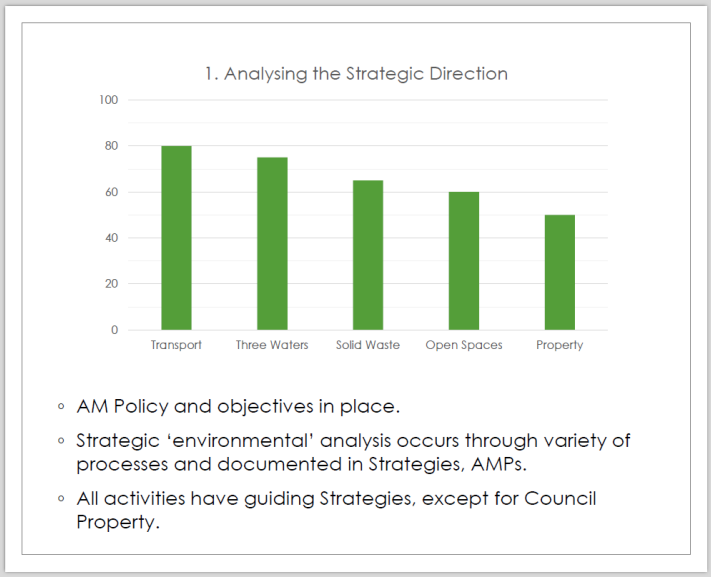


- **"Still a long way to go"**
- Property activity brought in-house in 2021, this has been a major change and AM hasn't been a focus.
- Improvements in condition assessments / renewal forecasting process for AMP / LTP 2021 and currently undertaking assessments to inform AMP / LTP 2024.
- Property needs additional AM resource to develop and deliver AM improvements, possibly additional support from P&I Strategy Team.
- Development of a Property Strategy is a high priority.
- Development of SLAs with activities occupying Council property was started but needs to be progressed.
- Separate property workshop was run to confirm improvement priorities and scope the *Property AM Planning System* – refer slides at end of report.



- **"Pockets of good practice"**
- Focus has been on bedding down a new long term contract for waste management.
- Minor improvements in operational space. Otherwise no change.
- No evidence that Contractor is delivering on AM responsibilities such as maintaining an asset register.
- *(note, key people were not available for the interviews. The results could be reviewed when they are available, or wait for 2024 review).*

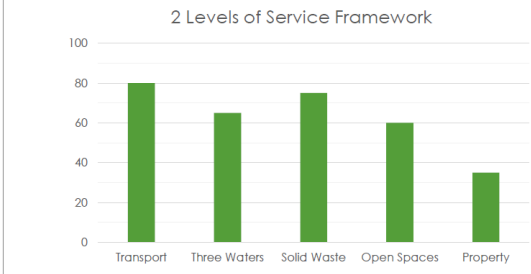
COUNCIL-WIDE RESULTS BY AM FUNCTION



- AM Policy and objectives in place.
- Strategic 'environmental' analysis occurs through variety of processes and documented in Strategies, AMPs.
- All activities have guiding Strategies, except for Council Property.

Strategic Direction:

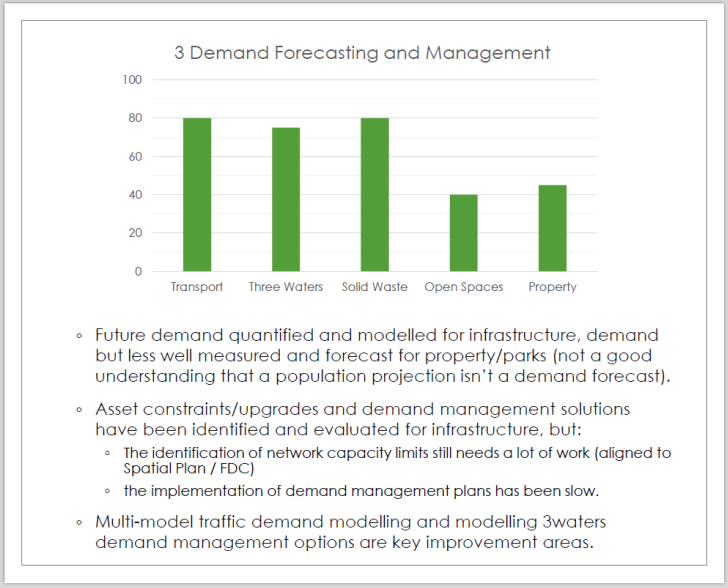
We understand our strategic goals and priorities our have aligned our AM policy, objectives, strategies and plans.



- Performance monitoring and reporting in place – LTP measures reported through Annual Plan and contract KPIs reported monthly. Targets are largely based on maintaining current performance.
- Customer engagement occurs through LTP and Strategy Development, largely 'submissions' based.
- Developing level of service options/costs and engaging with Council is a key priority leading into LTP 2024.

Levels of Service / Performance Management:

We have defined levels of service through an evaluation of level of service options and engagement with customers.
We measure and report on achievement of these.



- Future demand quantified and modelled for infrastructure, demand but less well measured and forecast for property/parks (not a good understanding that a population projection isn't a demand forecast).
- Asset constraints/upgrades and demand management solutions have been identified and evaluated for infrastructure, but:
  - The identification of network capacity limits still needs a lot of work (aligned to Spatial Plan / FDC)
  - the implementation of demand management plans has been slow.
- Multi-model traffic demand modelling and modelling 3waters demand management options are key improvement areas.

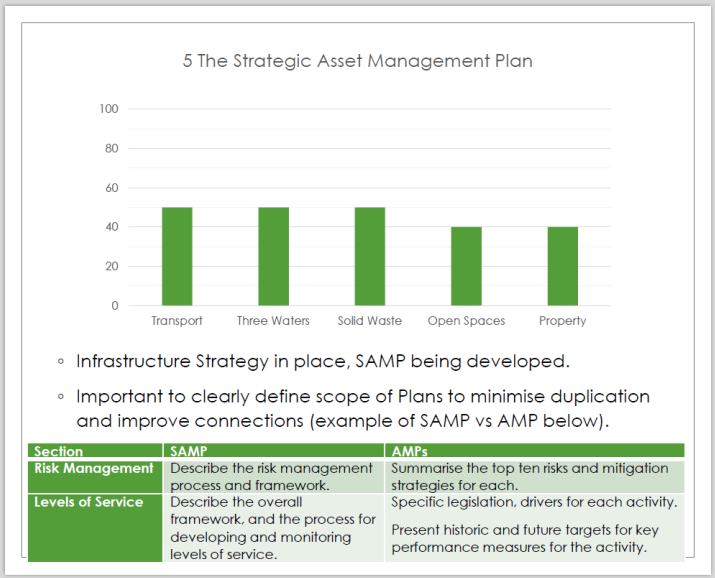
Demand Forecasting and Management

We have analysed future demand requirements and asset constraints, and have evaluated solutions to match demand and supply ('asset' and 'non-asset')

- Condition assessment data used in renewal forecasting for most major asset groups.
- However, data not always used stored and used effectively – 'value mapping' of transport condition/performance assessment and renewal processes is a good model for other activities.
- Lack of visibility of network performance information (contractor holds data) is an issue for 3Waters.

Asset Performance and Condition

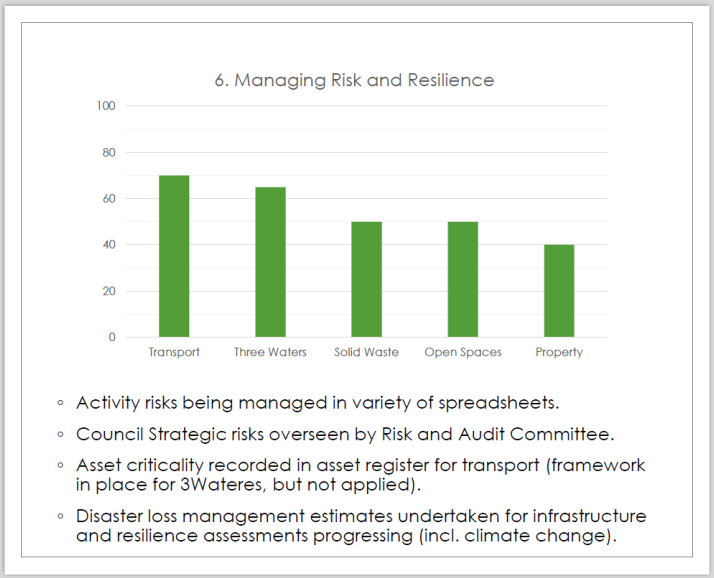
We understand the condition and performance of our assets (past, current, future), with more robust information for critical assets.



Strategic Asset Management Plan

The SAMP defines the AM System at QLDC – who, how, what.
The Infrastructure Strategy presents strategic issues and options and a long term strategy to address.

Content may be in other documents



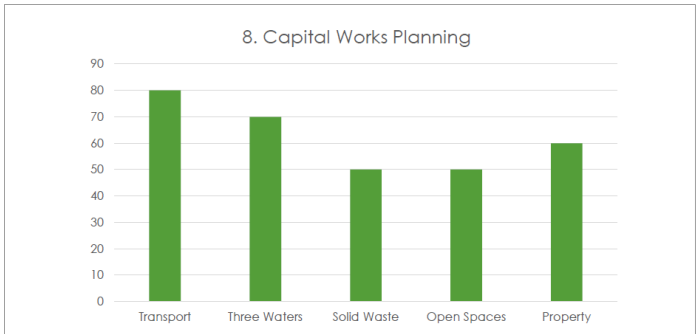
Managing Risk and Resilience

We understand our risks and level of resilience and have good processes to manage these.

- Maintenance Management Plan completed for transport, potential model for other areas.
- Council oversight of O&M contractors is improving, still needs work.
- O&M documentation is generally in place (O&M Manuals, ProMapp, Emergency Response Plans)but often out-of-date and/or incomplete.
- Deriving 'optimal' maintenance programmes typically done through annual reviews with ops staff/contracts (data-driven maintenance analysis is a future improvement area).

Operational Planning and Management

We operate and maintain our networks to deliver maximum value.

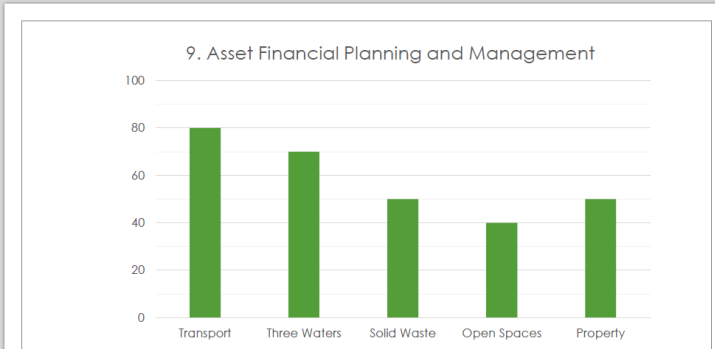


- A lot of good work in this space with development of business cases to support CAPEX programmes, a 'gateway' process, and a Programme Governance Board established. However:
  - Project costings and forecasting is poor leading to high varinaces.
  - Processes aren't always followed by project managers and there is limited auditing of this; more PM capability development needed.
  - There are no agreed Council tools for developing, prioritising and managing investment programmes. Different approaches are used, tools/software change frequently and roles aren't clear across the business case steps.

Capital Planning and Management

We have good decision frameworks in place, aligned to our objectives, to evaluate the best value option and prioritise projects and programmes.

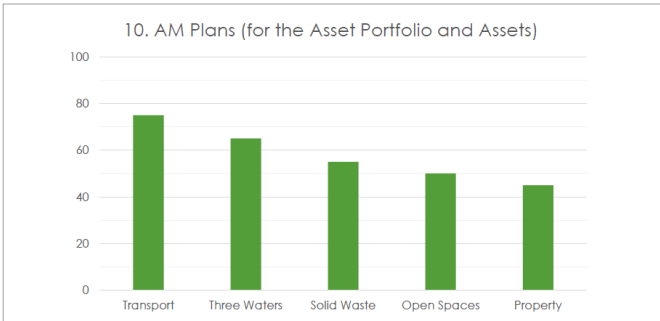
We have a robust CAPEX management process.



- 10 year financial forecasts in place (30 year for Infrastructure Strategy), but high rate of deviation from plan. Continued efforts to build stronger evidence base for costings and forecasts.
- Tight financial operating environment, vital to be able to prioritise projects and programmes effectively.
- Infrastructure revaluations are being undertaken annually due to high cost fluctuations and growing asset base. Implementing TechOne valuation module for all assets should make this easier.

Financial Management

We have long-term financial forecasts based on whole-of-life asset costs.
We have a reliable knowledge of asset costs, value and depreciation.



- AMPs are in place for all areas (though Parks was never completed and approved).
- 'AMPs on a page' have been a success for Council engagement.
- An issue is that AMPs are being 'backfilled' post-LTP rather than being well used as a tactical planning document or to provide underlying evidence to support financial forecasts.
- Only Transport has engaged well with operational staff / contractors in developing the AMP – others should consider how to get wider involvement.

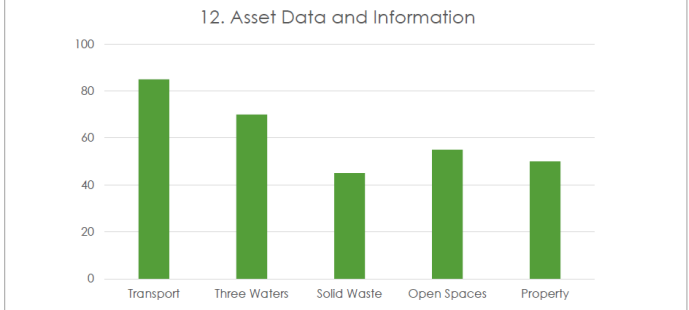
Asset Management Plans

Our AMPs tell the 'story' of our asset and service requirements, how we will manage these to provide maximum value, and the long-term cost of providing the service.

- AM roles are generally well-defined for infrastructure. However Solid Waste and Property don't have a clearly defined AM role and AM staff in Parks and Waters are thinly spread.
- P&I Strategy and Planning Manager provides an AM coordination function across P&I and parks, consider how to better engage other areas of Council.
- P&I Leadership support of AM is good, but attention needs to be given to the resourcing issues, and stronger oversight of the AM Improvement Plan.

People and Teams

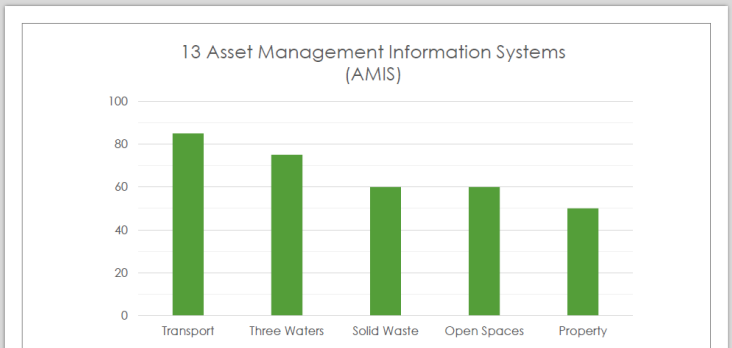
Our organisation effectively leads, coordinates and resources asset management.



- Transport asset register in RAMM, linked to TechOne, high data quality ratings using REG framework. Only minor ongoing improvements identified.
- 3Waters asset register in GIS, linked to TechOne – good reliability for pipes, less so for plant (2022 valuation was a major exercise in data cleansing).
- Parks have developed an asset register in the GIS, process in place for updating when new assets handed over.
- Property data captured by SPM during last condition assessments, held in spreadsheets, not updated on an ongoing basis.

Asset Register Data

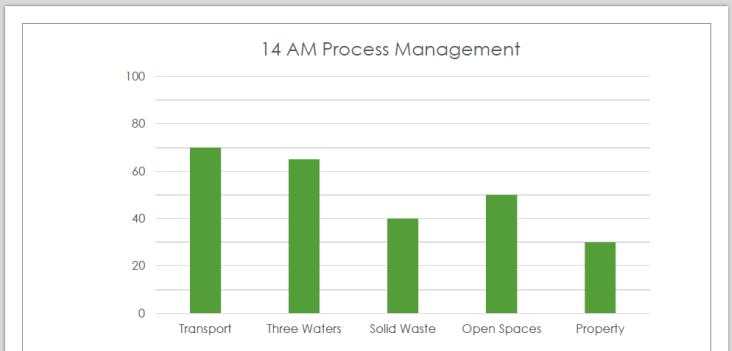
We have a reliable, well-structured asset database, sufficient to perform AM functions to an appropriate level.



- Previous attempts at managing assets in TechOne have not been successful (apart from Roads, where RAMM-TechOne is aligned). Comments around being clunky and lack of support.
- All teams are currently working with Knowledge Management to define needs and implement TechOne for AM.
- 3Waters needs to re-establish access to contractor's operational data, to support maintenance and renewal planning.
- No consensus on software for project / programme management – El Cappo, various spreadsheets, Sentient, TechOne, Power BI all being used for different functions

Information Management Systems

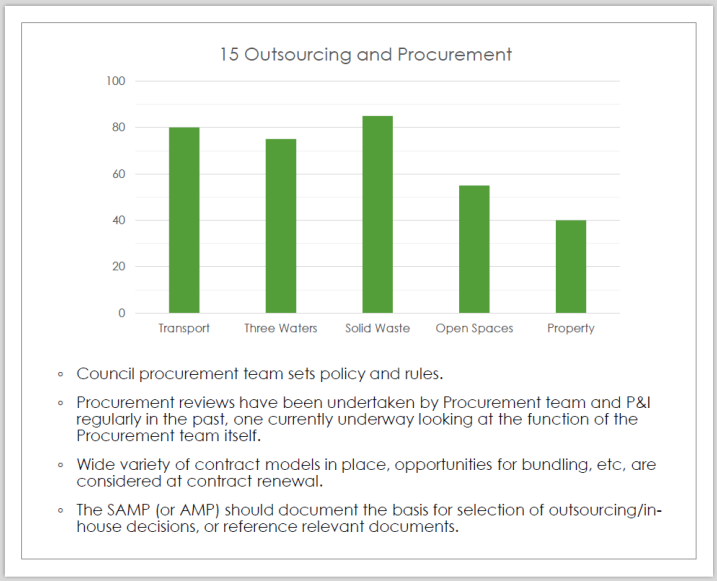
Our information systems enable effective and efficient AM practices.



- ProMapp is QLDC's main process mapping tool, through the focus has been use for operational processes (e.g. Event booking) rather than 'AM Processes' (e.g. Property condition assessments).
- A recommended starting point is to develop a list of critical AM processes and identify where these need to be documented, followed by process mapping to close gaps.
- Process auditing is generally not undertaken (checks that staff and contractors follow defined processes), with limited staff just getting things done is the priority.

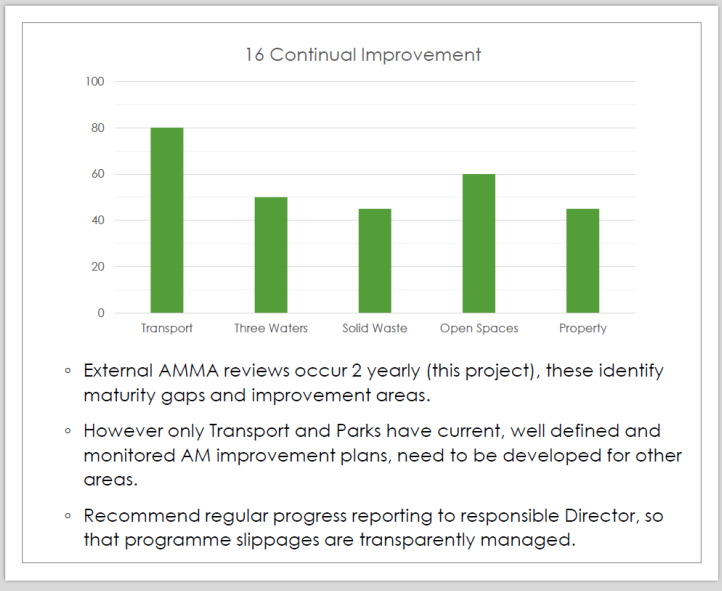
AM Processes

We have well defined and documented AM processes that are managed within a quality system.



Service Delivery / Procurement

We evaluate all options for service delivery and have effective procurement and control of outsourced activities.



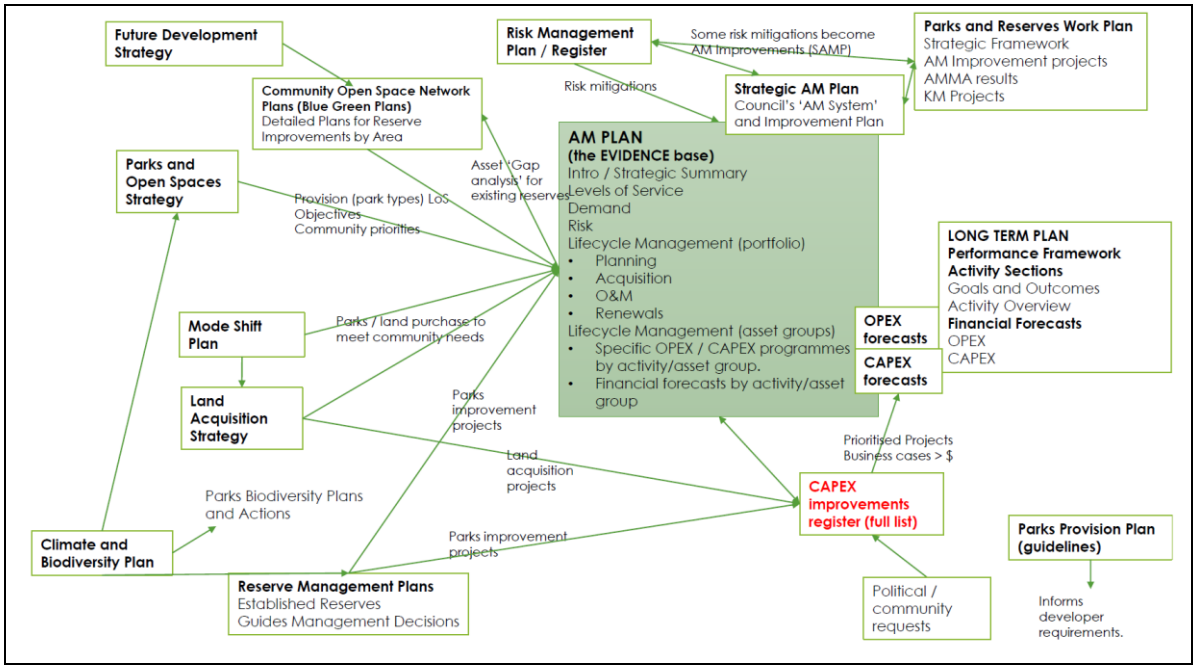
Audit, Review and Improvement

We take a continual improvement approach towards an appropriate level of asset management maturity.

SUPPLEMENTARY INFORMATION: PARKS AND PROPERTY WORKSHOPS

Mapping the Parks Planning System (workshop notes)

- The following diagram is the outcome of a workshop session for the parks team to better collectively understand the Council AM Planning system and interactions between key strategies and plans.
- These are rough working notes and were handed over Parks AM staff to further develop for inclusion in the AMP / SAMP.



Prioritising Parks AM Improvement Projects (workshop notes)

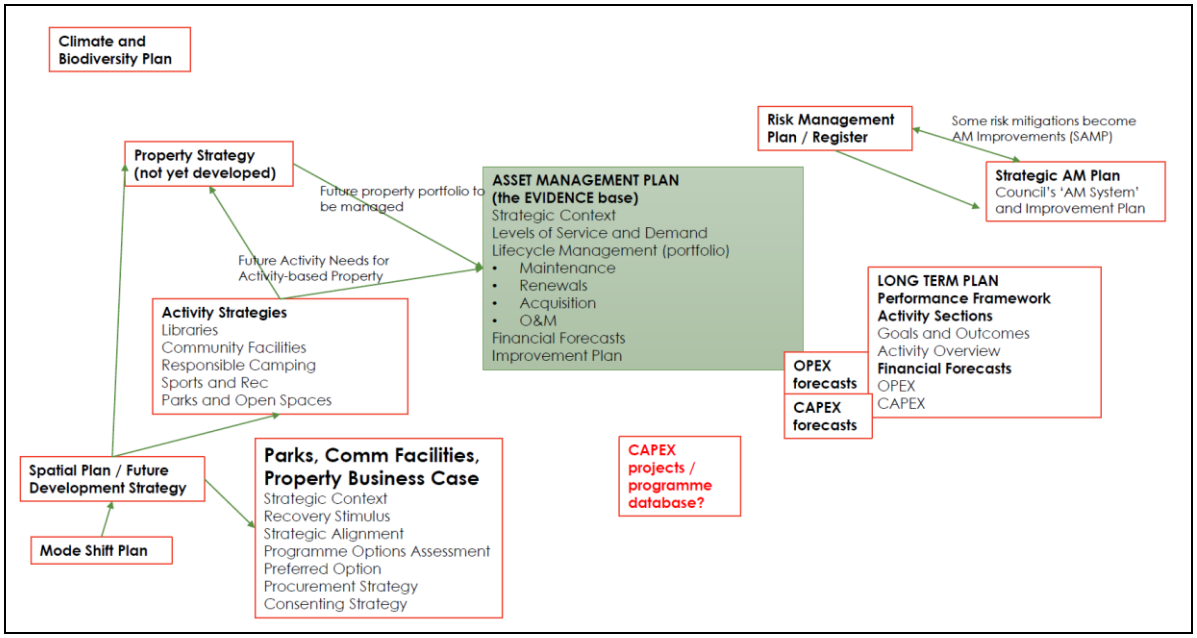
- The following slide contains the outcome from a Parks team workshop to prioritise improvement projects as identified through the AMMA gap analysis (gap between 'current' and 'target' AM maturity score).
- This information is expected to feed into a revised AM Improvement Programme

AM Improvement Projects – Priority projects (bolded)

- **Community Network Plans (by June 2023)**
- **Parks Biodiversity Plans and Actions (by June 2023)**
- **Update the AMP as evidence base for LTP, working with P&I (by June 2023)**
- **Review levels of service/performance measures, align Council/activity outcomes.**
- **OPEX forecasts – risk-based, more 'bottom up' (new / vested assets, changed O&M practices) and more conservative forecasts**
- **Levels of service 'gap analysis' (feed into Community Network Plans)** and identify CAPEX projects/OPEX initiatives to close gaps.
- **Risk monitoring and reporting**
- **Condition and Performance Assessment Programme.**
- **Renewals forecasting model, based on asset data.**
- **Capital projects database (links to AMP/LTP/corporate budgets)**
- **Business cases for major programmes**
- Structured process for identifying growth-related projects
- Specific strategies from Parks/Open Spaces strategy (e.g. play spaces)
- Demand monitoring plan / demand forecasts.
- Parks data quality management processes ('value mapping'?).
- Guidelines and System setting for Community Projects
- Document process for integration with Council subdivision mega-process.
- Maintenance contract auditing / reporting process.
- Standard operating procedures for field teams.
- Depreciated replacement cost valuations.
- Improve financial / budget structure to support asset lifecycle cost analysis
- Integrate GIS / TechOne
- Cemeteries Management System
- Automated end-of-year reporting contract prices

Mapping the Property Planning System (workshop notes)

- The following diagram is the outcome of a workshop session for the property team to better collectively understand the Council Property AM Planning system and interactions between key strategies and plans.
- This is an incomplete working diagram and needs further work by the Property AM Team.
- The work highlighted that the relative scope / content of the various documents needs to be managed to avoid repetition and inefficiencies in planning.


Climate and Biodiversity Plan
Risk Management Plan / Register
Some risk mitigations become AM Improvements (SAMP)
Strategic AM Plan
Council's 'AM System' and Improvement Plan
Property Strategy (not yet developed)
Future property portfolio to be managed
ASSET MANAGEMENT PLAN
(the EVIDENCE base)
Strategic Context
Levels of Service and Demand
Lifecycle Management (portfolio)
• Maintenance
• Renewals
• Acquisition
• O&M
Financial Forecasts
Improvement Plan
Future Activity Needs for Activity-based Property
LONG TERM PLAN
Performance Framework
Activity Sections
Goals and Outcomes
Activity Overview
Financial Forecasts
OPEX
CAPEX
Activity Strategies
Libraries
Community Facilities
Responsible Camping
Sports and Rec
Parks and Open Spaces
OPEX forecasts
CAPEX forecasts
Spatial Plan / Future Development Strategy
Parks, Comm Facilities, Property Business Case
Strategic Context
Recovery Stimulus
Strategic Alignment
Programme Options Assessment
Preferred Option
Procurement Strategy
Consenting Strategy
CAPEX projects / programme database?
Mode Shift Plan

APPENDIX B: ACTIVE CONSENTS RELATING TO THREE WATERS

SUMMARY OF CONSENT CONDITIONS

Table B-1 presents a high level summary of the combined maximum day **consent** limits for each scheme (summed totals for schemes with multiple water takes).

Table B-1: Combined consent limits for each scheme

Scheme	Water source	Number of active water takes	Combined Maximum Day Limit for active water takes. (m^3/day)
Arrowtown	Groundwater (3 bores)	1	7,800
Arthur's Point	Groundwater[1]	1	3,385
Glenorchy	Groundwater[1]	1	5,400
Hāwea	Groundwater	1	13,500
Lake Hayes Water	Groundwater[1]	1	2,200
Luggate	Groundwater[1]	1	1,437
Queenstown	Surface Water – Lake Whakatipu	2	45,000
Shotover Country	Groundwater	1	28,250
Wānaka	Surface Water – Lake Wānaka	2	40,176
Wānaka Airport	Groundwater	1	240
Corbridge Downs	Groundwater	1	460
Cardrona	River	2	1,296

[1] While identified as a groundwater take within the resource consent, water is sourced from a shallow bore or bore field and therefore the source water is considered equivalent to surface water in accordance with the New Zealand Drinking Water Standards.

Table B-2 shows the water take consent numbers and limits for each scheme and water take. There are three consents that are not currently in use, and these are highlighted in grey in the table.

Table B-2: Consent limits by scheme and water take.

Scheme	Water Take	Consent Number	Source and Type	Instantaneous Limit Litres/second	Daily Limit m^3/day	Weekly Limit m^3/week	Monthly Limit m^3/month	Annual limit m^3/ year (1 Jul to 30 Jun)	Issue date	Expiry Date
Arrowtown	Arrowtown	RM19.410.01	Water Permit - Groundwater	108	7,800		234,000	1,274,200	30-Oct-2035	30-Oct-2035
Arthur's Point	Arthur's Point	2005.762	Bore - Groundwater	49	3,385		105,000	823,500	15-Jan-2008	01-Dec-2042
Glenorchy	Glenorchy	2009.158	Bore - Groundwater (limits apply from 01 Jan 2017)	62.7	5,400		49248		02-Dec-2009	02-Dec-2044
Hāwea	Lake Hāwea	RM14.278.01	Lake Hāwea - Groundwater	180	13,500		100175	1,202,100	19-Jan-2015	19-Jan-2050
Hāwea	Lake Hāwea	2008.235	Lake Hāwea - Surface Water	180			100175	1,202,100	14-Jan-2009	01-Nov-2043
Lake Hayes	Lake Hayes	2001.822	Bore - Groundwater	40	2,200	15,400			24-May-2002	20-May-2027
Lake Hayes	Shotover Country	RM14.142.01	Bore - Groundwater	395	28,250		35,643	6,223,165	09-Oct-2018	01-Oct-2048
Luggate	Luggate	2008.464	Bore - Groundwater	20	1437				17-Nov-2008	14-Nov-2043
Queenstown	Queenstown Two Mile	2007.665	Lake Whakatipu - Surface Water		30,000				11-Feb-2008	01-Feb-2042
Queenstown	Queenstown Kelvin Heights	2004.552	Lake Whakatipu - Surface Water	350	15,000				13-Sep-2005	01-Apr-2040

Scheme	Water Take	Consent Number	Source and Type	Instantaneous Limit Litres/second	Daily Limit m^3/day	Weekly Limit m^3/week	Monthly Limit m^3/month	Annual limit m^3/ year (1 Jul to 30 Jun)	Issue date	Expiry Date
Wānaka	Wānaka Western Intake	2008.459	Lake Wānaka - Surface Water	200	12,960		324,000		06-Nov-2008	05-Nov-2043
Wānaka	Wānaka Beacon Point	2008.460	Lake Wānaka - Surface Water	400	27,216		680,400		06-Nov-2008	05-Nov-2043
Wānaka Airport	Wānaka Airport	RM19.097.01	Bore - Groundwater	2.8	240					1-Jun-2041
Corbridge Downs	Corbridge Downs	RM11.177.01	Bore - Groundwater	12	460		14,260	167,900	02-Sep-2011	30-Aug-2036
Cardrona	Cardrona River and Pringles Creek	RM21.628.03 2009.191V2	River – Pringles Creek and Cardrona River	15	1296		33,387	382,920		

Table B-2 presents a summary of consent conditions relating to water demand management for the relevant water take consents, along with their reporting requirements.

Table B-2: Summary of consent conditions relating to water demand management

Consent No.	Scheme	Condition #	Requirement	Reporting Requirement
2004.552	Queenstown (Kelvin Heights)	3	Proactive leak detection programme. Annual public awareness programme encouraging consumers to prevent leakage of water.	No
2004.552	Queenstown (Kelvin Heights)	4	Make publicly available via appropriate media educational material for the efficient use and conservation of water. Conduct an annual public awareness program encouraging appropriate water use efficiency and water conservation measures.	No

Consent No.	Scheme	Condition #	Requirement	Reporting Requirement
2005.762	Arthurs Point	4	A commitment to upgrading the reticulation network to minimise leakage. A proactive leak detection programme. Developing a maintenance plan for the network. A public awareness programme encouraging consumers to prevent leakage of water.	Yes - 1 December every second year
RM19.410.01	Arrowtown	6	Commitment to upgrading of the reticulation to minimise leakage. A proactive leak detection programme; and maintaining a public awareness programme encouraging consumers to prevent leakage of water.	No
RM19.410.01	Arrowtown	7	Prepare and submit a Water Conservation and Management Plan demonstrating a commitment to minimising environmental effects of takes and increase the efficient use of water over the term of the consent for certification by the Consent Authority. This plan must include: a) Purpose of the plan. b) Water supply management including maintenance, leak detection, leak reduction and pipe renewal policy. c) Water use efficiency and water demand measures (these may include but are not limited to water use restrictions, rationing, residential water use and efficiency measures which include low volume toilets, taps, showers and water appliances, water efficient gardens, strategies and timing for universal metering, roof water storage for new properties and industrial, commercial, and agricultural water use efficiency). d) Monitoring and reporting requirements including water use trend and the effects of Water Supply Management measures and water use efficiency and water demand measures on water use. e) Policy for non-compliance with water conservation directions including for recidivist offenders; and f) Regular promotion of water use efficiency to new and existing water users through appropriate media or communication methods.	Yes
2007.665	Queenstown (Two Mile)	6	Ensure leakage from the water delivery system is minimised through an ongoing leak detection programme, with commitment to upgrades of the system as necessary, and implementation of a public awareness programme encouraging consumers to prevent leakage of water.	Yes – February annually
2008.235 Not surrendered	Hāwea	10	Water supply management. Any maintenance undertaken. Any promotional material used.	Yes - annually

Consent No.	Scheme	Condition #	Requirement	Reporting Requirement
2008.235 Not surrendered	Hāwea	9	Promote the efficient use of water to all new subscribers to the scheme on application, and to all existing subscribers at least once every two years through appropriate media or communication methods.	No
RM14.278.01	Hāwea	6	Water demand management plan that includes: (a) an outline of the overall water scheme. (b) the promotion and education strategies relating to efficient use of water. (c) water loss reduction programme including leakage. (d) any metering undertaken and its operation. (e) water efficiency and water efficient fixtures.	Yes – September annually
	Hāwea	7	An annual report that summarises: a) Water supply management. b) Any maintenance undertaken. c) Any promotional material used.	Yes – September annually
2008.459	Wānaka (Western)	5	Leak detection programme. Implementation of a public awareness programme encouraging consumers to prevent leakage of water. A commitment to upgrading the system.	Yes – February annually
2008.460	Wānaka (Beacon Point)	5	Leak detection programme. Implementation of a public awareness programme encouraging consumers to prevent leakage of water. A commitment to upgrading the system.	Yes – February annually
2009.158	Glenorchy	5	Promote the efficient use of water to all new subscribers to the scheme on application, and to all existing subscribers at least once every two years through appropriate media or communication methods.	No
2009.158	Glenorchy	7	An annual report that summarises: a) Water supply management. b) Any maintenance undertaken. c) Any promotional material used.	Yes – September annually
2009.158	Glenorchy	8	The number of lots and their type, being supplied by the scheme. The total volume of water used in the scheme. An assessment of the efficiency of water use.	Yes, every 5 years
RM14.077	Lake Hayes Estate (not currently being used)	5	Water demand management plan that includes: (a) an outline of the overall water scheme. (b) the promotion and education strategies relating to efficient use of water. (c) water loss reduction programme including leakage. (d) any metering undertaken and its operation. (e) water efficiency and water efficient fixtures.	Yes – September annually

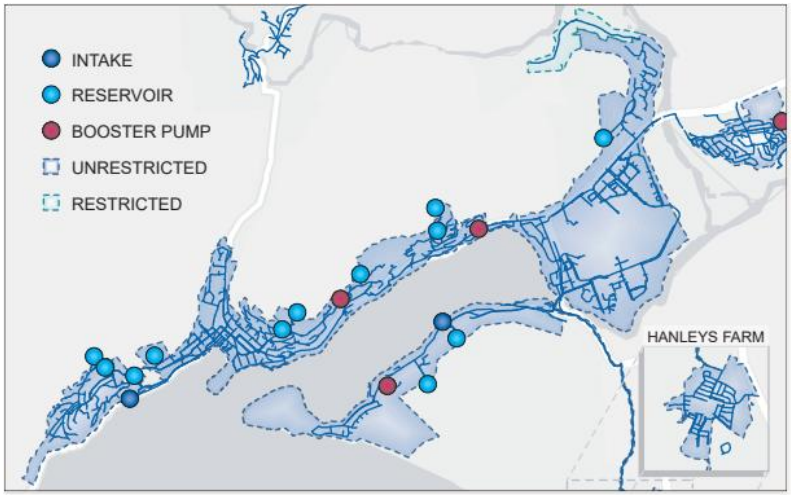
Consent No.	Scheme	Condition #	Requirement	Reporting Requirement
RM16.142.01	Shotover Country	8	Take all practicable steps to ensure that there is no leakage from pipes and structures.	No
RM11.177.01	Corbridge Downs	7	The number of lots and their type, being supplied by the scheme. Measures taken to ensure that each lot in the domestic water supply area is only supplied up to 2,500 litres per day.	Yes – July annually
RM11.177.01	Corbridge Downs	8	Details of all practicable steps taken to ensure no leakage, use of water is confined to specific supply areas, and that efficient use of water is promoted.	No
RM21.628.03 and 2009.191	Cardrona	9	Must take all reasonable action to minimise the leakage from the water delivery system. The term "reasonable action" is to include: (a) A proactive leak detection programme, and (b) A commitment to upgrading of the reticulation, as required, to minimise leakage, and (c) A public awareness programme encouraging all water users to prevent leakage of water from their connected systems	
RM21.628.03 and 2009.191	Cardrona	10	Must promote the efficient use of water to all water users of the scheme at least once every two years through appropriate media or communication methods.	

APPENDIX C: SCHEME SUMMARIES

Queenstown Water Supply

Supply Summary: Water is currently sourced from two Lake Wakatipu intakes: Fernhill (Two Mile) and Kelvin Heights. Queenstown's topographic nature necessitates the division of the reticulated water supply system into 24 different pressure zones with a number of pumpstations and smaller reservoirs. The two lake intakes pump directly to the two largest reservoirs, Fernhill No 1 and Kelvin Heights, which in turn serves the majority of the Queenstown network and the main 'Wakatipu' pressure zone. In 2023 the "UV Rapid Deployment" project was initiated, implemented a temporary UV water treatment system at the Fernhill No.1 reservoir facility, compliant with DWQAR 2022 standards. However, this temporary UV system limits the capacity of the Two Mile intake and QLDC plans to replace it with an appropriately sized permanent UV system in the future. Larger properties along Tucker Beach Road receive a restricted supply, a provide firefighting tanks onsite, the remainder of Queenstown's supply operated on-demand supply. Currently properties do not have meters installed due to lake algae present in the water supply impeding their operation.

Unique Strategic Drivers and Key Risks: The scheme faces significant growth projections, particularly towards the south and east. While storage capacity currently meets demands, the distribution of storage predominantly favours central Queenstown over areas like Frankton, which are earmarked for future expansion. This distribution discrepancy raises concerns about the scheme's ability to accommodate future demand and maintain supply resilience. Furthermore, reliance on lake intakes introduces risks associated with fluctuating water quality, including occurrences of algae and turbidity events. These challenges directly impact the scheme's ability to maintain compliance with drinking water standards.



Water Intake/Source:
Two Mile – Lake intake
Kelvin Heights – Lake Intake

Treatment:
Two Mile – UV and Chlorine disinfection.
Kelvin Heights – UV and Chlorine disinfection.

Consents: Water take consents.
Two Mile – (2007.665). Maximum extraction rates: 365 l/s and 30,000 m^3/day. Expires 2042.
Kelvin Heights – (2004.552). Maximum extraction rates 350 l/s and 15,000 m^3/day. Expires 2040.

Reservoirs: Ten QLDC reservoirs and four private reservoirs with operating capacity is 21.5Ml. This meets the current design storage capacity.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	177,859.12	X	$ 117,284,828.42	
Rising Mains	m	5,050.7	42	$ 4,386,090.97	
Valves	no.	6,628	10	$ 7,758,859.94	
Hydrants	no.	981	3,5	$ 4,761,098.34	
Pump station	no.	16	-	-	
Reservoirs	no.	12	-	-	
Water Sources	no.	2	-	-	SOC soon to connect

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$310.00	
2022/23 operations budget vs annual expenditure	**Budget:** $622,0153	**Expenditure:** 149% of budget
2022/23 capital budget vs annual expenditure	**Budget:** $ 9,009,823	**Expenditure:** 77% of budget

Consent compliance	No breaches
Ave water demand per connection, l/conn/day	1,288
Calculated water loss per connection, l/conn/day	177
Residential average peaking factor per season	1.58
Drinking Water Standards. *(Water Safety Plans)* - Two Mile - Kelvin Heights	Bacterial treatment compliant Protozoa treatment complaint Bacterial treatment not compliant - Fail chlorine contact time Protozoa mostly compliant with UV some turbidity spikes in summer
From 2022 Hydraulic model, Queenstown Water Network:	
Fire Fighting - Less than FW2 - FW2 and above - FW4	 15% 82%-85% 17%
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) - A maximum limit of 900 kPa.	Less than 3% less than 300kPa 80-90% of network operates between 300kPa-90okPa 8% is above 900kPa m.-
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 12 hrs of peak day demand	Min storage 12.6 h – Lower Kelvin Heights Res Currently, two reservoirs drop below their respective 60% water level mark (Lower and Upper Goldfield Reservoirs).

Events in last 3 years: On the 20 September 2023 the drinking water regulator, Taumata Arowai, issued a compliance order to QLDC following a Cryptosporidium outbreak in central Queenstown, with the source remaining unconfirmed. A boil water notice was enforced until protozoa treatment measures were implemented and operational at the Two Mile water treatment plant, which was completed on December 8, 2023. In response to the outbreak, QLDC prioritized the addition of adequate protozoa barriers to other water supplies within the district, as deemed necessary.

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	9,147	14,112	54
Total Visitor Peak Day	2,568	3,979	55
Total Population (Av. Day)	13,082	19,480	49

Projects to optimize management of this supply

In progress: As part of the Wakatipu master plan, new bores and a treatment plant have been developed at Shotover Country (SOC) and are currently undergoing commissioning. These facilities not only replace existing adjacent water supply sources for the Shotover Country and Lake Hayes Estate schemes but are also intended to integrate this supply into the Queenstown water scheme, leading to the ability to take Kelvin Heights Lake intake offline.

Planned, significant projects (present day $):

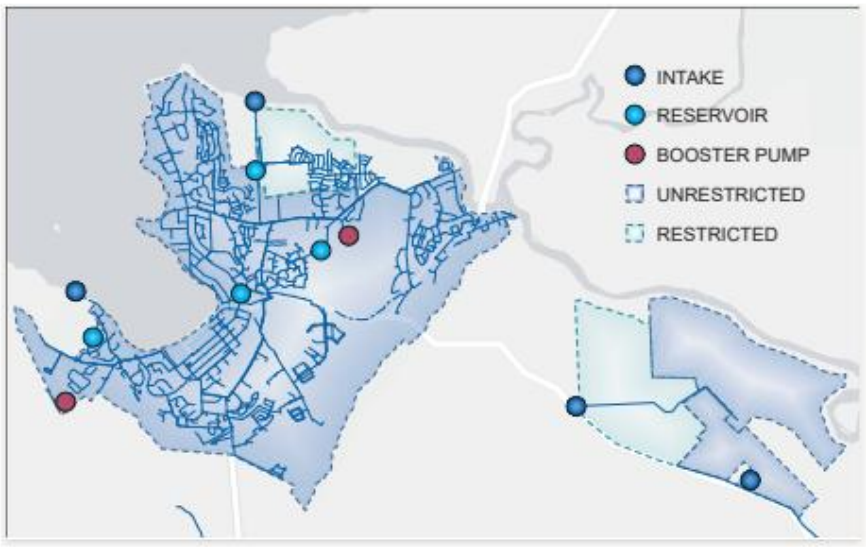
- Demand management, network zoning and demand management interventions $22,986,541, (2024-2032).
- Ladies Mile new scheme, to meet growth demand. $29,296,716, (2026-2032).
- Levels of service performance $12,034,590, (2026-2034).
- Quail Rise Reservoir, to meet current and projected storage demand. $28,315,009, (2027- 2032).
- Southern Corridor new scheme, to meet growth demand. $86,035,146, (2024- 2034).
- Two Mile Supply Upgrades, improvements are required to provide compliant drinking water. $23,759,111, (2030 - 2034).

Wānaka Water Supply

Supply Summary: The town operates an on-demand supply system. Sourced primarily from two Lake Wānaka intake pump stations. Each station pumps directly to two main reservoir sites, Beacon Point (comprises of two reservoirs) and Western reservoir. Additionally, a reservoir located at Plantation Road and above Far Horizons subdivision supplement the reservoir capacity. Water from these reservoirs is distributed throughout Wānaka and Albert Town via gravity. The water supply from both intakes is treated with UV and chlorine disinfection. Booster pump stations are utilised to increase water pressure in subdivisions situated at higher elevations. Currently, properties do not have meters installed due to the presence of lake algae in the water supply, impeding their operation.

Unique Strategic Drivers and Key Risks:

- Ongoing growth to the south and east of the scheme remains a primary strategic driver, resulting in increasing water demand. This growth underscores the necessity for increased water storage.
- Historic usage data indicates an increase in daily water demand over summer, placing strain on storage and pumping infrastructure.
- The Beacon Point supply zone lacks resilience due to critical assets such as Beacon Point rising mains.
- Reliance on lake intakes introduces risks associated with fluctuating water quality, including occurrences of algae and turbidity events. These challenges directly impact the scheme's ability to maintain compliance with drinking water standards.



Water Intake/Source:
Western: lake intake
Beacon Point: lake intake

Treatment: Both intakes- Chlorine Disinfection and UV

Consent: Water take consents
Western: (2008.459) Maximum extraction rates 200 L/s, 12,960 m^3/day and 324,000 m^3/year. Expires 2043.
Beacon Point: (2008.46). Maximum extraction rate: 400 L/s, 27,216 m^3/day; and 680,400 m^3/yr. Expires 2043.

Reservoirs:
Beacon Point Reservoir x2; 9,000 m^3, Western Reservoir; 1,040 m^3, Plantation Reservoirs x2:1,450 m^3, Far Horizons tank farm. 10 x 25m^3, Northlake Reservoir 500m^3, Mt Iron Reservoir – inactive. The Supply is currently deficit of 10 ML/day based on insufficient reservoir storage.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	219,802.09	X	$ 120,244,113.94	
Rising Mains	m	2,445.9	-	$ 2,763,204.49	
Valves	no.	8,910	0,6	$ 10,426,699.69	
Hydrants	no.	1,043	0,3	$ 5,062,003.64	
Pump station	no.	9	-	-	
Reservoirs	no.	10	10	-	
Water Sources	no.	2	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$220.00	
2022/23 operations budget vs annual expenditure	**Budget:** $388,3077	**Expenditure:** 135% of budget
2022/23 capital budget vs annual expenditure	**Budget:** $12,147,322	**Expenditure:** 100% of budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,263	
Calculated water loss per connection, l/conn/day	125	
Residential average peaking factor per season	2.66	
Drinking Water Standards. *(Water Safety Plans)* - *Beacon Point* - Western	Bacterial treatment compliant Protozoa treatment compliant Bacterial treatment compliant Protozoa treatment compliant	
From 2023 Hydraulic model, Wanaka Water Network:		
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity	Generally, the network can provide residential fire flows, and commercial flows in the CBD. There are however some areas of deficiencies which should be considered in more detail.	
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints. - A maximum limit of 900 kPa.	Non- Compliance: <200 kPa --Bills Way and Montieth Road experience low pressure >900 kPa Head Place – to be verified, Totara Pressure Zone, Lower elevation areas of the new Wānaka-Mt Aspiring boosted zone -	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 12 hrs of peak day demand	Required volume 12,665m^3. Storage volume available 12,540m^3	

Events in last 3 years:

- Level 1 water restrictions 2023/24
- Increases in lake turbidity interfere with protozoa compliance in summery

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	13,999	26,872	92
Total Visitor Peak Day	7,154	12,703	77
Total Population (Av. Day)	12,674	25,899	104

Projects to optimize management of this supply

Completed:

- The 2023 'UV Rapid Deployment' project has delivered protozoal compliant water treatment systems to both Western and Beacon Point Water Treatment Plants (WTP). These WTPs effectively comply with the DWQAR 2022. However, Taumata Arowai has indicated that the rules will be modified to include pre-UV filtration for direct surface water supplies such as Western and Beacon Point. Consequently, the addition of finer pre-UV filtration at both Western and Beacon Point is a priority for QLDC.

- New Wānaka Mt Aspiring Road pumpstation and creation of the Wānaka-Mt Aspiring Road pressure zone, an extension of the Far Horizon zone, this has resolved historical low pressure on Wānaka-Mt Aspiring Road, however, it does result in high pressures of more than 900kPa further east along the road near Studholme Road.
- New trunk main from Anderson Road through Golf Course Road to Cardrona Valley Road to improve pressure and fire flows to Cardrona Valley Road (South Wānaka) area.
- New reservoir at Beacon Point. Construction of the first 5,500m^3 reservoir is completed. This provides additional operational and emergency storage and improves the resilience in this area. The additional capacity also means older infrastructure can be safely taken offline for maintenance if required.
- A high-level water supply zone has been created to provide higher elevated lots in the Northlake and future Allenby Farms developments with a potable water supply. This includes a pumpstation and 500m^3 reservoir.

In progress:

To address demand in the short term, summer water restrictions will be maintained. Additionally, a proactive strategy will be implemented, encompassing educational, guidance, and stewardship initiatives aimed at promoting reasonable reductions in water consumption.

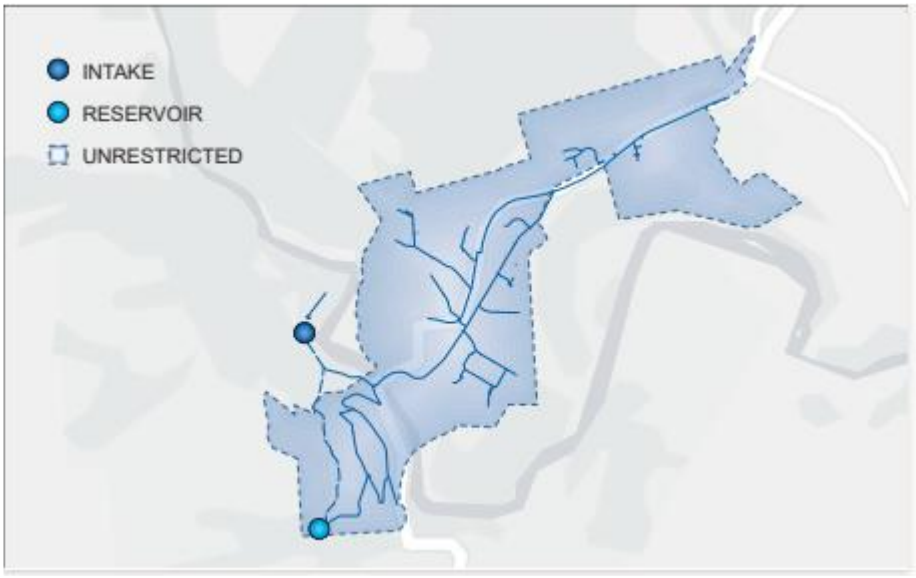
Significant projects planned:

- Beacon Point Supply Upgrades, Long-term planning of scheme upgrades required to provide compliant water across the Wanaka scheme and meet future demand. $28,510,236, 2024-2030.
- Demand management, network zoning and demand management interventions, $16,494,914, 2024-2032.
- Levels of service performance $16,296,184, 2026-2034.
- Wanaka Storage Upgrades, servicing growth in South Wanaka $71,586,997, 2028-2034.
- Wanaka Scheme Upgrade, $139,067,939 (2024-2034)

Arthurs Point Water Supply

Supply summary: Water is abstracted from two bores located adjacent to the treatment plant above the Shotover River near to the Arthurs Point community. The water is pumped through a small treatment plant and disinfected with UV before being delivered to a reservoir through a combined rising / falling watermain. Water is then supplied under gravity form the reservoir, or under pumped pressure when the reservoir is filling, into the reticulation network.

Unique Strategic Drivers and Key Risks: The water intake is situated on the south side of the bridge, while the majority of the water supply is located on the opposite side. Given the critical role of the bridge in infrastructure, plans are underway to renew the water main. To enhance resilience and accommodate the substantial growth on the north side of the bridge, additional storage will be necessary on that side. Additionally, for improved resilience and full redundancy bore pumps required upgrading so they can achieve greater flows.



Water Intake/Source: Two bores

Treatment: UV treatment and chlorine disinfection.

Consent: Water take consent (2008.464). Maximum abstraction rate 20 L/s (1,437 m^3/day). Expires 2043. Adequate for current demand, growth projection identify this is not sufficient for life of consent.

Reservoir: Operating capacity is 1,020 m^3.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	12,594.6	X	$ 5,813,644.88	
Rising Mains	m	945.68	0,1	$ 851,103.92	
Valves	no.	453	0,5	$ 530,290.21	
Hydrants	no.	63	0,1	$ 305,758.60	
Pump station	no.	1	-	-	
Reservoirs	no.	2	-	-	
Water Sources	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$320.00	
2023/24 operations budget vs annual expenditure	**Budget:** $ 357530	**Expenditure**: 130% of budget
2023/24 capital budget vs annual expenditure	**Budget:** $84,070	**Expenditure**: 0.45% budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,007	
Calculated water loss per connection, l/conn/day	162	
Residential average peaking factor per season	2.07	
Drinking Water Standards. *(Water Safety Plans)*	Bacterial treatment compliant	
	Protozoa Treatment compliant	

From 2023 Hydraulic modelling report:	
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity	The network can provide residential fire flows throughout.
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints. - A maximum limit of 900 kPa.	Non- Compliance: No areas The majority of the network has pressure over 800kPa A significant portion of the network has pressure over 900kPa, including Redfern Terrace, Shotover Jet area, Edith Cavell Bridge, Oxenbridge Tunnel Road and Gorge Road
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 24 hrs of average day demand - 12 hrs of peak day demand	The Arthurs Point network has sufficient treated water storage to meet the current system demands. The current bore pumps can meet peak demands however this may require both pumps to operate at times.

Events in last 3 years

- Level one Water restrictions 2022/23, 2023/24

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Population (Av. Day)	2,025	2,699	33
Total Rating Units	581	782	35
Total visitors (Peak day)	594	1,055	78

Projects to optimize management of this supply

In progress: To address demand in the short term, summer water restrictions will be maintained. Additionally, a proactive strategy will be implemented, encompassing educational, guidance, and stewardship initiatives aimed at promoting reasonable reductions in water consumption.

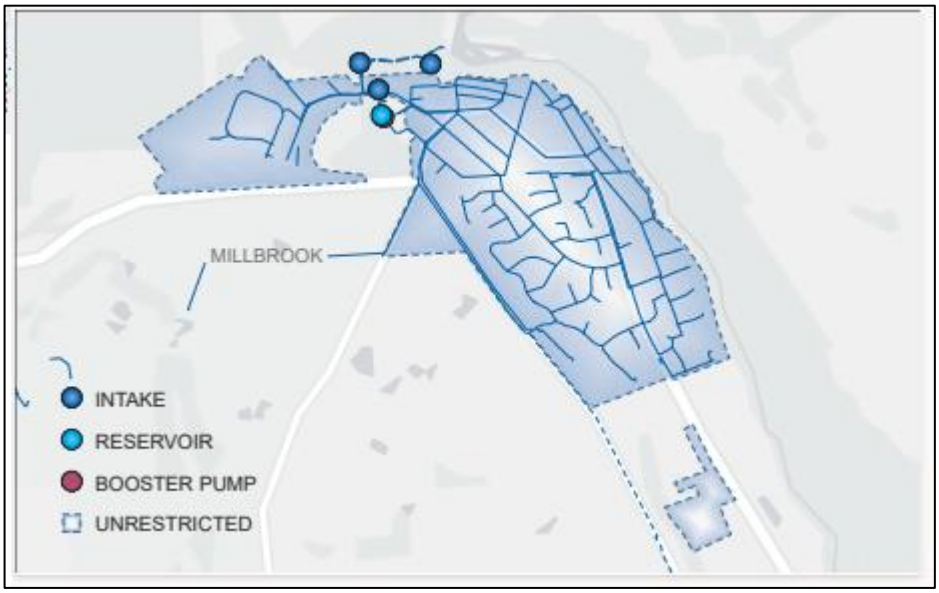
Significant projects planned:

- Arthurs Pt Reservoir, Arthurs Pt WS bores & reservoirs are on west side of Edith Cavell bridge with majority of growth occurring on east side. Additional storage would increase resilience., $8,168,689 (2027-2031)

Arrowtown Water Supply

Supply Summary: The town operates on an on-demand water supply system. Water is sourced from three bores within the Arrow-Bush Ribbon aquifer, adjacent to the Arrow River, which is unconfined. These bores channel water to the Arrowtown treatment plant, situated near Caernarvon Road. Following UV treatment, the supply undergoes chlorine gas disinfection before being stored in three tanks and distributed to the community. From the reservoirs, most of the water is gravity-fed to the township via three trunk mains. Additionally, a booster pump station assists in supplying water to elevated areas. Moreover, the pump station at the reservoir site is utilized to maintain water pressures during periods of high demand.

Unique Strategic Drivers and Key Risks: Growth is occurring in Millbrook and there are further pressures from developments outside of the scheme boundary for connection. Reservoir storage for current demand is insufficient. The intake bores, being less than 30 meters deep, are vulnerable to fluctuations in both water quantity and quality. Furthermore, there is an additional risk due to the location of the boreheads in a flood-prone area, despite being raised.



Water Intake/Source: Three bores.

Treatment: UV treatment and chlorine disinfection.

Consent: Water take consent (2008.464). Maximum abstraction rate 20 L/s (1,437 m^3/day). Expires 2043. Adequate for current demand, growth projection identify this is not sufficient for life of consent.

Water demand sits close to daily consent limit over summer.

Reservoir: Operating capacity is 1,350 m^3. There are some signs of visible leakage.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	32,208.5	X	$ 15,592,895.59	
Rising Mains	m	1,089	0,5	$ 1,010,841.52	
Valves	no.	1,416	0,6	$ 1,657,595.90	
Hydrants	no.	190	0,2	$ 922,129.13	
Pump station	no.	3	-	-	
Reservoirs	no.	1	-	-	
Water Sources	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$280.00	
2023/24 operations budget vs annual expenditure	**Budget:** $530,742	**Expenditure:** 157% of budget
2023/24 capital budget vs annual expenditure	**Budget:** $ 196920	**Expenditure:** 22% of budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,421	
Calculated water loss per connection, l/conn/day	332	
Residential average peaking factor per season	1.78	
Drinking Water Standards.	Bacterial treatment compliant	
	Protozoa treatment compliant	
2017 Hydraulic model, Arrowtown Water Network		
Fire Fighting	Current data note sourced	
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints; - A maximum limit of 900 kPa.	Non- Compliance: Areas of low pressure in west of scheme -	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 12 hrs of peak day demand	3,261m^3/day, this is more than the reservoir storage	

Events in last 3 years: Level three water restrictions 2022/23 and level one water restrictions, 2023/24. This is driven by demand nearing the consent water take limit.

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	3,732	4,014	8
Total Visitor Peak Day	737	907	170
Total Population (Av. Day)	297	367	70

Projects to optimize management of this supply

In progress: To address demand in the short term, summer water restrictions will be maintained. Additionally, a proactive strategy will be implemented, encompassing educational, guidance, and stewardship initiatives aimed at promoting reasonable reductions in water consumption.

Significant projects planned:

- Arrowtown Scheme Upgrade, additional storage required in Arrowtown to meet QLDC's agreed levels of service. $11,511,906 (2026-2031).
- Demand Management, network zoning and demand management interventions. $2,742,092 (2024-2032).
- Arrowtown Permit, water take consent renewal $445,620 (2032-2034).

Cardrona Water Supply

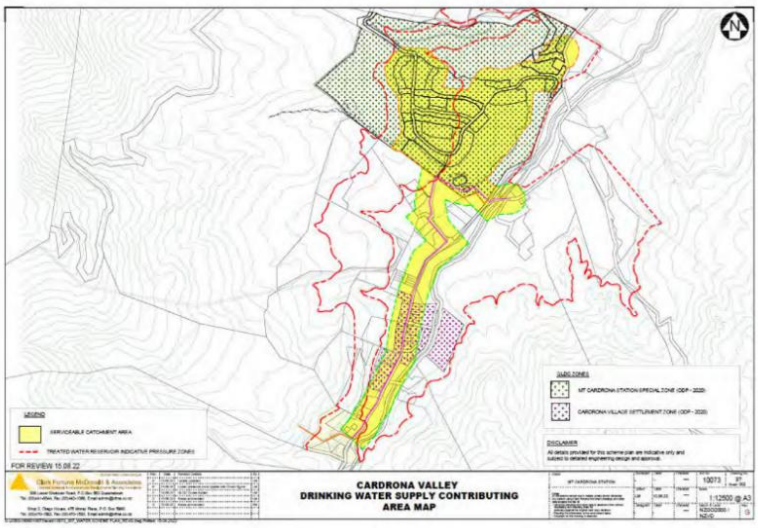
Supply Summary: Cardrona Village is currently served by five small private water supply schemes, each with permitted water extraction consents. However, these private schemes, either individually or collectively, cannot meet the long-term demand for water in the village. The primary water supply for the village, drawn from a shallow 13-meter bore, fails to meet Drinking Water standards and has experienced contamination in recent years. Two Norovirus outbreaks have been traced back to an upstream private wastewater disposal field. Consequently, public wastewater infrastructure has been installed in Cardrona Township.
In 2024, Stage one of the new Cardrona Water Supply Scheme was constructed, sized to accommodate over 500 dwellings plus commercial accommodation and vested into QLDC. Currently undergoing commissioning, this supply addresses shortcomings of the old system and facilitates growth, including the Mt Cardrona Station (MCS) special zone. The initial $21 million headworks investment, partially developer-funded, sources water from surface water at Pringles Creek and the Cardrona River. Treated water is pumped to a reservoir and distributed to the MCS special zone and Cardrona Village water scheme. QLDC has extended the water main from Pringles Creek Road to Cardrona Village and from the Cardrona River intake crossing to Tuohy's Gully, with plans for further extension as growth demands. Future construction includes rider mains, initially omitted from the design.
It is understood there is an overallocation of water take consents in this area and because of this constraint this new scheme has been designed to provide 1,000 liters per day per household, below typical design parameters.

The water treatment plant also provides non-treated irrigation water to the MCS Special Zone and supplements the Cardrona Wastewater treatment plant disposal fields as needed.

All properties connected to the new supply have an on-demand supply with smart meters installed during construction, facilitating volumetric charging.

Service Level Risks: The existing scheme will remain operational until properties opt to connect to the new compliant QLDC scheme. The completion of this transition is planned for June 25th2024. Currently four existing properties have chosen to connect as well as stage one of the MCS special zone.

Unique Strategic Drivers and Key Risks: The scheme is strategically aligned with significant planned growth, with its design tailored to accommodate this expansion in water supply. A key risk associated with this scheme pertains to the uptake of connections by the existing township, which is crucial for financing the construction and operations of the new supply and ensuring its efficient functioning. Additionally, there is a concern regarding the limited availability of water for supply beyond the existing consents.



Water Intake/Source: Two surface water takes.

Treatment: Chlorine disinfection and membrane microfiltration.

Consents:

-Pringles Creek (2009.435) - Maximum abstraction rate 1,452 m^3/day (315,000 m^3/year). A minimum flow of 15l/s must be maintained in Pringles Creek. Expires 2030

-Cardrona River (2009.191.V2) - Maximum abstraction rate 1,296 m^3/day (382,920 m^3/year). Expires 2030.

Reservoir: One 430 m^3 treated water reservoir.

Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	66.70	No financial data available as construction of the scheme was completed after the most recent valuations	
Rising Mains	m	-		
Valves	no.	3		
Hydrants	no.	-		
Pump station	no.	-		
Treated Reservoir	no.	1		-
Water Sources	no.	2	-	-

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing? This relates to the new QLDC scheme, which is not yet operational**.**

Average water demand per connection, l/conn/day	Designed for 1,000l – because of the limited water available	
Calculated water loss per connection, l/conn/day	Designed for 100 l/day	
Drinking Water Standards.	Designed to be bacterial treatment compliant	
	Designed to be protozoa treatment compliant	
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity:	As hydraulically modelled for the design:	
	Total no. Hydrants	No. of Non-Compliant Hydrants
	-	-
	18	-
Water pressures	Designed to be compliant 300-900kPa	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 24 hrs of average day demand - 12 hrs of peak day demand - 6 hrs of average day demand plus the greatest firefighting storage requirement	83 m^3 (Designed for 40 hrs) 55 m^3 (Designed for 28 hrs) 6hrs average day + FW3 requires 66 (180?) m^3	

Confidence in asset knowledge: This is a new supply with new assets and therefore there is a high confidence of asset detail. The scheme has been built and will be detailed to current asset data standards.

What does the future look like?

	2023	2053	Growth, %
Total Population (Av. Day)	1,127	3,156	180
Total Rating Units	569	1,266	122
Total Visitor Peak Day	1,128	4,079	261

Projects to optimize management of this supply.

In progress: New water supply currently being commissioned.

Planned, significant projects:

- Council has made obligations through the developer agreement in the delivery of the Cardrona Water Scheme (detailed in developer agreements) to provide guaranteed capacity to the developer, and for the developer to call for future stage upgrades where there are capacity constraints. As development at MCS demands a future high level pressure zone will be constructed for the MCS with a dedicated booster pump and reservoir. Incremental upgrades to scheme as growth requires, $1,008,771 over next ten years.
- The existing water take permits will expire in 2030. Funding provides for the renewal of this permit. $907,850.

Glenorchy Water Supply

Supply Summary: The supply for this scheme originates from two bores adjacent to the Glenorchy-Queenstown Road, near Glenorchy and is connected to the Buckler Burn groundwater aquifer. The water is drawn from the bores, treated, and directed to two reservoirs prior to distribution under gravity. Currently all properties have smart meters installed.

Unique Strategic Drivers and Key Risks: The current demand accounts for a relatively small residential population base, this fluctuates during the summer months where the population more than triples due to tourism. Both the peak and average day populations in Glenorchy are not expected to significantly increase over the next 30 years. Future demands are expected to be within consent limit. However, there are issues with drinking water compliance that need to be resolved. The existing two bore heads do not meet the drinking water or regional council (ORC) standards. The "UV Rapid Deployment" project will upgrade the bore heads need to meet the ORC and drinking water standards, with the exception of raising the bore heads above the 100-year ARI flood level. Raising the bore heads approximately 3.5m is a medium to long term project. Additionally, for improved resilience and full redundancy bore pumps required upgrading so they can achieve greater flows.

Water Intake/Source: Two bores

Treatment: Chlorine disinfection.

Consent: Water take consent (2009.158). Maximum abstraction rate 62.7 L/s (5,400 m^3/day) and expires in 2044. This is adequate for current and future demand.

Reservoir: Current there are two reservoirs providing 500 m^3 of storage.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	10,317.8	X	$4,193,030,89	
Rising Mains	m	344.6	X	$110,296.84	
Valves	no.	315	18%	$368,744.85	
Hydrants	no.	43	9%	$679,463.57	
Pump station	no.	1	-	-	
Reservoirs	no.	1	-	-	
Water Sources	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$530.00	
2023/24 operations budget vs annual expenditure	**Budget:** $481,612	**Expenditure:** 83% of budget
2023/24 capital budget vs annual expenditure	**Budget:** $3938732	**Expenditure:** 48% of budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,765	
Calculated water loss per connection, l/conn/day	580	
Residential average peaking factor per season	2.34	
Drinking Water Standards. *(Water Safety Plan)*	Bacterial treatment not compliant – insufficient contact time	
	No treatment barrier for protozoa currently.	
2018 Hydraulic model, Glenorchy Water Network:		
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity	Total no. Hydrants 33 3 FW2 non-compliant hydrants: Mull St/Pidgeon Pl/Woodley Pl and Coll St FW3 non-compliant hydrants: Mull Street	No. of Non-Compliant Hydrants 6 2
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints. - A maximum limit of 900 kPa.	No minimum pressure issues within Glenorchy water supply network. The lowest pressure is at the far end of Coll Street, as the elevation rises, pressure sits between 270-280kPa. No maximum pressure issues within Glenorchy-	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 24 hrs of average day demand - 12 hrs of peak day demand - 6 hrs of average day demand plus the greatest firefighting storage requirement for the network as defined by SNZ PAS 4509:2009	500m^3 available, this is sufficient for 24 hours of storage at an average daily flow	

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	1,319	2,089	58
Total Visitor Peak Day	710	985	39
Total Population (Av. Day)	1,118	2,235	100

Projects to optimize management of this supply

Completed:

- New reservoir, two new steel plate reservoirs have replaced four pre-cast concrete tanks and increased the township's water capacity from 90,000 litres to 500,000 litres. The previous reservoirs were leaking.
- Smart water meter trial was completed as part of the water demand management strategy.

Significant projects planned:

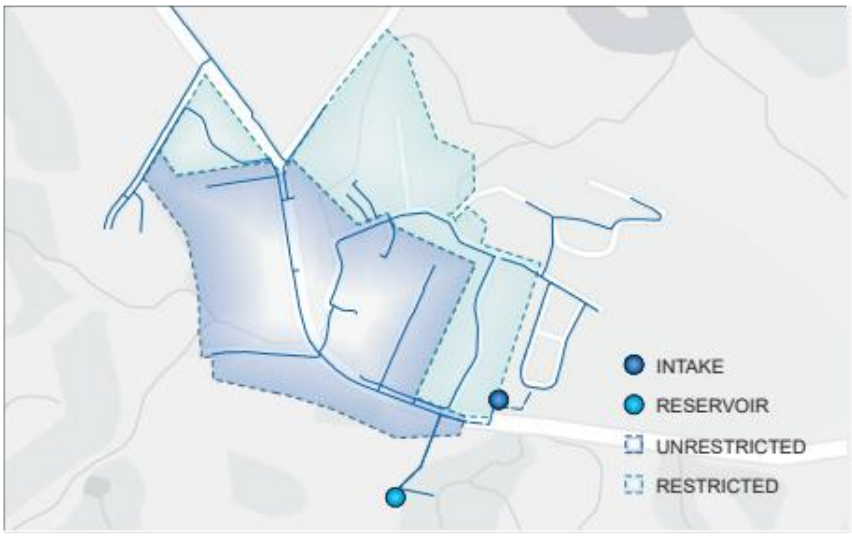
- Glenorchy Bore Upgrades, existing bore replacement $475,942 (2031/32).

Luggate Water Supply

Supply Summary. The water supply is obtained from shallow bores located near the Clutha River, with pressure and storage facilitated by ten tanks situated above Luggate. Distribution to the township's reticulation network is achieved through a single gravity-fed main. Presently, all properties are equipped with smart meters. While the majority of the town relies on an on-demand water supply, a few lifestyles lots along Pisa Rd and Alice Burn Dr receive a restricted supply of 1,500 liters per day.

Unique Strategic Drivers and Key Risks: Inadequate treatment barriers currently fail to meet legislated standards. Historical data indicates an increase in daily water demand over summer, placing strain on storage and pumping infrastructure. Continued population growth will exacerbate these pressures, potentially jeopardizing emergency water reserves. Considering the risks to supply and anticipated expansion, there is a compelling argument for significant supply upgrades. Although plans for such upgrades have been drafted and scheduled for construction in 2024, affordability concerns have led to project deferment.

Network Issues: Shallow bores are susceptible to surface conditions, impacting water quality and increasing risks related to drawdown and capacity. The operation of both bores concurrently eliminates standby capability, further compounded by the absence of a dedicated backup power supply.



Water Intake/Source: Two bores

Treatment: pH correction with soda ash and chlorine disinfection with calcium hypochlorite.

Consent: Water take consent (2008.464). Maximum abstraction rate 20 L/s (1,437 m^3/day). Expires 2043.

The consent limits are adequate for current demand, but growth projection identify this is not sufficient for life of consent.

Reservoirs: Operating capacity is 300 m^3. This is an insufficient capacity for peak demand.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	**m**	7,825.1	*x*	$3,316,752.22	
Rising Mains	**m**	424.4	23	$302,957.27	
Valves	**no.**	281	5	$328,943.82	
Hydrants	**no.**	50	2	$242,665.56	
Pump station	**no.**	1	-	$36,304.00	Pumping up to reservoir
Reservoirs	**no.**	1	-	$228,695.00	10 tanks in one reservoir facility
Water Sources	**no.**	2	-	-	2 bores at intake

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit, full charge	$720.00	
2022/23 operations budget vs annual expenditure	**Budget:** $481,570	**Expenditure**: 65% of budget
2022/23 capital budget vs annual expenditure	**Budget:** $538,739	**Expenditure**: 68% of budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,100	
Calculated water loss per connection, l/conn/day	92	
Residential average peaking factor per season	2.54	
Drinking Water Standards. *(Water Safety Plans)*	Bacterial treatment not compliant – insufficient contact time.	
	No treatment barrier for protozoa currently.	
From 2016 Hydraulic model, Luggate Water Network		
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity	Total no. Hydrants 22 5	No. of Non-Compliant Hydrants 7 5
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints; - A maximum limit of 900 kPa.	Non- Compliance: - 1% is above 60 m.	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 24 hrs of average day demand - 12 hrs of peak day demand - 6 hrs of average day demand plus the greatest firefighting storage requirement	22 hrs 8 hrs	

Events in last 3 years:

- Boil water notice in August 2023 after a fault with the chlorine dosing which was repaired promptly**.**
- Level one water restrictions 2021/22, 2022/23, 2023/24.

What does the future look like?

	2023	2053	Growth, %
Total Population (Av. Day)	716	1,162	62
Total Rating Units	289	484	67
Total Visitor Peak Day	421	848	101

Residential growth is on a steady rise, due to new developments such as the Luggate Park Subdivision and Lake McKay Station.

Projects to optimize management of this supply

Completed: Smart water meter trial was completed as part of the water demand management strategy.

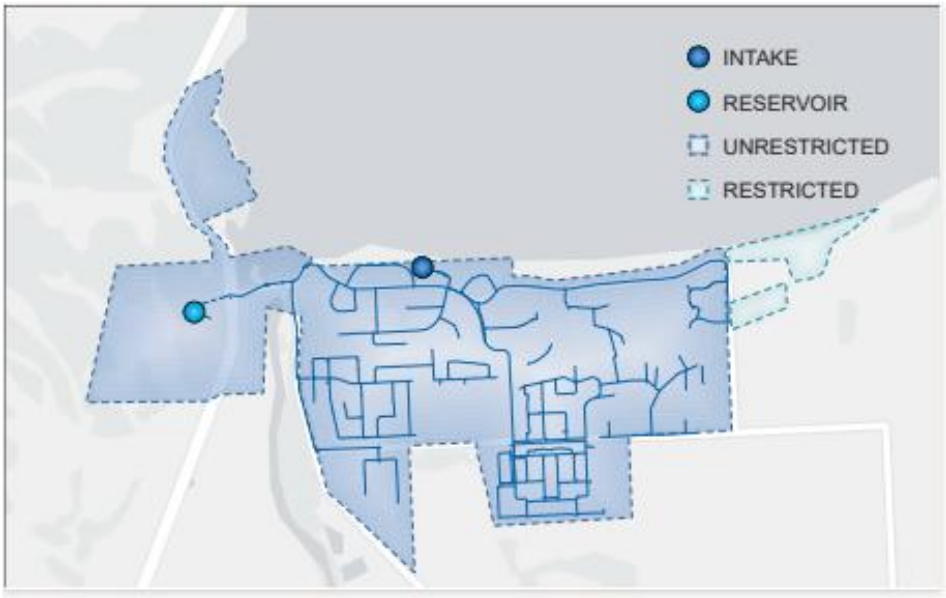
In progress: To address demand in the short term, summer water restrictions will be maintained. Additionally, a proactive strategy will be implemented, encompassing educational, guidance, and stewardship initiatives aimed at promoting reasonable reductions in water consumption.

Planned significant projects: Luggate Scheme Upgrades. $21.5 million. To ensure ongoing compliance and manage service level performance in line with growth. (Including new intake and treatment plan and reservoir storage with capacity to expand to Corebridge and Wānaka Airport in the future). This has been progressed to the detailed design stage. (2024-2032).

Lake Hāwea Water Supply

Supply Summary: Sourced from deep bores located along Scott's Beach, the water is pumped directly to the treatment plant located nearby. Following treatment, the water is distributed under pressure throughout the reticulation network, it can also be feed across the dam to a via a rising/falling main to single reservoir. This network can be maintained under pressure by the bore pumps (direct injection) or under gravity from the existing reservoir or a combination of both.

Unique Strategic Drivers and Key Risks: Lake Hāwea has very high factors with peak demands seen throughout the summer months. Additionally, Lake Hāwea anticipates significant forecast growth with several subdivisions planned. The direct injection operation of this scheme offers added resilience compared to a scheme reliant solely on gravity-fed reservoirs. Consequently, variations in the accepted reservoir storage design capacities are being considered.



Water Intake/Source: Four bores at Scott's Beach

Treatment: UV treatment and chlorine disinfection.

Consent: Water take consent (RM14.278.01.V1 & 2008.235) allows for a maximum abstraction rate of 108 L/s (13,500 m^3/day). Expires in 2050. Adequate for current demand, however, current demand predicts this will be insufficient within 30 years.

Reservoir: Current storage capacity is 1,040 m^3. This is insufficient to met projected demand, if the system was gravity feed only.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	28,201.7	X	$ 14,349,528.84	
Rising Mains	m	181	0	$ 110,296.84	
Valves	no.	1,304	0,2	$1,525,316.01	
Hydrants	no.	140	0,3	$ 679,463.57	
Pump station	no.	1	-	-	
Reservoirs	no.	1	-	-	
Water Sources	no.	1	-	-	Scott's Beach has 4 bores

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Affordability, cost per rating unit	$190.00	
2023/24 operations budget vs annual expenditure	**Budget:** $530,742	**Expenditure** 44 % of budget
2023/24 capital budget vs annual expenditure	**Budget:** $671028	**Expenditure** 111 % of budget
Consent compliance	No breaches	
Average water demand per connection, l/conn/day	1,281	
Calculated water loss per connection, l/conn/day	291	
Residential average peaking factor per season	3.08	
Drinking Water Standards.	Bacterial treatment compliant	
	Protozoa treatment compliant	
From 2023 Hydraulic model, Lake Hāwea Water Network:		
Fire Fighting - Residential areas FW2 capacity - Commercial areas FW3 capacity	With the high network pressures, fire flows can be achieved in most areas of the network.	
Water pressures - A minimum water pressure to each residential property of 200 kPa (20 m); - A target water pressure range between 200 and 600 kPa (60 m) where practical given topographic constraints. - A maximum limit of 900 kPa.	No minimum pressure issues. Much of the southern area of Lake Hāwea network operates with high pressures more than 900kPa including Domain Road, Timsfield Dr, Bell St, Cemetery Road, Grandview Rd, Sam John Pl, Lichen Lane, Muir Rd, End of Nicol St and Charles Court.	
Reservoir storage Minimum available reservoir storage across each network should be the greater of: - 24 hrs of average day demand - 12 hrs of peak day demand	Treated water storage within the network is less than the criteria of 12 hours peak day demand or 24 hours average day demand. But this is somewhat offset by the direct infection nature of the supply into the network.	

Events in last 3 years: Level one water restrictions, 2021/22, 2022/23 and 2023/24.

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	3,001	6,028	101
Total Visitor Peak Day	1,406	2,736	94
Total Population (Av. Day)	1,604	4,653	190

Projects to optimize management of this supply

In progress:

- To address demand in the short term, summer water restrictions will be maintained. Additionally, a proactive strategy will be implemented, encompassing educational, guidance, and stewardship initiatives aimed at promoting reasonable reductions in water consumption.
- Surface water infiltration has been an issue in the past for Hāwea bores, however, improvements have been underway to prevent this via recontouring the surrounding land.

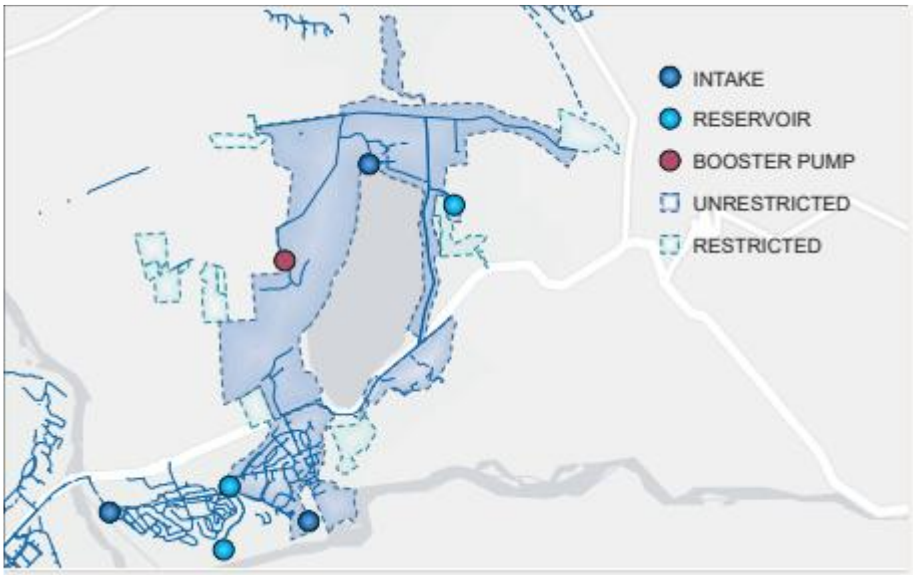
Significant projects planned:

- Demand Management, network zoning and demand management interventions, $2,531,380, 2024-2028.
- Hawea Scheme Upgrade, $24,417,000, 2024-2031
- Capell Ave Watermain Extension, reticulation extension along Capell Ave and Cemetery Road to meet consented growth. $1,135,892, 2024-2026
- Hawea level of service Improvements, network interventions to increase bore yield. $1,916,932, 2024-2026

Lake Hayes Water Supply

Supply Summary: The Lake Hayes Water scheme is composed of two parts, the established Lake Hayes community and an area of housing development called Shotover Country and Lake Hayes Estate. Each part of the supply has its own source and treatment system, but they are connected by a pipeline that is valved closed. The two parts of the supply operate separately. This summary just discusses the Lake Hayes portion. The area is supplied by bores located at the northern end of Lake Hayes, the bores and treatment plant were originally installed for supply in 2002. From the bores, the supply is pumped to the treatment plant located above the lake on Wilding Road. After treatment, the supply discharges into a storage tank, before being distributed to the community under gravity. Residential and commercial properties are feed by this scheme. This supply includes on demand and restricted schemes.

Unique Strategic Drivers and Key Risks: The source water quality from Lake Hayes shows elevated levels of nitrate and phosphate, accompanied by algae growth. It is anticipated that water drawn from the lake feeds into the bores, thereby posing potential risks. A management strategy has been implemented to help mitigate these risks. In addition, the water extraction consent is frequently breached during summer months and is scheduled to expire in 2027. Anticipated future growth in the area will further strain this water source.



Water Intake/Source: Two bores

Treatment: UV, pH adjustment, and chlorination disinfection.

Consent: Water take consent (2001.822), allows for the abstraction of 40 L/s (2,200 m^3/day) and expires in May 2027.

Reservoir: The on-site storage capacity is 587 m^3, the peak flow rate is 83.5 m^3/hr, which provides 7 hours of storage.

Asset Inventory and Value.

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	48,036.1	X	$14,349,528.84	
Rising Mains	m	3,695.5	X	$3,651,265.70	
Valves	no.	1519	X	$1.778,169.62	
Hydrants	no.	248	X	$1,203,621.19	
Pump station	no.	1	-	-	
Reservoirs	no.	1	-	-	
Water Sources	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit, full charge	$580.00	
2023/24 operations budget vs annual expenditure	**Budget:** $1,606,962	**Expenditure**: 108% of budget
2023/24 capital budget vs annual expenditure	**Budget:** $228,422	**Expenditure**: 35% of budget
Consent compliance	Water take consent exceeded during summer	
Average water demand per connection, l/conn/day	1,605	
Calculated water loss per connection, l/conn/day	82	
Residential average peaking factor per season	2.37	
Drinking Water Standards. *(Water Safety Plans)*	Bacterial compliant	
	UV	
Hydraulic model, Lake Hayes Water Network was not sourced		

Events in last 3 years: Level one water restrictions, 2023/24 and in previous years.

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	3,618	6,041	67
Total Visitor Peak Day	1,244	2,350	89
Total Population (Av. Day)	1,881	4,069	116

Projects to optimize management of this supply

The Wakatipu WS Masterplan indicates that the recently completed Shotover Country (SOC) bores and water treatment plant can, in addition to replacing the existing SOC and Lake Hayes Estate bores, replace both the Lake Hayes and Kelvin Heights intakes. This would resolve all the issues associated with this existing Lake Hayes water intake.

Significant projects planned:

- Lake Hayes Water Permit, water take consent renewal, $636,600 (2024-2027).

Shotover Country and Lake Hayes Estate Water Supplies

Supply Summary: The Lake Hayes Water scheme is composed of two parts, the established Lake Hayes community and an area of housing development called Shotover Country (SOC) and Lake Hayes Estate (LHE). Each part of the supply has its own source and treatment system, but they are connected by a pipeline that is valved closed. The two parts of the supply operate separately. This summary just discusses the SOC and LHE portion.

The Shotover Country water supply provides water to the small but rapidly growing community of Lake Hayes Estate and Shotover Country which is located 8 kilometres northeast of Queenstown, southwest of Lake Hayes. The supply is classified as a minor drinking-water supply under the Health (Drinking Water) Amendment Act 2007 and provides water to a population of approximately 2,000 people. All of the pipework has been installed since 2013 so is in very good condition.

Unique Strategic Drivers and Key Risks:
This eastern area of Queenstown is facing rapid population growth.

Water Intake/Source: Two bores, shallow

Treatment: Filtered via cartridge filter, disinfected with UV, chlorinated.

Consent: (RM16.142.01). Maximum extraction rate: 395 l/s, 28,250 m^3/day and 6,223 m^3/year. Expires 2048.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	23,710.9	X	$11,384,615.37	
Rising Mains	m	385.5	X	$417,359.47	
Valves	no.	1028	X	$12,947.45	
Hydrants	no.	86	X	$417384.76	
Pump station	no.	1	-	-	
Reservoirs	no.	1	-	-	
Water Sources	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit	$310.00 same as Queenstown
2023/24 operations budget vs annual expenditure	This is now included in the Queenstown budget
Consent compliance	No breaches
Average water demand per connection, l/conn/day	958
Calculated water loss per connection, l/conn/day	281
Residential average peaking factor per season	2.7
Drinking Water Standards. *(Water Safety Plans)*	Bacterial treatment compliant
	Protozoa treatment
Hydraulic model, Lake Hayes Estate Water Network was not sourced	

What does the future look like?

Total Population (Av. Day)	2023	2053	Growth, %
Total Population (Av. Day)	3,423	3,699	8
Total Rating Units	967	1,069	10
Total Visitors (Peak day)	1,735	2,106	21

Projects to optimize management of this supply.

In progress: These supplies have been integrated into the Queenstown water supply scheme following the completion and current commissioning of the new Shotover Country bore and treatment plant. The Shotover Country intake comprises four bores situated adjacent to the Shotover River, treated with chlorine and UV disinfection.

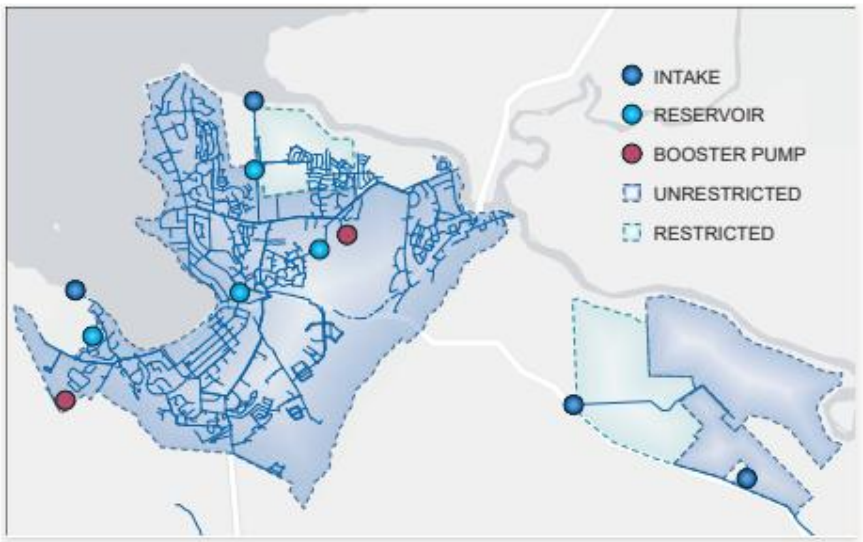
Planned:

Future projects are now listed under the Queenstown Water Supply summary.

Wānaka Airport Water Supply

Supply Summary: The supply sits within the Wanaka Water Supply scheme; it serves a non-resident population of approximately 150 people and is connect to just under 40 properties in total. The supply is classified as a small T2 supply under the Taumata Arowai, Drinking Water Quality Assurance Rules 2022, (DWQAR). The Wānaka Airport water supply is located to the southeast of Wānaka, along the Wānaka-Luggate Highway. Water is sourced from a deep bore near to the western end of Wānaka Airport. Currently no connections are metered.

Unique Strategic Drivers and Key Risks: The current firefighting water supply relies on several privately owned offline tanks. A centralized firefighting supply, distributed through reticulation, could offer a more resilient solution. Moreover, the Wānaka Airport bore aquifer is currently over-allocated, with no new resource consents being issued. This situation raises concerns about the future availability of drinking water and firefighting resources for the airport. To mitigate this risk, plans are in place to connect the airport to the upgraded Luggate Water Supply scheme. The "UV Rapid Deployment" project will upgrade the treatment by adding UV. Bore head? This is a basic supply with no backup power supply etc.



Water Intake/Source: One bore

Treatment Chlorine disinfection, with Calcium Hypochlorite dosing. this deep bore has secure bore status and therefore UV treatment has not been a requirement.

Consent: Water take consent (RM19.097.01). Maximum abstraction rate 2.8 L/s, 220 m^3/day and 26,491 m^3/yr. Expires 2041. Source; Wānaka Basin Aquifer.

Adequate for current demand, growth projection identify this is not sufficient for life of consent.

Reservoir: Operating capacity is 25m^3. Also, 30m^3 offline firefighting tank.

Asset Inventory and Value – data included within Wanaka scheme

How is it performing?

Rates, cost per rating unit	$220.00 – same as Wanaka
2023/24 operations budget vs annual expenditure	Operates within the Wanaka budgets
Consent compliance	No breaches
Water demand details	No produced for this scheme
Drinking Water Standards. *(Water Safety Plans)*	Bacterial treatment compliant
	No treatment barrier of protozoa currently (UV).
Fire Fighting	Onsite private tanks
Water pressures	Water delivered to private tanks
Reservoir storage	Water is provided to private tanks, thus providing additional storage time should the main reservoir ever be taken offline, ensuring continuity of supply for the residential properties.

What does the future look like? (this scheme is too small to be distinguished within the population projections).

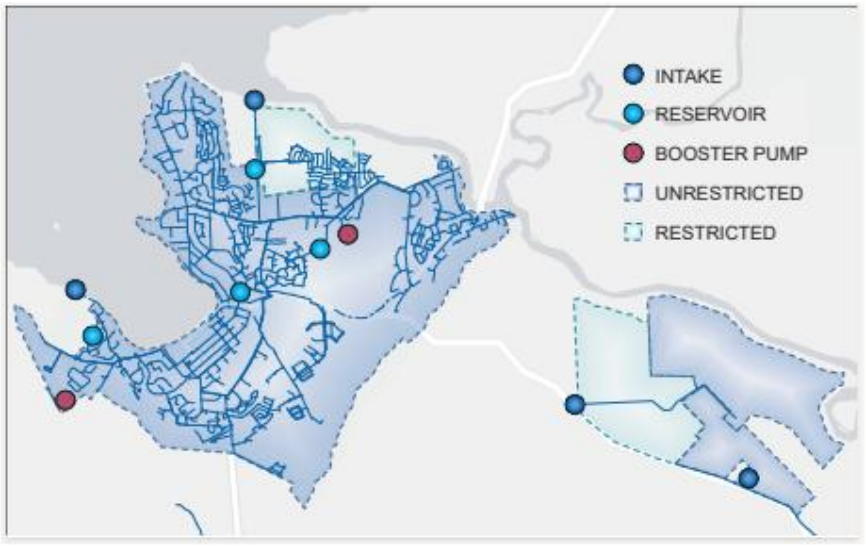
Projects to optimize management of this supply

Planned significant projects: The Luggate Water Supply project can expand to also upgrading this supply in the future.

Corebridge Water Supply

Supply Summary: The supply sits within the Wanaka Water Supply scheme and supplies a base population of 58 people, along with the Project Pure wastewater treatment plant near the Wānaka Airport. The bore is located along the Wānaka-Luggate Highway (State Highway 6), in close proximity of the Ballantyne Road intersection. The scheme connects to approximately 12 properties, classifying it as a small supply. Each of the private properties that the Corebridge bore supplies has its own water storage tank, thus providing additional storage time should the main reservoir ever be taken offline, ensuring continuity of supply for the residential properties.

Unique Strategic Drivers and Key Risks: The population and therefore demand, is expected to grow with increased development in the area. The "UV Rapid Deployment" project will upgrade the treatment by adding UV.



Water Intake/Source: One bore

Treatment: Chlorine disinfection

Consent: Water take consent (RN11.177.01). Maximum abstraction rate 12 L/s (460 m^3/day), this expires in August 2036.

Adequate for current demand, growth projections identify this is not sufficient for life of consent.

Reservoir: Storage capacity is 33 m^3, the reservoir consists of a plastic potable water tank.

Asset Inventory and Value –data included within Wanaka Scheme

How is it performing?

Rates, cost per rating unit	$220.00 same as Wanaka
2023/24 operations budget vs annual expenditure	Operates within the Wanaka budgets
Consent compliance	No breaches
Water demand details	No produced for this scheme
Drinking Water Standards. *(Water Safety Plans)*	Bacterial treatment compliant
	No treatment barrier of protozoa currently (UV).
Fire Fighting	Rural firefighting supply provided by onsite private tanks
Water pressures	Water delivered to private tanks
Reservoir storage	This reservoir provides 1.5 hours of storage. Water is provided to private tanks, thus providing additional storage time should the main reservoir ever be taken offline, ensuring continuity of supply for the residential properties.

What does the future look like? (this scheme is too small to be distinguished within the population projections).

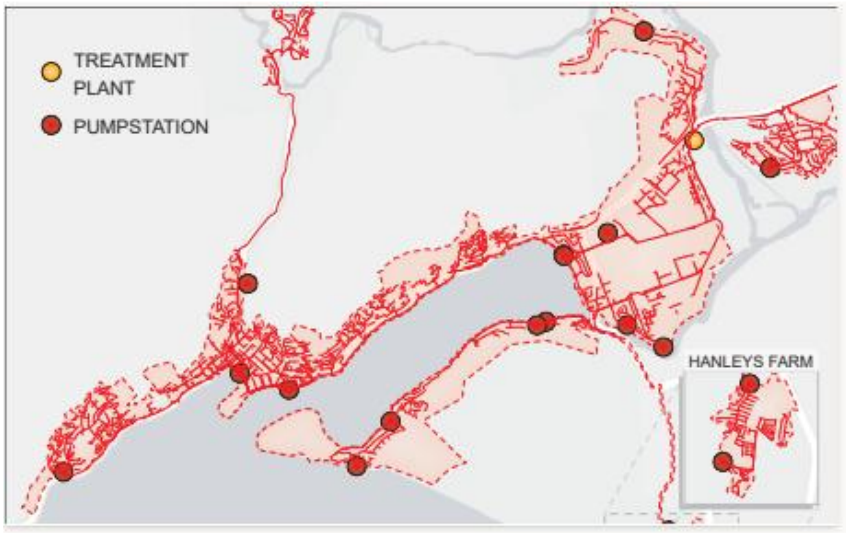
Projects to optimize management of this supply

Planned significant projects:

- Corebridge Permit, to renewal water take consent, $127,320 (2033/34).
- The Luggate Water Supply project can expand to also upgrade this supply in the future

Queenstown Wastewater Treatment

Schemes Supplied: Arrowtown, Arthurs Point, Queenstown, Lake Hayes, Lake Hayes Estate Shotover Country and Hanleys Farm.



Treatment Plant: Project Shotover

Type of treatment: Pond system with MLE plant and UV

Consent:
-Discharge to land. RM13.215.03.V2. Condition 3: The rate of abstraction shall not exceed:
(a) an annual average flow of 11,238 m^3/day
(b) A maximum discharge loading rate averaged over the disposal field area of 1,000 mm/calendar day based on the total area of the disposal field.

Consent Expiry: 31 Dec 2031

-Discharge to Air consent

Unique Strategic Drivers and Key Risks: Significant projected load and improved treatment drive the future management of this plant.

How is it performing?

- The disposal field has been issued two abatement notices in the last three years. Solutions are being investigated.
- There has been a breach to the discharge to air consent in December 2023. The cause for this breach has been repaired and management practices have been improved.

Rates, cost per rating unit, full charge	$670.00
Consent compliance	Breaches

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	141,124.7	x	$115,170,433.8	
Rising Mains	m	24,607.38	22.46	$26,796,244.42	
Valves	no.	190	2.15	$2,103,669.76	
Pump station	no.	16	-	-	
Manholes	no.	3,219	6.41	$30,612,579.53	
Treatment	no.	-	-	-	

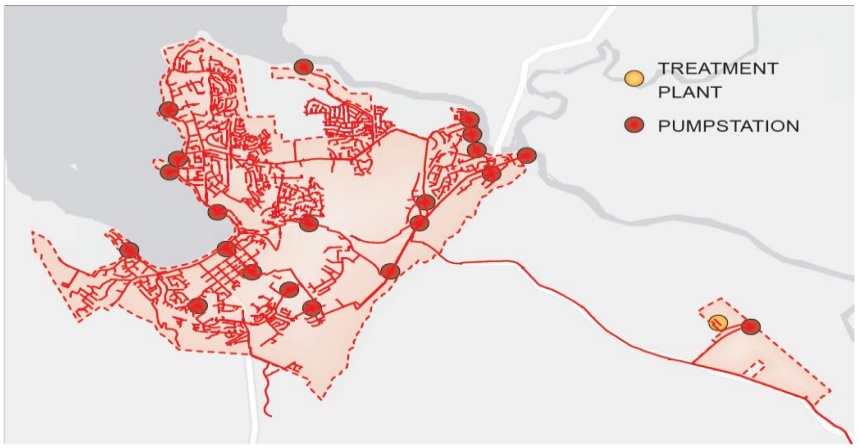
Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:

- Project Shotover Stage 3, insufficient capacity at Shotover WWTP to meet projected demand. Works include duplicate MLE reactor and clarifier and decommissioning of the legacy oxidation ponds. $33,956,822 (2024-2027).
- Shotover Disposal field, The Shotover WWTP disposal fields are experiencing operational issues. Funding is required to investigate possible solutions, $70,164,259 (2024-2030).
- Project Shotover Future Work $18,922,650 (2027-2034).
- Biosolids Disposal , 11,996,760 (2029-2034).

Wanaka Wastewater Treatment

Schemes Supplied: Wanaka, Albert Town and Luggate.



Treatment Plant: Project Pure

Type of treatment: SBR and UV

Consent: Discharge to land
-Volume of wastewater discharged to the disposal field shall not exceed 26,400 m^3/calendar day, at a maximum discharge loading rate per each rapid infiltration trench of 2,000 mm/calendar day.

Consent Expiry: 2041

Unique Strategic Drivers and Key Risks: Significant projected demand drive the future management of this plant.

How is it performing?

- There has been overflow in the disposal field over the 22/23 New Year. This was deemed to be an operational issue which has been resolved.
- A new SBR has been constructed due to increased load, this is currently being commissioned.
- A new sector in the disposal field has been constructed.

Rates, cost per rating unit, full charge	$806.00
Consent compliance	Breaches

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	156,931.69	x	$ 116,967,859.7	
Rising Mains	m	30,626.8	-1.3	$ 26,403,438.72	
Valves	no.	168	2.43	$ 1,910,359.56	
Pump station	no.	4	-	-	
Manholes	no.	529	-0,2	$ 4,930,757.52	
Treatment	no.	-	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

What does the future look like? (Wanaka only projections)

Total Population (Av. Day)	2023	2053	Growth, %
Total Rating Units	13,999	26,872	92
Total Visitor Peak Day	7,154	12,703	77
Total Population (Av. Day)	12,674	25,899	104

Significant projects planned:

- Project Pure Upgrade, Insufficient capacity at Project Pure WWTP to meet projected growth. Update of treatment facilities and development of plant redundancy. $ 583,550, (2024/25).
- Project Pure Aeration Grid Renewal, Replacement of failing grids with new high-efficiency panel diffusers enabling greater treatment throughput, $5,092,800 (2024/25).
- Project Pure Future Works, $40,009,825 (2025-31).
- Biosolids Disposal , $6,672,616 (2029-2034)

Lake Hāwea Wastewater Supply and Treatment

Scheme Summary: The Hawea wastewater infrastructure comprises a single Wastewater Treatment Plant, along with four Pump Stations located at Esplanade Road, Scotts Beach Road, Cemetery Road, and Domain Road, in addition to gravity mains.

Unique Strategic Drivers and Key Risks: There is significant growth in Hawea, leading to a redesign of wastewater treatment for this area. The existing treatment plant is currently under capacity, it is operating outside its consent limits and cannot accommodate the current development.

Treatment Plant: Hawea WWTP

Type of treatment: NDBR and land treatment

Pumpstations:
Esplanade Rd, 15l/s and 35.7m^3 of emergency storage
Scotts Beach 23l/s and emergency storage of 34.2m^3
Cemetery Rd 6L/s and emergency storage of 26.9m^3.
Domain Rd 45L/s and 42.9m^3 of emergency storage.

How is it performing?

Rates, cost per rating unit, full charge	$540.00
Consent compliance	Breaches, not compliant on TN

Currently wastewater from the most recent development is being trucked to Project Pure as a temporary measure until the wastewater treatment for this growth is resolved.
Within the network:

- The Cemetery Road Pump Station suffers from insufficient pumping capacity.
- For the current dry weather flow scenario, Scotts Beach and Cemetery Road Pumping Stations have less than 4 hours of ADWF Storage.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	22,834.2	x	$15,044,067.08	
Rising Mains	m	2,350.6	-11.6	$1,600,230.99	
Valves	no.	10	0	$113,711.87	
Pump station	no.	4	-	-	
Manholes	no.	391	4	$3,712,346.39	
Treatment	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:
Upper Clutha Conveyance Scheme, connection of Hawea to Project Pure, along with significant capacity upgrades to the existing (receiving) Wanaka scheme. Partially funded by the Infrastructure Acceleration Fund. $ 80,283,747 (2024-2029).

Cardrona Wastewater Supply and Treatment

Supply Summary: The Cardrona Wastewater Scheme was design-built in 2021 and vested into QLDC. The Cardrona WWTP services the Village, the MCS subdivision, and the Cardrona Alpine Ski Resort (via private reticulation form private buffer ponds in the Alpine Ski Area subzone). Wastewater is collected from the Cardrona Village via gravity pipe in the Cardrona Valley Road, collected and pumped up at Pringle Creek Road to a receiving manhole that gravitates through the MCS Special zone subdivision to the inlet headworks of the WWTP.

Unique Strategic Drivers and Key Risks: Providing for future growth.

Treatment Plant: Cardrona

Type of treatment: SBR with disposal to land (cut and carry disposal field) via subsurface drip irrigation system.

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	1,684.1	X	$ 1,182,536.86	
Rising Mains	m	1,639.8	0,1	$ 790,425.54	
Valves	no.	19	0,5	$ 216,052.57	
Manholes	no.	31	0,1	$ 295.083.94	
Pump station	no.	1	-	-	
Treatment	no.	1	-		

Note: Data schemas and system changes have made some data comparisons challenging

How is it performing?

Rates, cost per rating unit, full charge	$800.00
Consent compliance	No breaches

What does the future look like? (Cardrona Water Supply projections)

	2023	2053	Growth, %
Total Population (Av. Day)	1,127	3,156	180
Total Rating Units	569	1,266	122
Total Visitor Peak Day	1,128	4,079	261

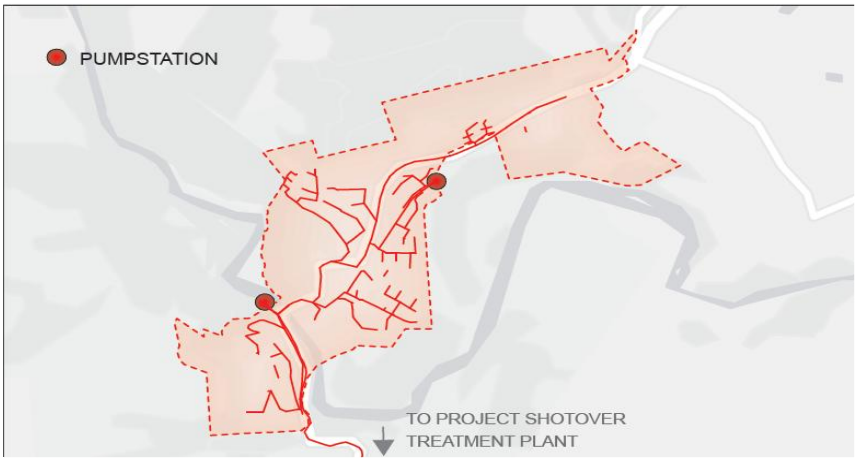
Significant projects planned:

- Cardrona Scheme Upgrade, to connect existing township which are currently have onsite systems $10,627,269 (2028-2032).

Arthurs Point Wastewater Supply

Supply Summary: The Atley Road Wastewater Pump Station (WWPS) serves as the conduit for wastewater from a small residential area. Wastewater from Atley Road is directed to the Oxenbridge Tunnel Road WWPS. The Oxenbridge Tunnel Road WWPS manages wastewater conveyance for the entire Arthur's Point township. Upon arrival, all wastewater undergoes partial treatment via aeration. Subsequently, it is pumped to a receiving sewer and then transferred to a balance tank situated at a high elevation on Gorge Road, near the junction with Industrial Place. From this balance tank, wastewater naturally flows to the Recreation Ground WWPS. From there, it is conveyed to the Frankton Beach WWPS and subsequently to the Porject Shotover for treatment.

Unique Strategic Drivers and Key Risks: Modelling shows the 5-year ARI design storm causing wastewater overflows at Atley Road WWPS, Oxenbridge WWPS and at the Gorge Road balance tank. There is further growth projected in this supply. This risk will be captured under the general levels of service project budget.



Treatment Plant: Project Shotover

Pumpstations:
-Atley Road 3.2L/s
-Oxenbridge WWPS is 28.4L/s.
-Balance tank at Gorge Road buffers flow so approximately 12L/s discharges from the tank

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	10,169.8	x	$6,385,767.87	
Rising Mains	m	2,242,10	0	$1,416,551.36	
Valves	no.	6	0	$68,227,12	
Pump station	no.	2	-	-	
Manholes	no.	226	-7	$2,151,257.14	
Treatment	no.	-	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

Shotover Country Wastewater Supply

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	13,508.9	x	$10,127,712.53	
Rising Mains	m	2823	x	$2,336,832.53	
Valves	no.	2	x	$22,742.37	
Pump station	no.	16	x	-	
Manholes	no.	308	x	$2,931,801.77	
Treatment	no.	-	x	-	

Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:

- Shotover Country Scheme Upgrade, $168,201,867 (2024-2034).

Luggate Wastewater Supply

Supply summary: The original part of Luggate is still serviced by private septic tanks, The more recent subdivisions are reticulated and are now directed to Luggate Highway Pumpstation where it is pumped to Project Pure for treatment. There are a number of small pumpstations that direct flow to the main Luggate Highway pumpstation.

Unique Strategic Drivers and Key Risks: The primary concern lies with the aging septic tanks currently in place within the unreticulated area of Luggate. Development potential in this unreticulated area is limited due to both the available land area and the expenses associated with individual onsite treatment systems.

Treatment Plant: Project Pure

Type of treatment: NDBR and land treatment

Pumpstations:
Alice Burn #1,
Alice Burn #
Pisa Rd
Harris Pl
Church Rd
Luggate HW

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	4,330.9	x	$ 2,704,213.39	
Rising Mains	m	1,745.3	-	$ 933,380.85	
Valves	no.	13		$ 147,825.44	
Pump station	no.	7	-	-	
Manholes	no.	71	-	$ 675,837.42	
Treatment	no.	-	-	-	

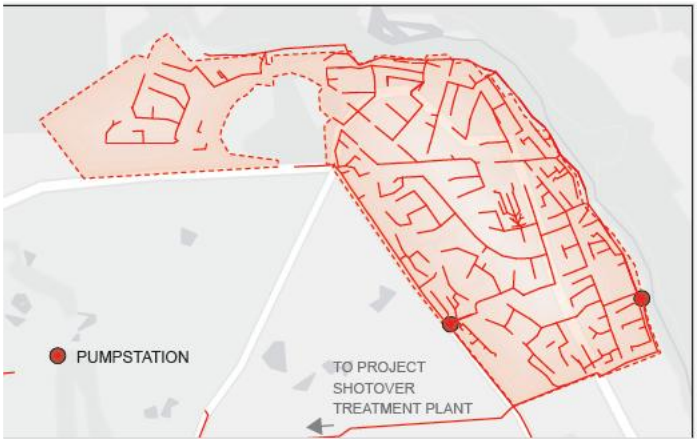
Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:

- Luggate Reticulation Extension, $5,097,809 (2029-2033).

Arrowtown Wastewater Supply

Supply Summary: Arrowtown wastewater network consists of both private and council's owned assets. All of the minor pump stations flow into the Arrowtown - Lake Hayes, which is the main pump station for this catchment located at the South East side of the Lake Hayes. The pipeline after this main pump station is the only one that can be used to discharge the wastewater from Arrowtown to Project Shotover. Therefore, it presents as a high risk critical asset.



Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	27,004.10	x	$ 18,006,631.41	
Rising Mains	m	4,633.7	10	$ 3,332,370.21	
Valves	no.	25	95	$ 284,279.69	
Pump station	no.	7	-	-	
Manholes	no.	71	-	$ 675,837.42	
Treatment	no.	-	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:

- Arrowtown Conveyance Upgrade, Lake Hayes pumping system optimisation interventions to improve network efficiency and capacity. Currently Arrowtown's WW flows through LH Estate; with development of Ladies Mile a more direct route could be developed. $6,702,579 (2029-2033).

Lake Hayes Wastewater Supply

Unique Strategic Drivers and Key Risks: Growth

Asset Inventory and Value

Type	Unit	Total	% increase	Current Value	Comment
Mains	m	29,573.5	X	$20,249,316.02	
Rising Mains	m	11,636.6	X	$8,928,301.11	
Valves	no.	37	X	$409,362.76	
Pump station	no.	4	-	-	
Manholes	no.	523	X	$4,968,832.87	
Treatment	no.	1	-	-	

Note: Data schemas and system changes have made some data comparisons challenging

Significant projects planned:

- Lake Hayes Scheme Upgrade, Lake Hayes pumping system optimisation interventions to improve network efficiency and capacity. Currently Arrowtown's WW flows through LH Estate; with development of Ladies Mile a more direct route could be developed. $6,702,579 (2029-2033).
- Ladies Mile New Scheme, Infrastructure to align with/service the new housing development. $ 29,371,652 (2026-2032).

Glenorchy Wastewater Supply

Properties within the Glenorchy Township are mostly serviced by individual private septic tanks. However, within the township there are also several small private communal wastewater treatment systems.

Wānaka Airport Wastewater Supply

Holding tanks onsite, pumped privately and discharges to Project Pure via the Wanaka scheme.

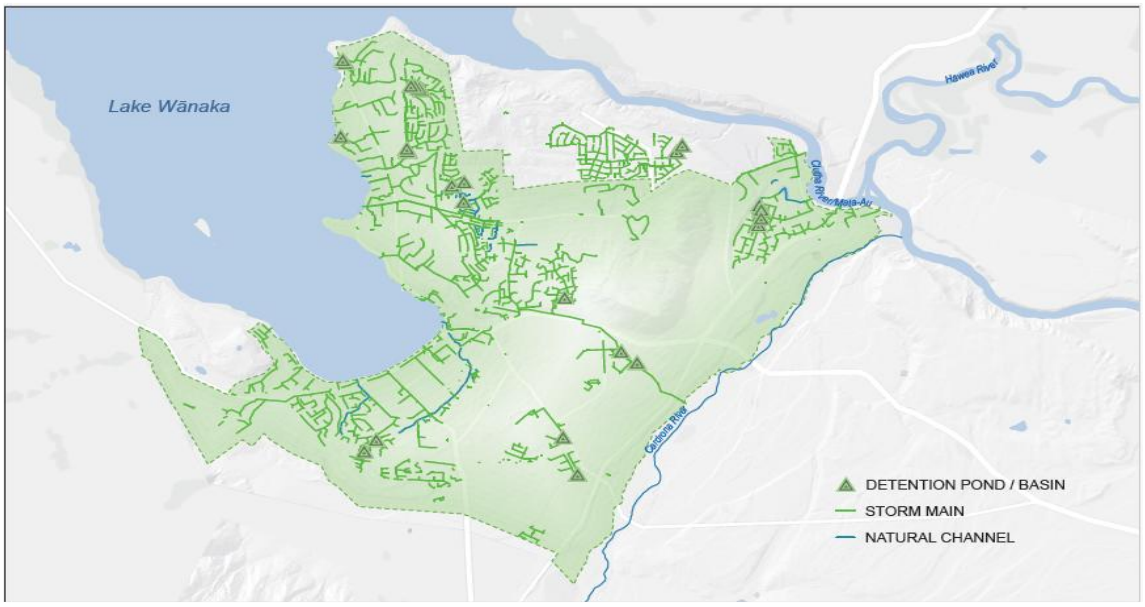
Kingston Wastewater Supply

The existing Kingston township is serviced for wastewater by individual private septic tanks with no public infrastructure available to connect to. A new development is planning a new scheme.

Significant projects planned:

- New Scheme planned, Headworks & trunk infrastructure, excludes existing community reticulation $ 35,323,949 (2024-2027).
- Scheme extension, to connect existing township currently on septic tanks $ 7,346,948 (2029-2034).

Wanaka Stormwater Supply



Asset Inventory and Value

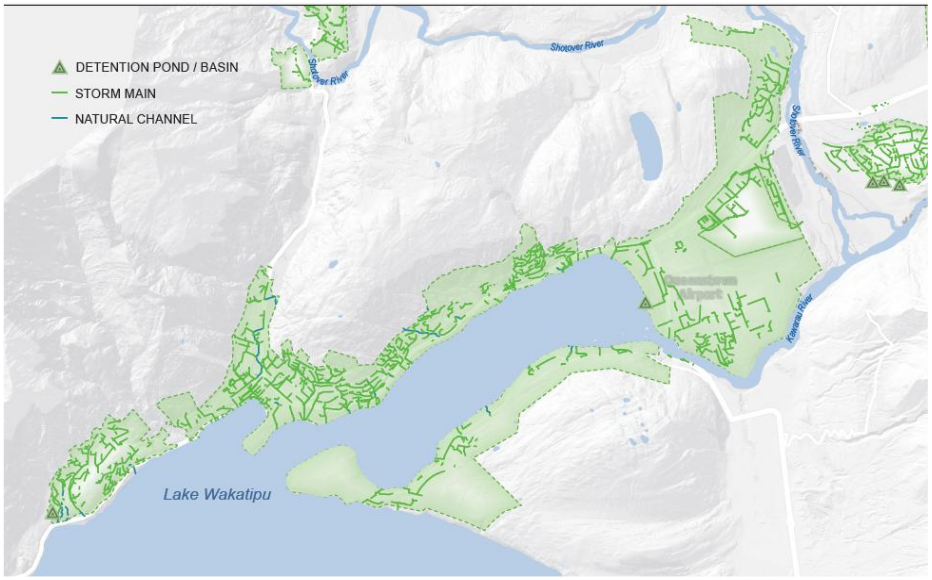
Type	Unit	Total	Current Value	Comment
Mains	m	128,861.44	$152,365,346.3	
Manhole	m	2,531	$22,208,986.6	
Structure	no.	590	$5,102,315.21	
Lateral	no.	3,601	$17,236,024.75	
Open Channel	no.	305	0	
Valve	no.	17	$129,877.11	

Note: Data schemas and system changes have made some data comparisons challenging.

Significant projects planned:

- Rockabilly Gully Erosion Protection. $ 5,003,247 (2024-2026)
- Stone St, divert flow from Alpha Series away from Bullock Creek. $10,362,016 (2026-28)

Queenstown Stormwater Supply



Asset Inventory and Value

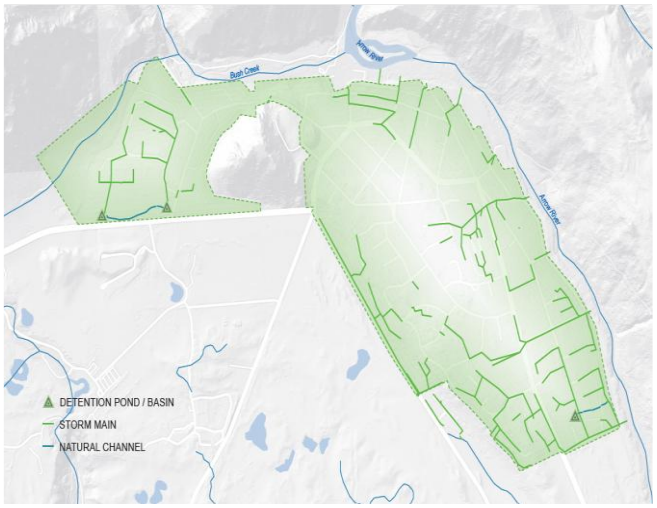
Type	Unit	Total	Current Value	Comment
Mains	m	135,234.99	$133,105,049.2	
Manhole	no.	2,673	$23,275,834.33	
Structure	no.	566	$4,907,499.54	
Lateral	no.	2,442	$11,121,065.92	
Open Channel	no.	150	0	
Valve	no.	3	$9,276.93	

Note: Data schemas and system changes have made some data comparisons challenging.

Significant projects planned:

- Lakeview Development Servicing. $1,061,000 (2024/25)
- Kingston New Scheme. $ 14,451,285 (2024-2026)
- Ladies Mile New Scheme $43,087,226 (2026-2032)
- Remarkables Park Outlet $ 4,637,375 (2025/26)

Arrowtown Stormwater Supply

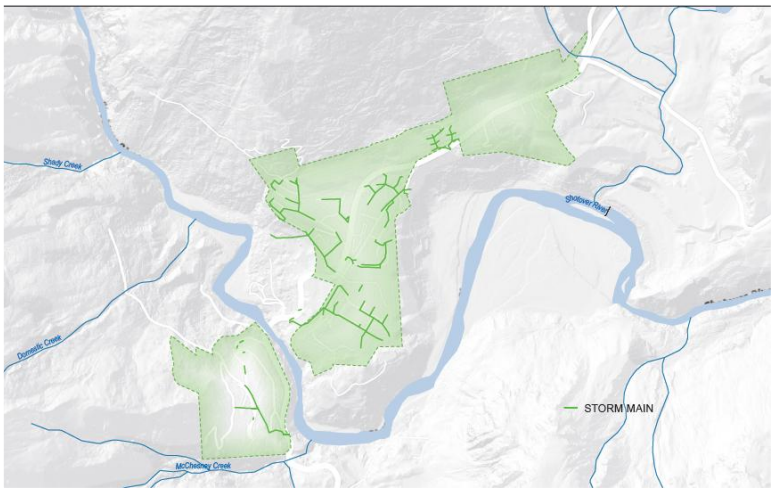


Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	18599.69	$17,121,609.62	
Manhole	m	303	$278,081.02	
Structure	no.	99	$918,416.73	
Lateral	no.	396	$1,992,336.41	
Open Channel	no.	27	0	

Note: Data schemas and system changes have made some data comparisons challenging.

Arthurs Point Stormwater Supply

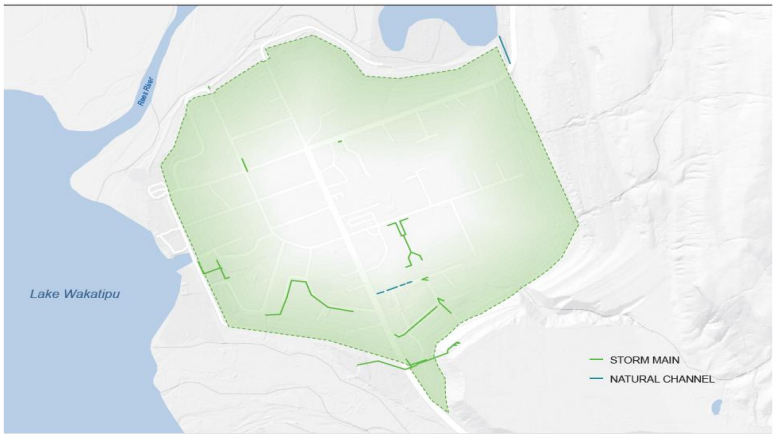


Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	6,774.57	$6,421,154.93	
Manhole	m	163	$1,484,309.82	
Structure	no.	57	$528,785.39	
Lateral	no.	152	$625,192.08	
Open Channel	no.	21	0	

Note: Data schemas and system changes have made some data comparisons challenging.

Glenorchy Stormwater Supply

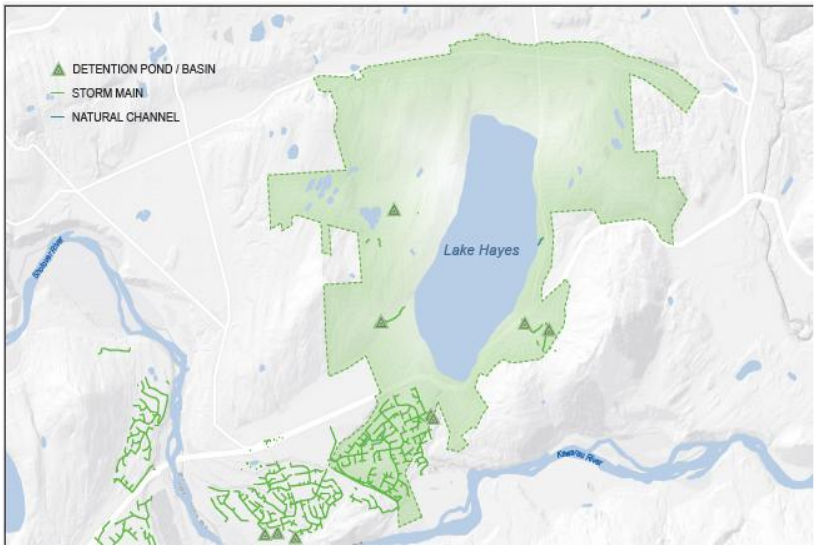


Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	1,971	$1,536,942.01	
Manhole	m	46	$352,523.59	
Structure	no.	60	$556,616.2	
Lateral	no.	93	$59,626.11	
Open Channel	no.	41	0	
Valve	no.	1	$9,276.93	

Note: Data schemas and system changes have made some data comparisons challenging.

Lake Hayes Stormwater Supply



Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	20,531.74	$30,214,609.09	
Manhole	m	391	$3,627,288.27	
Structure	no.	95	$881,308.99	
Lateral	no.	817	$3,892,591.97	
Open Channel	no.	12	0	
Valve	no.	3	$27,830.81	

Note: Data schemas and system changes have made some data comparisons challenging

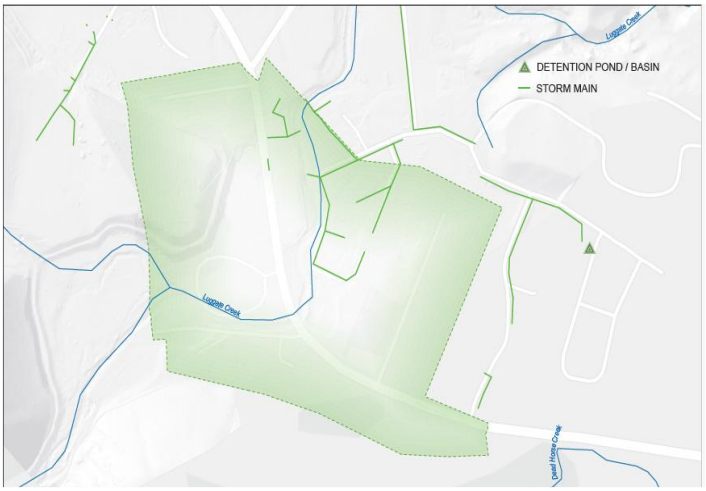
Lake Hawea Stormwater Supply

Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	10,675	$6,996,331.82	
Manhole	m	374	$2,263,572.56	
Structure	no.	114	$974,078.35	
Lateral	no.	353	$944,270.63	
Open Channel	no.	23	0	
Valve	no.	1	$9276.93	

Note: Data schemas and system changes have made some data comparisons challenging

Luggate Stormwater Supply



Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	2,898	$3,295,562.51	
Manhole	m	66	$612,277.82	
Structure	no.	10	$92,769.36	
Lateral	no.	77	$364,252.57	
Open Channel	no.	38	0	

Note: Data schemas and system changes have made some data comparisons challenging

Shotover Stormwater Supply

Asset Inventory and Value

Type	Unit	Total	Current Value	Comment
Mains	m	16,509,8	$20,796,320.13	
Manhole	m	302	$2,801,634.91	
Structure	no.	5	$37,107.74	
Lateral	no.	816	$3,614,364,91	
Open Channel	no.	1	0	

Note: Data schemas and system changes have made some data comparisons challenging